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A NOTE ON THE TREATMENT OF GUNSHOT INJURIES OF THE MANDIBLE.

BY

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GUNSHOT injuries of the mandible differ materially in their character from the fractures met with in civilian practice: in the latter there is seldom any loss of tissue, and the displacements which occur are due in part to muscular action, and in part to the direction of the line of fracture; in the former there is often considerable loss of tissue and comminution of the bone, with a corresponding increase in the displacement of the fragments. The problems to be faced in the treatment of the injuries are to a great extent new, and the treatment cannot altogether be carried out on the ideal lines suggested by those who have written on the subject, drawing their experience from civilian life. In treating these injuries the surgeon is perhaps too apt to lose sight of the utility of interdental splints; while the dental surgeon is too apt to lose sight of the facts that treatment is required beyond the mere adaptation of splints, and that sepsis is a factor in delaying and often preventing union.

The fractured mandible is a comparatively easy bone to treat if we remember that its pathology is very similar to that of the long bones, and that it calls for the same lines of treatment as those applicable to such bones, namely:

- (1) Control of the sepsis.
- (2) Approximation of the fractured ends.
- (3) Fixation of the parts.

Unfortunately, amongst the members of the dental profession there is considerable diversity of opinion on the question of treatment. There are those who consider that the best treatment is to adapt splints with the teeth in ideal occlusion, retaining the teeth even when intimately connected with the region of fracture. On the other hand, there is a smaller section which considers that the all-important factor is speedily to rid the parts of sepsis, and not to fix splints until the sepsis is thoroughly under control. The treatment at the Croydon War Hospital has always been carried out on these latter lines, and the experience gained shows conclusively that the former method of treatment, which ignores fundamental surgical principles, leads to considerable delay in union, and, in a large majority of instances, to non-union where union could reasonably be expected. I propose, therefore, briefly to record the methods adopted at the Croydon War Hospital.

I. THE REMOVAL OF SEPSIS.

This question mainly centres round the retention of the teeth in the region of the fracture. When the line of fracture passes through the socket of a tooth the periosteum of the root is detached and a pocket is formed, which becomes filled with septic matter. The periosteum covering that part of the root is entirely destroyed, and whenever this happens there is no possibility of the periosteum becoming reattached. The result is a permanent pocket, from which infection is constantly passing to the fractured area. The pulps of the teeth also become infected, and each pulp chamber becomes an added source of sepsis. The removal of the tooth or teeth eradicates this focus of infection.

All teeth in relation to the fractured area should be removed. Though this step is not considered necessary by many of those engaged in treating these fractured mandibles, yet results speak for themselves; in cases in which the teeth are removed the sepsis is rapidly eliminated, and healing follows quickly with but little necrosis; in cases where the teeth are retained the sepsis persists, the incidence of the necrosis is greater and union is prevented. Two cases may be quoted by way of contrast.

CASE I.

The patient was injured on October 19th, 1915; by a glancing shot on the anterior part of the mandible. When admitted to hospital on April 19th, 1916, the condition was as follows: The lower portion of the bone was extremely comminuted (see diagram, Fig. 1); there was a free discharge of pus between the first and second incisors, mobility of the fragments, and a sinus under the mandible at the entrance wound. There was no displacement. The teeth present were:

8	7	6	5	4	3	2	1	|	1	2	3	4	5	7	8	
8	7	6	5	4	3	2	1	|	1	2	3	4	5	6	7	8

On April 29th the sinus was opened and packed, and the following teeth were extracted:

2	1		1	2	3	4	5
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A splint was adapted to the lower teeth. The sinus healed rapidly, and by the end of June union was obtained. At the

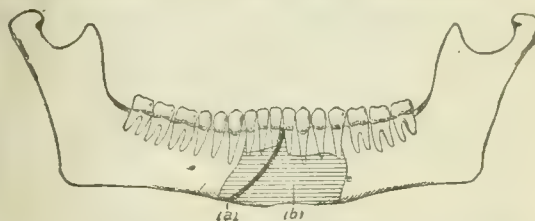


FIG. 1.—(a) Line of vertical fracture; (b) area of comminution.

end of July the muco-periosteum showed no signs of trouble, and the patient was returned to dépôt with a denture.

As a contrast to this case the following may be quoted:

CASE II.

A machine gun bullet struck the bone on the lower border of the mandible in the region of the left premolars, and passed in a slightly upward direction, emerging on the right side about three-quarters of an inch below and external to the angle of the

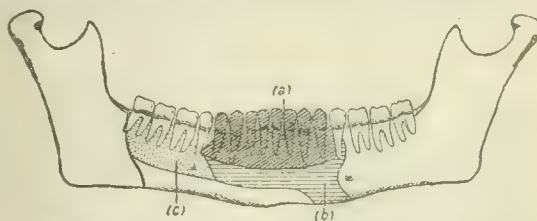


FIG. 2.—(a) Tissue lost; (b) area of extreme comminution; (c) area of moderate comminution.

month. The patient was injured on July 1st, and admitted July 15th. The condition of the bone is shown in the diagram, Fig. 2.

There was considerable induration of the soft tissues, a sinus was present under the chin, the pulse-rate was 102, and the temperature was 100.4° F. The bullet had carried away the

eight anterior teeth. On July 29th the following teeth were removed:

8 2 4 6 8
8 7 6 5 5

* Unerrupted.

The suppuration in the mouth rapidly disappeared, the fragments in the meantime being allowed to approximate. On August 19th a splint was adjusted, consisting of a vulcanite cap covering the lower gums attached to a metal cap splint on the upper teeth. By October 12th union was complete.

The damage to the bone by the retention of the septic teeth is, I am confident, not fully recognized by those who are adverse to their removal. The infected teeth lead to a progressive rarefying osteitis, and this is well seen in cases of simple fracture where the teeth have been retained.

The worst effects of the retention of the teeth in the fractured area are met with in comminuted fractures in the region of the angle where the fracture includes the molar teeth. In this area the swelling of the soft tissues increases the "stagnation areas" around the teeth and adds considerably to the sepsis. Many cases have come under observation in which splints have been adapted to the teeth left in the region of the fracture. The condition of these patients on admission is usually as follows: There is considerable swelling about the ramus with one or more discharging sinuses; the mouth can be opened only to a slight extent and the mucous membrane in the neighbourhood of the molars on the injured side is ulcerated. This last condition is caused partly by the constant friction of the swollen mucous membrane on the teeth and partly by the action of the toxins formed in the deep pocket which usually exists posterior to the last molar in the mandible.

The method adopted at Croydon in these cases is as follows:

1. The third molars on the injured side are removed to give free drainage.
2. The sinuses are constantly irrigated and the bone, if necrosed, is allowed to sequestrate before its removal is attempted.
3. The mandible is fixed by means of a metal Gunning splint.

The following may be quoted as a typical case:

CASE III.

A patient was injured July 1st, 1916, and admitted July 13th. A bullet had entered half an inch above the right ala of the nose and emerged just behind the angle of the mandible on the same side. There was a deep flesh wound at the point of exit; all the teeth, with the exception of the left third molars, were present; there was no malocclusion. The skiagram showed a severe comminuted fracture of the mandible and a fracture through the maxilla in the region of the molars.

The diagram (Fig. 3) will help to give an idea of the extent of

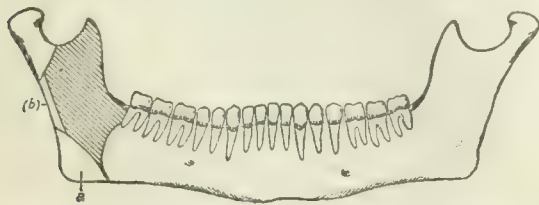


FIG. 3.—Shaded area denotes area of comminution and lost tissue.

injury to the mandible. The greater part of the ramus, as shown by the shaded area, was severely comminuted; the portion (a) was displaced backwards; there was a fracture running from the sigmoid notch downwards and backwards to the posterior border of the ramus; a thin layer of the posterior border (b) had escaped comminution.

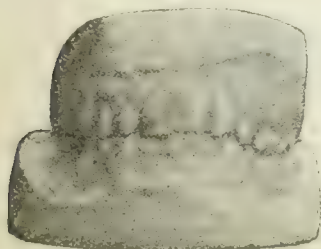


FIG. 4.

By October 15th, when the occlusion of the teeth was as shown in Fig. 4.

The contrast between the retention and non-retention of the teeth is shown in the following cases:

CASE IV.

A fragment of shell struck the mandible behind the right angle. The patient was injured on September 11th, and admitted on October 2nd. The mandible had deviated slightly to the left; there was considerable swelling in the neighbourhood of the wound, with a sinus freely discharging pus. The skiagram showed extensive comminution of the ramus from the region of the angle to just below the sigmoid notch. The third molar communicated with the fracture. The second and third molars were removed, together with several fragments of necrosed bone. A metal Gunning splint was adjusted, but not fixed until the external sinus had healed. By the middle of February union was complete, and the teeth were in perfect occlusion.

In this case the removal of the teeth ridded the injured parts of an active focus of infection and permitted free drainage; if the teeth had been retained the greater part of the ramus would have been lost from necrosis.

The contrast to this method of treatment is shown in the following case:

CASE V.

A patient was injured by a bullet which entered near the angle of the mandible on the left side and emerged through the right cheek. He was wounded on November 13th, and on December 16th a splint was fixed in France. No teeth were removed. On April 5th he was admitted to Croydon in the following condition:

1. The left lower third molar was loose and lying in a horizontal position in the region of the fracture, the tooth being simply attached by its neck to the muco-periosteum.
2. There was a sequestrum about 1 in. in area which was present in the mouth. This was removed, and a skiagram taken, which showed a complete loss of the lower two-thirds of the ramus.

In this case the loss of tissue was almost certainly due to chronic sepsis fostered by the presence of the teeth. If the teeth had been removed at an early stage and the sepsis controlled, there is little doubt that union would have followed.

In my opinion, not only should the teeth in the area of fracture be removed, but the whole mouth should be freed of septic teeth; in other words, the dental sepsis should be radically treated. The benefits to the patient from the removal of the dental sepsis are:

(a) The wounded area heals more rapidly because it is not being constantly reinfected by the sepsis around the teeth.

(b) The removal of the dental sepsis leads to marked improvement in the general condition, and this in turn reacts on the wounded area.

At Croydon this free removal of dental sepsis has been carried out systematically, with the greatest benefit to the patients. The general standard of health has been excellent, and it was remarked by one who visited the hospital, and whose opinion was valued, that they were the healthiest collection of patients he had ever seen in any hospital. In but few cases is there loss of weight during the treatment, and this is remarkable considering that for a stretch of two and sometimes three months nothing but "slop diet" can be taken. The most striking evidence in support of the removal of sepsis is the almost complete absence of complications such as bronchopneumonia or intestinal affections.

II. THE APPROXIMATION OF THE FRAGMENTS.

To obtain osseous union it is essential that the fractured ends should be brought into contact, or that living bone should exist in the tissues between the gap in the bone. In the mandible the approximation of the fragments will result in narrowing of the arch and some loss of masticating area, but from a practical point of view the masticating area can be restored by properly constructed artificial dentures. Some writers, who place considerable stress on correct occlusion of the teeth, maintain that if the fractured ends are kept apart, fresh bone will eventually bridge the gap. There is nothing in pathological teaching or experience to support this view, and if bone cells do not exist in the tissues uniting the fragments it is difficult to see how the bone is to be created. The cases in which bone has been observed to form have probably been examples of comminution of the tissues with the fragments of bone remaining, and forming nuclei for bone growth. Experience shows that many of these cases end, as might be

expected, in fibrous union. The choice would therefore seem to lie between a mandible firmly united, capable of bearing the strain of an efficient denture, or the teeth in

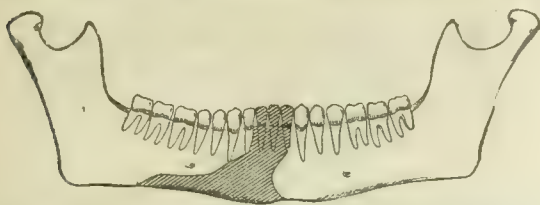


FIG. 5.—Loss of tissue indicated by the darkened area.

correct occlusion on a base not capable of bearing the strain of mastication.

In the incisor region the fragments are allowed to approximate, provided the narrowing does not lead to marked deformity of the face and disorganization of the occlusion. An example may be quoted:

CASE VI.

The bullet carried away the bone, as shown in Fig. 5. The parts were approximated and osseous union followed with but slight interference with the occlusion of the teeth, as shown in Fig. 6.

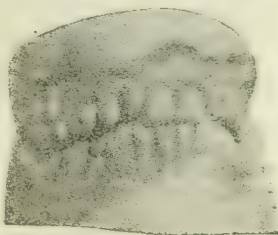


FIG. 6.

In the premolar region, and especially the molar region, the following method is adopted: The upper teeth opposing the teeth of the posterior fragment are removed; this allows the posterior fragment to spring forwards and upwards, the anterior fragment being allowed to swing over to the injured side. In practice the following method is pursued:

Where the gap is small, the posterior fragment is released, and a splint made with the anterior fragment in position. Skiagrams are then obtained. If the bony parts are seen to be in contact, the splint is fixed in position; otherwise the anterior fragment is brought across until contact is obtained. The mandible is, therefore, in many cases mended with the anterior fragment swung over to the injured side. This is no disadvantage, because, with the removal of the splint, the mandible tends to readjust itself to functional activity, provided the so-called "bite of comfort" is avoided. This condition requires a word of explanation. In fractures about the region of the angle the ramus moves forwards and brings the soft tissues in contact with the upper teeth, but even if there is no loss of tissue, the soft tissues are considerably damaged, and when healing is complete there is a certain amount of permanent swelling, and a similar condition follows. The result is that the patient, in order to obtain a "bite of comfort," involuntarily brings the mandible over to the injured side, and the teeth are not in occlusion; further, in many cases definite ulceration of the soft tissue follows.

It is difficult to say what is the breadth of gap that can be satisfactorily reduced in this manner without causing undue deformity, but it probably varies in individual cases. Good results may be confidently anticipated where the gap is less than three-quarters of an inch, and even with gaps up to one inch approximation may prove successful in some cases. With a wider gap, approximation of the fragments must give way to bone grafts for the formation of an osseous bridge.

The following case may be quoted because it illustrates in an excellent manner: (1) The effects of the glancing shot on the bone; (2) the approximation of the fragments to obtain union; (3) fixation in a malposition; (4) readjustment of the mandible to functional activity.

CASE VII.

The patient was injured on August 18th, 1916, and admitted September 14th. The bullet entered one inch behind the left angle of the mandible, and emerged through the right side of the bone, about midway between the angle and the symphysis, and about midway between the lower border of the bone and the alveolar border.

On admission there was a sinus at the site of the exit wound;

there was a purulent discharge, and a probe passed up the sinus on to bare bone. The teeth present were:

7 6 5 4 3 2 1	1 2 3 4 5 6 7
7 6 5 4 3 2 1	1 2 3 4 5 6 7

The mouth was gagged open on the second molars. The skiagram showed loss of bone in the region of the first molar and a comminution of the bone extending backwards to the second molar and forwards to the incisors. The following teeth were removed:

8 7 6

8 7 6 5 4 3

* Unerupted.

The sinus was dilated, and a few fragments of necrosed bone were removed. The patient was then left to allow the fragments to approximate by natural means. The left fragment passed across to the right, and the right or posterior fragment swung forwards. A splint was adjusted to bring the left fragment still further to the right; this was fixed on October 5th, and by the end of January there was good union. At this period the teeth on the left side were not in occlusion, but the efforts of the patient to utilize the teeth soon resulted in these teeth assuming the correct occlusion.

III. FIXATION OF THE FRAGMENTS.

Many splints have been devised for the treatment of the fractured mandible. The most self-cleansing and the most reliable is the metal Gunning splint fixed in position with oxyphosphate of copper. Hooks, elastic bands, and wires only add to the difficulty of cleansing the mouth.

In conclusion, it may be said with confidence that if ordinary surgical principles are adopted in the treatment of gunshot injuries of the mandible, the most excellent results can be expected. To adapt splints in a "field of sepsis," as is so often done, is to ignore the most elementary surgical teaching.

A detailed account, fully illustrated, of the methods referred to in this paper was published in the *British Dental Journal*, March 15th, April 2nd, and April 16th, 1917.

THE DEPARTMENT OF ORAL SURGERY OF THE HARVARD SURGICAL UNIT.

BY

MAJOR V. H. KASANJIAN.

During the present war soldiers who have received wounds of the face and jaws have for the first time been collected in centres for treatment. This concentration has made it possible to systematize and simplify certain phases of the work and to form definite conclusions as to the cause and treatment of certain complications.

Some of the advantages have been:

The nursing staff is more efficient as they become familiar with and devote their entire attention to the care of fractured jaws. The daily care and feeding have been organized to make easier the treatment of a large number of patients.

The development of a mechanical laboratory has made it possible to apply at an early date the splints and appliances which are essential to successful treatment.

The treatment of cases during a period of over eighteen months has given opportunity to maintain a comprehensive system of records from which deductions can be made on the complications, mortality, etc.

Daily Care of the Patient.

Cases are admitted to the department usually from two to three days after injury. They are suffering from mental shock, toxic absorption from the wounds, and from lack of nourishment owing to the inflammation of the soft tissues and the derangement of the organs of mastication.

The mouth is irrigated at frequent intervals during the day and night, in most cases every two hours, and in addition the mucous surfaces are swabbed with cotton pledgets saturated in tincture of iodine or hydrogen peroxide, to remove mechanically mucous deposits and adherent food particles.

The majority of operations are performed under a local anaesthetic. This procedure makes it possible to remove foreign bodies, fragments of teeth or roots, and detached segments of bone. The suppuration or necrosis during the early stages of treatment is thus materially reduced.

Immobilization of the Maxillary Bones.

We believe that early immobilization of maxillary fractures means the quickest and most satisfactory recovery. While technical difficulties may stand in the way, since nearly every splint must be made to suit each individual case, we have devoted considerable attention to the classification of the type of splints, and the simplification of their preparation. A number of devices of a simple and temporary nature have been designed to immobilize the jaws during severe illness, and until more permanent splints can be employed.

For cases of ordinary severity, the usual splints (with or without modifications) familiar to the oral surgeon are used. In many cases of extensive destruction of hard and soft tissues it was found that intraoral splints were inadequate, and an external support, consisting of a series of vulcanite plates fitted over the forehead, with a head-gear of straps, was developed. With this appliance as a base, the tissues of the mouth, nose, eyes, and neck are under control, either during the process of scar contraction or after plastic operations.

In the many cases of extensive loss of the mandible accompanied by laceration of the lower part of the face and neck, a sectional or folding artificial jaw has been successfully used; it acts as a framework for plastic operations, is easily removed, and at the same time maintains the contour of the lower part of the face.

In restoring the upper jaw, a satisfactory means of retention and also of resistance to the force of mastication has been designed, and in cases in which the loss of the mandible has been sufficiently extensive to destroy the function of the temporo-mandibular joint, a mechanical condyle has been substituted.

Septic Complications.

The special septic complications, apart from the usual condition of local sepsis in the wound, which have been observed, are septicaemia, cellulitis, and bronchopneumonia. No cases of pyaemia have occurred.

Septicaemia.—There have been two cases of septicaemia, both ending fatally. In each the wounds of entry and exit were small. In one there was a scarlatiniform rash and the infection was thought to be streptococcal, but no blood cultures were made. In the other, growths of a bacillus were obtained from samples of blood taken on two successive days. The bacillus was not identified, as it died off in all the subcultures.

Cellulitis.—A form of cellulitis spreading from the wound over the face and scalp has been observed in several instances. It was accompanied by pyrexia, but in no case did the patient seem very ill or suffer from any serious consequences. The affected area of skin has been light pink in colour, slightly tender, with a definite induration at the spreading margin. These cases have been regarded as mild erysipelas, and have been treated as such. In some instances the condition has recurred in the same patient.

Bronchopneumonia.—This has been one of the most fatal complications. Preliminary septic bronchitis has occurred in some cases; in others the onset of pneumonia has been sudden. Empyema and multiple abscesses in the lung have been common, and the mortality has been high. The pulmonary infection seems to be attributable, as a rule, to the inhalation of septic material from the mouth, and a high percentage of the cases has followed general anaesthesia. Many patients were suffering from bronchopneumonia at the time of their admission, and it was usually found that they had already been operated upon elsewhere under general anaesthesia.

Value of Local Anaesthesia.

Our practice now is to employ local anaesthesia whenever this is possible for operation upon patients with wounds which communicate with the mouth. If general anaesthesia is necessary, special precautions are taken to prevent the entry of septic material into the air passages. These precautions are as follows:

1. A hypodermic injection of a hundredth of a grain of atropin is given one hour before operation in order to reduce the secretion of saliva.
2. The mouth is carefully cleaned by swabbing and syringing immediately before the operation is commenced.
3. The administration of the anaesthetic is commenced in the ordinary way. As soon, however, as the patient is unconscious,

and before he has lost his reflexes, nasal tubes are passed through the nostrils into the pharynx, and the administration is continued through them while the buccal cavity is well packed with dry gauze, so as to prevent the backward escape of blood and other fluids.

Those who are working at clearing stations and other points where men with gunshot wounds involving the mouth receive treatment before reaching the base should always bear in mind the great danger of giving general anaesthetics to these patients.

Plastic Operations.

So far as concerns the soft tissues, these may be considered under the following headings:

1. *Primary Suture.*—There does not appear to be much scope for primary suture of gunshot wounds complicated by fracture of the jaw, for reasons which are manifest. However, so long as general anaesthesia is not employed, some advantage may follow accurate primary suture of those portions of a wound which involve the lip margins, the eyelids, the alae of the nose, portions of the external ears, or the outlying tributaries of a radiating wound, provided such suturing is limited, and no attempt is made to close the entire wound.

2. *Secondary Suture.*—Early secondary suturing has been increasingly employed of late. The interval that has been allowed to elapse between the infliction of the wound and its complete or partial closure has varied with the condition of local sepsis, but has most often been between the fifth and twelfth days. B.I.P. has been used as an adjuvant in these operations, we think with advantage. The use of early secondary suturing has done much to lessen the amount of deformity from scarring.

3. *Flap Operations.*—Although primary or early secondary suturing may be practised with success in some cases, yet extensive operations required for reconstruction of the face to cover deficiencies which have been brought about by actual destruction of tissue, or by scarring and laceration, are invariably postponed until all suppuration has disappeared. Primary or early secondary suturing may have served to bring the edges of a lacerated wound into apposition, or suturing may have been done at a later date to extend mucous surfaces or to lessen the deformity as a preparatory measure for an extensive plastic operation. In other words, in the first instance the suturing reduces the size of a wound in which there is no loss of substance, and in the second instance it lessens the area to be covered by flaps. In all cases in which there is an appreciable loss of substance and a plastic operation is contemplated, an appliance to reproduce the bony tissue is always made to serve as a framework, to give a natural contour to the soft tissues of the face or neck, and to prevent undue scar contraction.

Even for extensive plastic operations local anaesthesia is almost invariably used, because the majority of patients prefer it to a general anaesthetic, whilst from the operator's point of view it is better because he can take his own time to obtain juxtaposition of the flaps, the loss of blood is much less, the patient is quiet and under perfect control, and the dangers of a prolonged operation are reduced to a minimum.

Haemorrhage.

Among 400 cases of gunshot wound of the face with fracture of the upper or lower jaw treated in this department there have been 34 cases of secondary haemorrhage (8.5 per cent.), and of these 7 were fatal.

Injury of one or both lingual arteries in the floor of the mouth has been the chief cause of serious bleeding. In the majority of cases it has not been possible to secure the bleeding point, and proximal ligation has been employed. This, however, has not always been satisfactory, as it is often impossible to identify with certainty the vessel which is bleeding. Efforts to overcome this uncertainty by ligating the external carotid artery were not encouraging. Owing to the dropping of the fractured jaw and other anatomical and pathological derangements, the external carotid is not easy to find and ligate in these cases, the operation is somewhat prolonged and has a high mortality; moreover, concomitant injury of both linguals is not uncommon, in which event ligation of one external carotid is not sufficient. Recently we have had better results by direct ligation of one or both lingual arteries whenever

the anatomy of the wound was indicative of injury of these vessels.

Haemorrhages from—		No. of Ligations.	Deaths.
Facial artery (or branches)	7	{ Under local anaesthesia Under general ..	5 2 } 0
Nasal region	4	—	—
Lingual or inferior dental	21	{ Lingual External carotid ... Common carotid ...	6 9 4 } 1 2 3
Pharyngeal region ...	3	—	1*
Totals	34	—	26 } 7

* Suddenly.

The above figures are compiled from the records of the first 400 cases of gunshot wound of face and jaw treated in the department.

The total of cases of haemorrhage is 34 and not 35, since one patient had haemorrhage distinctly from both the nasal and the pharyngeal regions. One death occurred immediately following haemorrhage from the pharyngeal region before any assistance could be given. One case died from shock within a few hours after ligation of both lingual arteries. Of the five remaining cases which ended fatally, one died from recurrence of bleeding from the floor of the mouth and another from cerebral embolism. The three fatal cases from ligation of the common carotid had all previously had the external carotid ligated, but owing to a recurrence of haemorrhage the former artery was ligated as a last resort.

Mortality.

Of 436 recorded cases of injuries to the face and jaws treated in the department between July, 1915, and January, 1917, 19 patients died from the following causes:

Haemorrhage	7
Bronchopneumonia	5
Cerebral complications	4
Septicaemia	2
Collapse	1

It is hard to make an accurate analysis of the percentage of deaths among patients suffering from gunshot wound of the face and jaw, because wounds of other parts of the body may exist which are of more serious consequence than those of the jaw. Of the four cases which died from cerebral complications, three were suffering from fracture of the base of the skull and one from spinal injury in addition to the jaw-wounds.

Most of the patients who succumbed to bronchopneumonia had contracted this complication previous to admission to the department.

CONCLUSIONS.

We feel that some of the advances have been:

1. A realization of the importance of immobilization or reduction of maxillary fractures at the first possible moment along the lines of normal occlusion of the teeth.
2. Early reduction of sepsis by small and timely operations with a local anaesthetic.
3. A better understanding of the dangers attending the use of general anaesthetics for operations on patients suffering from face and jaw injuries.
4. The control of severe complications, especially of secondary haemorrhage.
5. The modification and simplification of many types of oral splints.
6. Temporary and permanent oral restorations.
7. The use of local anaesthesia for extensive plastic operations about the face, mouth, and neck.

This summary of the work has not included an appreciable number of cases which have been treated from necessity in other hospitals, nor a large number of patients who have received attention for dental and oral complications.

DR. LUDWIG LAZARUS ZAMENHOF, the inventor of the international language known as Esperanto, who died recently, was a member of the medical profession. He was born in 1859 at Byalistok, Grodno, in Russia, and practised as an ophthalmic surgeon in Warsaw. Esperanto was presented to the world in 1887.

A NOTE ON ORAL SURGERY.

BY

MAJOR A. C. VALADIER, C.M.G., R.A.M.C.,

AND

CAPTAIN H. LAWSON WHALE, R.A.M.C.

THE advances in the surgery of the jaw and face have been gradual, but as the result of experience a few points have crystallized out with distinctness.

At the beginning of the war broken fragments of bone were removed too freely; many such if left would have thrown out callus. A tooth should never be removed if there is any chance of it subsequently forming a useful support for dentures or other appliances. Even in the line of fracture the extraction of a tooth may be left until later, since for the period immediately following injury it may provide an invaluable *point d'appui* for some appliance.

Maxilla.

If the tuberosity carrying a molar tooth be separated from the rest of the bone by fracture, but the muco-periosteum is continuous, it should never be removed. It may be kept in position by any convenient method, whether by splint or by silk stitches through its muco-periosteum; and it will always unite with the parent bone. In the case of transverse fracture through both maxillae (with or without fracture of the palate), producing a downward sag of the maxillae *en masse*, the whole may be lifted up by a vulcanite plate moulded to the roof of the mouth; from the sides of this plate brass rods fitted with hooks permit of a constant pull by means of bandages fixed over the head. Union is established in less than three weeks. These two statements as to fractures of the maxillae are emphasized as being invariably true.

Mandible.

The displacement of fragments in a complete fracture of a ramus is often obstinate, and suitable neither for wiring nor, if there be a gap, for subsequent bone grafting. Occlusion of teeth in this very frequent type of case is obtained by building up the depressed side with vulcanite or a metal gutter, on which are fixed teeth.

Injury of Facial Nerve.

Often the loss of soft parts has involved a great part of the facial nerve, and on the injured side the angle of the mouth maintains its original relation to the lower jaw—that is, it is depressed. The tissue of the cheek is cicatricial, and anastomosis of the nerve is impracticable. A good result is obtained by elevating the mouth angle by a plastic operation.

Closure of Wounds.

A wound, however fetid, anywhere in the neighbourhood of the jaw ramus, should be closed as soon as possible. For drainage by tube a median stab-wound is then made beneath the chin.

Formation of Flaps.

Where a large gap in the cheek has to be covered by sliding a flap from one or both edges of the wound, the large amount of undercutting necessitated tends to impair vitality, and in particular to raise the tension on the stitches. To avoid these drawbacks the first third of the undercutting may be of dermis only; the next third may include fat and subcutaneous tissue; and the last third—that is to say, the most proximal part of the flap—may also embrace deep fascia. On pulling the flap in the necessary direction its deep surface now becomes shaped like a staircase; the blood supply is cut off to a less extent, and the tension is more diffusely distributed.

GENERAL CONCLUSION.

Speaking generally of facial wounds, it is advisable to delay considerably before doing final and finishing operations, but not at all before the primary sewing up.

The most common serious sequelae of war injuries to the jaw have been recurrent and secondary haemorrhages, inhalation pneumonia and gangrene of the lung, and mediastinitis.

Down to January, 1917, we had among 1,010 cases twenty-seven deaths, seven of these from pneumonia.

There were three tracheotomies (including one emergency laryngotomy) and eleven haemorrhages necessitating ligation of the external, and three of the common carotid. These three latter are all living, and apparently not suffering any discomforts as a consequence of this operation.

NOTE ON FLAVINE, SODIUM DESOXYCHOLATE, AND QUININE AS A MOUTH-WASH.

BY

F. M. WELLS, MAJOR C.A.D.C.

(From the Canadian Army Dental Corps Laboratory, London, S.W.)

In the estimation of the value of chemical substances at present employed as antiseptics in the mouth and throat there is a sharp division of opinion as to the advisability of employing antiseptics in the treatment of infections where the chemical is brought in contact with such a delicate structure as the mucous membrane. Any chemical which would act as a bactericidal agent, which at the same time would not destroy the life of cells and inhibit phagocytosis, and which could be applied to such a delicate surface as the mucous membrane without causing an irritant action, would satisfy a long-felt want in mouth and throat treatment.

I have in the course of the last ten months examined a series of substances comprising the principal antiseptics, washes, lozenges, pastilles, etc., in common use.

Neufeld has shown that bile salts have a solvent action on pneumococci, but not on other bacteria. Bile salts also dissolve completely leucocytes, spermatozoa, amoebae, spirochaetes, and trypanosomes.¹ Mair has brought evidence to show that scarlet fever is due to a pneumococcus-like organism which is also bile-soluble,² and has indicated that there is reason to believe that "trench nephritis" is due to a similar bile-soluble diplococcus. Mair found that the solvent action on pneumococci of sodium desoxycholate was ten times as powerful as sodium cholate or the commercial sodium taurocholate.³

These bile-soluble diplococci show also a special sensitivity to solutions of quinine, and there is evidence that a combination of desoxycholate and quinine has a much greater bactericidal effect on them than can be accounted for by a mere summation effect.

A solution with the following formula:

Quinine hydrochloride	...	...	5 grams.
Sodium desoxycholate	...	...	40 "
Glycerin	...	...	250 c.cm.
Water	...	...	to 1,000 "

has been in use in the form of a fine spray for the throat and nose in cases of scarlet fever for some months, with results so far satisfactory that they show that the treatment does no harm, and that septic throats clear up with it at least as rapidly as with any other form of treatment.

Messrs. Allen and Hanburys are now preparing tablets containing:

Sod. desoxycholate	...	...	gr. 1
Quin. ethyl. carb.	...	...	gr. 4
Ol. menth. pip.	...	...	m. 5
Glycerrhiz. ammon.	...	...	gr. 2

Also with flavine 1 in 1,000.

The quinine desoxycholate solution has a considerable bactericidal effect also on other cocci which are not bile-soluble, and in the strength used it appears to have no irritant effect on the mucous membrane.

The method employed to test the value of the preparations checking the development of bacteria were all carried out in the same mouth; only one test was made in twenty-four hours. The mouth was first rinsed thoroughly with distilled water, and after thirty minutes the saliva was expectorated from the mouth into a sterile test tube, and then a loopful inoculated into nutrient agar and plated. At the end of an hour another test was made in the same manner. These tests were used as controls. Immediately after the second control the substance to be tested was rinsed thoroughly over the mouth, and then tests made in the same manner every half-hour up to the fourth hour. Plates were incubated for twenty-four hours

and counts made. The most favourable results were obtained from a solution containing:

Desoxycholate	...	...	2 per cent.
Quinine	...	...	0.25 per cent.
Flavine 1 in 2,000.	...	...

Judging from the chemical action of the desoxycholate and quinine tablet, it should be an excellent treatment for infected throats, as in the strength used in these tablets all the pneumococci strains are easily destroyed without causing any irritation on the mucous membrane. This pathogenic group alone is giving more trouble than any other strains to be found in the mouth and throat. Again, amoebae are very easily cleared out of the mouth with sodium desoxycholate and quinine in the strength used in these tablets, as I have found in cases of pyorrhoea caused by amoebae.

In the solutions containing desoxycholate and quinine and flavine the bacterial count, even after four hours, was in most cases considerably lower than the control before treatment, whereas with the more irritating antiseptic solutions the count rises rapidly after the initial fall until it reaches a figure in excess of the normal. I consider this secondary rise in the number of bacteria to be a useful indication of an irritant effect on the mucous membrane. The same difference is seen in comparing the effects of the 1 per cent. carbolic and the desoxycholate and quinine tablets. The latter do not show the same reduction in the number of bacteria as the corresponding solutions, possibly because the effect in the mouth is somewhat localized. At the same time the effect on the throat of the slowly dissolving tablet should be greater than that of a mouth-wash, as the swallowing of the saliva in which the tablet has dissolved keeps up a continuous action on the mucous membrane of the throat.

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ACRIFLAVINE PASTE AS A DRESSING FOR INFECTED WOUNDS.

BY

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Owing to the limited supply of acriflavine we have been using this reagent at Leicester in the form of a cream or paste, somewhat on the lines of the B.I.P. method recommended by Rutherford Morison, which has given good results in certain cases. Thorough and efficient surgical treatment of the wound is still a necessary preliminary, but the results so far obtained with acriflavine paste as an adjunct to such surgical treatment are sufficiently encouraging to justify a wider trial.

I speak of such injuries as lacerated wounds of soft tissues, compound fractures of limb bones, and of septic cavities in bones associated with osteomyelitis, which often resist repeated efforts at sterilization by scraping out, and the removal of foreign bodies and bony sequestra. It is these heavily infected, profusely suppurating wounds as we see them at the base hospitals that seem to be especially benefited by packing with acriflavine paste after preliminary surgical sterilization and drainage. Amputation wounds have also been treated by leaving a quantity of the antiseptic material between the lightly sutured flaps where the amputation has had to be carried through infected tissues.

Several different forms of cream or paste have been tried:

1. Acriflavine soap paste is made by neutralizing stearic acid with sodium carbonate in the proportion of 1 part of sodium carbonate to $1\frac{1}{2}$ parts of stearic acid with the addition of 0.1 per cent. of acriflavine. The soapy compound so prepared is canary yellow in colour and firm in consistence.

2. Acriflavine gelatine is made by heating French gelatine in water with the addition of acriflavine 0.1 per cent. The consistence of the jelly is determined by the amount of water added.

3. Acriflavine starch mucilage is made by adding boiling water to starch with the addition of 0.1 per cent. of acriflavine; one part of starch to 10 of water forms when cold a thick mucilage. This form of dressing has been found useful for large granulating surfaces, such as flush amputation stumps, in which the absence of sticking is very helpful.

Of these the acriflavine stearate soap paste has been chiefly used so far, and may possibly be increased in antiseptic strength with advantage. No doubt a better basis in which to incorporate the antiseptic will be devised. It will be useful to say a word about the results from the clinical and bacteriological points of view.

Clinically.

The wound is first surgically cleansed, and if highly infected may be dried and swabbed out with acriflavine spirit or water solution and is then packed with the acriflavine paste. It is either left open with a top dressing of acriflavine gauze or it is closed by suture partly or entirely. If there are grounds for thinking that the infection may be inhibited by the antiseptic paste, aided by the preliminary mechanical sterilization, and especially if the state of the surrounding tissues will allow of coaptation of the sides of the wound without undue tension, it is closed. A wound so treated when examined two or three days later should, if progressing favourably, show an absence of any inflammatory peripheral zone, though there may be some slight redness and swelling about the skin edges and suture lines; there should be an absence of general malaise or evidence of toxic absorption. The cavity of the wound will contain a quantity of the canary yellow creamy substance, some of which will have exuded on to the gauze. In favourable circumstances—as, for instance, in the case of a cavity left in the head of a tibia after the removal of a shrapnel bullet with the debris of an abscess cavity and a quantity of bone—suture of the skin over the cavity so packed resulted in primary union of the soft parts, and the gradual consolidation of the bony cavity beneath. In other cases, where closure of the soft parts by suture has not been possible or only partially successful, time has been gained by reduction in the size of the wound. Where a wound so packed has been left open it can be refilled with the acriflavine paste at subsequent dressings, or irrigation with the watery solution and plugging with acriflavine gauze may be used. A considerable number of wounds have been treated with the paste, and while only a limited number have been so circumstanced in regard to the condition of the tissues and the arrest of the infection as to close primarily under one application of the paste, yet quite a number have improved during treatment, and post-operation flares, if present, have been less violent.

Bacteriologically.

It seems clear that, as in the case of B.I.P., wounds packed with acriflavine paste or soap are not sterilized in the bacteriological sense. Clinically the infection is inhibited or arrested, but organisms are still found in the discharge from the wound. There are, however, certain encouraging facts about the canary yellow coloured pus which collects in, or oozes from, such wounds when not closed. In the first place there is distinct evidence that many of the cells are living phagocytes and not dead pus cells; thus:

(a) If a drop of such pus be examined on a slide in normal saline with the addition of 1 per cent. watery iodine solution, a considerable number of the cells will show the mauve-coloured iodophil exudation which I have already described¹ as a delicate indication of functional activity in leucocytes. Dry films showing the same glycogen reaction may be fixed and stained in iodine vapour and mounted in iodine gum.

(b) A little powdered carmine is mixed with a drop or two of pus from the wound, thinned, if necessary, with normal saline. This is incubated for an hour in a plasticine cell. After the removal of the plasticine the incubated cells are examined in normal saline and 1 per cent. watery iodine solution. A number of the cells will have ingested the carmine grains.

(c) A dry film of the same pus from a wound in which the virulence of the infection had been inhibited by the

acriflavine paste, when stained with carbol. methylene blue gave evidence of active phagocytosis by the polymorph leucocytes, many of which contained cocci.

These three tests, each confirmatory of the others, may be used to test the relative non-toxicity to leucocytes of acriflavine, Dakin's solution, B.I.P., or any other antiseptic. Non-toxicity to phagocytes is of equal importance with bactericidal capacity in antiseptic reagents, and the relative non-toxicity of acriflavine is a matter of great importance.

I have already drawn attention² to the fact that sterilized rice starch grains previously mixed with B.I.P. are taken up by some of the leucocytes in a wound packed with that substance, but these starch grains so ingested, together with other free grains, are colourless and not blue. It has been suggested, probably rightly, that the absence of any iodine starch reaction in a wound treated with B.I.P. previously mixed with starch is due to the fact that the protein substances, either bacterial or leucocytic, seize upon the nascent iodine and prevent it reaching the starch grains. It is interesting to find that phagocytes from wounds dressed with acriflavine starch emulsion also ingest starch freely, though there can be no question of iodine action in this case.

From what I have seen of wounds treated by acriflavine in the casualty clearing stations in France and the base hospitals in England I think it will be found that a strength of 1 in 2,000 watery solution is better than a stronger solution for continuous application. How far the method of paste application is suitable for fresh wounds after initial surgical sterilization must be a matter for trial at the front. The non-toxicity of acriflavine, both local and general, seems however to be a point in its favour. It also does not give a shadow with x rays when the paste is packed in a wound.

Doubtless some surgeons who begin by applying acriflavine either in watery solution or as a paste to the surfaces only of infected wounds without efficient surgical sterilization will be disappointed with the results, for acriflavine, like all other antiseptic applications, will not reach the recesses of wounds when applied to the surface only; the reagent must be conveyed to the deepest parts, as Dakin's solution is conveyed by Carrel's tubes, or it must be applied thoroughly by the surgeon when the wound is freely exposed under an anaesthetic. Chemical sterilization must be the handmaid of surgery, and cannot take the place of drainage and mechanical sterilization by surgical means.

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¹ BRITISH MEDICAL JOURNAL, February 3rd, 1917. ² *Ibid.*, December 23rd, 1916.

ACUTE OSTEOMYELITIS OF THE FRONTAL BONE: OPERATION: RECOVERY.

BY

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THE gravity of this condition is so well known to and dreaded by those who are familiar with the surgery of the nasal accessory cavities that no excuse is necessary for bringing forward a case in which recovery took place. I will only anticipate by saying that the outlook of the patient was as bad as could be, that surgical intervention was adopted almost as a forlorn hope, and that the pluck and cheerfulness of the sufferer was one of the outstanding and bright features of an otherwise anxious and distressful situation.

History.

Mrs. T., aged 35, was taken ill with "influenza" during the first ten days of September of 1916. She suffered from intense pain in and around the left eye, and over the left frontal region. The temperature had varied from 99° to 100° in the morning to 103° to 104° at night.

I saw her at her home in Surrey on the evening of September 10th, and noted the following conditions: The left upper eyelid was intensely red and oedematous so that she could not open the eye. Chemosis of the conjunctiva in its outer half. There was slight oedema over the region of the left frontal sinus, and it extended outwards to the parotid region, over the left malar region, and as far downwards as the left angle of the jaw; but none of these regions were congested, and hence they were in striking contrast with the hyperaemia and oedema of the left upper eyelid. Deep pressure over the region of the frontal sinus

and lower half of the frontal bone was very painful. The mucous membrane of the left nasal cavity was swollen, deeply injected, and pus was visible in the anterior cleft of the middle meatus. The appearances in the right nasal cavity were normal.

The patient complained of dull headache, there was no vomiting, the pulse was 94, and her temperature was 102.4°.

It was obvious that the patient had an acute suppurative inflammation of the frontal sinus, and arrangements were made to bring her by motor to London next day.

Operation.

On September 11th, at 5 p.m., I opened the frontal sinus through an incision immediately below the line of the eyebrow, and terminating internally just above the internal canthus. On elevating a small disc of bone from the anterior wall of the sinus pus and air bubbles escaped. The whole anterior wall was removed; it was red, soft, and infiltrated with pus. The mucous membrane was intensely oedematous, and was wiped out—not curetted—with small gauze swabs. It was now seen that small points of pus made their appearance in the diploë spaces, which had been exposed on the boundaries of the sinus cavity, and I was forced to the doleful conclusion that osteomyelitis of the frontal bone had commenced, and that probably our intervention would prove to be "too late."

A loose wick of gauze was placed in the sinus, fomentations applied, and the patient returned to bed.

After-History.

The following are the chief points in the after-history and treatment of the illness:

September 13th. Some oedema of right upper and lower eyelids noticed. Free discharge of pus from the left frontal sinus and considerable oedema of fronto-parietal region. Oedema of left eyelid remains as before operation, and there is considerable proptosis of the eye.

September 18th. Opened an abscess in the orbit and evacuated 2 drachms of pus. Oedema of fronto-parietal region remains the same and free discharge of pus from the original incision in the eyebrow continues.

Since the first operation on the sinus this has been irrigated morning and evening with normal saline and hydrogen peroxide solutions, and it was possible to pass the cannula between periosteum and bone as far as the hair line—that is, as far as the oedema of the soft parts extended. In spite of the gravity of the local condition the temperature never rose above 100°, but usually attained that degree in the evening. Headaches were frequent, but were controlled by a combination of aspirin, salicylate of quinine, and codeia. The patient was cheerful, her mental condition remained good, and she took her food and slept fairly well.

Bacteriology.—The organisms found in the pus at the first operation were *Staphylococcus aureus*. There is also a small number of Gram-negative bacilli of coliform type. These, however, are relatively insignificant. Both organisms have been obtained in pure culture. No vaccines were used.

October 5th. During the past two or three days a painful swelling has appeared in the left breast. To-day, under local anaesthesia, I evacuated 4 drachms of thick greenish-yellow pus. This complication seemed to forebode evil and the possibility of further dissemination of infection, but the mammary abscess quickly healed and our fears proved to be groundless.

Time went on, and in spite of twice-daily irrigations of the sinus and of the subperiosteal cavity over the left frontal bone, the discharge of pus remained very profuse; the patient was not making headway, her sleep was not restful, and she was losing flesh.

Her husband was summoned from France and the pros and cons of an extensive operation for removal of the affected region of the frontal bone laid before him. He assented to this proposition, which was shared by Dr. Lack and myself.

October 23rd. A median incision was made in the forehead from the line of the hair to the inner end of the original incision in the eyebrow and a transverse incision from the upper end of the first and beyond the hair line to the temporal region. The scalp was turned outwards, and revealed a sad state of affairs.* The whole of the left frontal bone presented an inflamed and partially necrosed condition. Loose portions of bone were

removed, and in two places the adherent and inflamed dura mater came away with the bone, together with subjacent cortical substance of the brain. As much of the infiltrated and necrosed bone was removed as seemed advisable. A curved and multi-perforated drainage tube was placed around the borders of the bone wound and the scalp replaced and sutured in position. Fomentations were applied four-hourly for three days, and then replaced by ordinary dry dressings.

The patient made a rapid recovery, and returned home under the care of her local medical attendant on November 4th.

Three weeks later I was called down to see her, and found she was suffering from an acute attack of facial erysipelas, which had started from the internal angle of the original incision over the sinus. Once more she made an uninterrupted but somewhat slow recovery. Since then I have removed one or two small sequestra which have worked their way down to the incision in the eyebrow, but the patient is now well and the picture of good health.

REMARKS.

1. In my own personal experience this is the only case of acute osteomyelitis of the frontal bone complicating acute frontal sinus suppuration that I have seen recover, although I know that a few others have been recorded—for

example, one patient was shown by Mr. Mollison at the Laryngological Section, Royal Society of Medicine, May, 1917, and the photograph of yet another patient was exhibited who had survived thirteen operations for the relief of the condition. The instance I record also illustrates another curious experience which is generally agreed upon—namely, that an extensive operation may save the life of a patient when the osteomyelitis complicates an acute suppurative inflammation of the frontal sinus which hitherto has not been operated upon: whereas, when the frontal bone becomes infected after, and as a result of an operation on the frontal sinus, the issue is practically always a fatal one in spite of the most extensive operations for the removal of the infiltrated bone.

2. It may be asked why at the first operation, and seeing that the frontal bone diploë were infected, I did not proceed at once to a more extensive removal of the bone. My answer is that the disease had existed only for some ten days, and I hoped that by freely opening the frontal sinus and providing for subsequent drainage the diploë bordering on the sinus might recover, and even if they did not do so the infected area might become delimited in the course of a few weeks, and involve less traumatism in its

removal than if I had proceeded at once to an extensive operation. Furthermore, with such an acutely infective condition I was anxious not to expose more healthy tissue than the immediate necessities of the case demanded.

3. Opinions vary as to whether the complication is more likely to follow operation on an acute or chronic empyema of the sinus. In my own practice I have had three cases which terminated fatally, and have seen several others in consultation, but in all of them the complication has set in after operation on a chronic suppurative inflammation.

4. With regard to the method of exposing the frontal bone, I should not use the median forehead incision again because it leaves a noticeable scar. In a more recent case I laid bare the infected region by a transverse incision commencing in the middle line beyond the hair, and passing downwards and outwards to the temporal fossa, then directly forward to the outer angle of the eyebrow, where it joined the frontal sinus incision below the line of the eyebrow. The included portion of the scalp was then turned upwards and inwards towards the middle line. The small incision in the exposed portion of the temporal fossa healed by immediate union, and is no longer easy to detect.



FIG. 1.—Osteomyelitis of skull resulting from septic infection of the diploë after operation on the frontal sinus. The patient died after nine months of suffering, and after numerous operations for the removal of abscesses in different regions of the body. a, Sequestra; b, longitudinal sinus; c, left frontal sinus (anterior wall removed). This was the first recorded case in which the sequence of osteomyelitis as a complication of nasal sinus suppuration was detected (vide BRITISH MEDICAL JOURNAL, 1889). Surgeons interested in the subject are advised to read Dr. Dan McKenzie's monograph on the subject (*Journ. Laryngology*, vol. xxviii, 1913).

* The nature of the lesion can best be illustrated by reference to the illustration of a more extensive and fatal case.

5. When osteomyelitis complicates an operation on the frontal sinus it usually makes its appearance as a non-inflammatory oedema in the soft parts which cover the margin of the bony wound, and this sign is still more ominous if an area of oedema appears at some distance from the wound in the sinus. A coincident rise of temperature may be noted. If such a swelling be incised no pus escapes, but the wound does not heal and suppuration soon makes its appearance, while the oedema spreads still further.

The only treatment of any value in such case is to expose the frontal bone very freely and to remove its whole thickness involving a liberal area of healthy bone around the inflamed region. Delay and hesitation are unpardonable, while fomentations, incisions in the oedematous areas, or the administration of vaccines only betray the ignorance of the surgeon as to the grave condition of his patient.

6. As to the cause of the complication, my impression is that it is due to two details in faulty technique: (1) When the sinus is opened and the diploic spaces in the margin of the bony wound are exposed, infective material is introduced into them by curetting the walls of the sinus with a small sharp spoon. The diseased and pus-infected mucous membrane should be wiped away gently with small sterile swabs. (2) The lips of the wound in the soft parts should be left widely open and only the lightest packing placed in the sinus cavity. Since adopting these precautions I have experienced no anxiety in any of my cases.

It may not be out of place to state that opening an acute or chronic empyema of the frontal sinus by the intranasal method does not exclude the possibility of osteomyelitis of the frontal bone, for at least one case has already occurred, the details of which may be studied in the *Journal of Laryngology*, June, 1917, p. 186.

A NOTE ON THE ASSOCIATION OF HERPES ZOSTER WITH ARSENIC.

BY

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It is well known that arsenic administered in large quantity may have a harmful effect on the nervous system, both central and peripheral, and from time to time cases of herpes zoster have been recorded which have been ascribed to arsenic. Hutchinson was one of the first observers to point out this association.

Herpes zoster is looked upon commonly as being secondary to some change, either haemorrhage or inflammation, in the posterior root ganglia of the spinal nerves, but it has been recognized for a long time that the lesion is not confined to these ganglia. For instance, in some cases the cerebro-spinal fluid has been found to contain a well-marked lymphocytosis, pointing to involvement of the meninges, and in others the occurrence of Kernig's sign has suggested that the posterior roots have not escaped the inflammation.

Many cases of herpes zoster have been described which have been associated with, or followed by, a generalized vesicular eruption, and Dr. Parkes Weber¹ has recently summarized some of these. It has been suggested that herpes zoster is a modified and localized form of varicella, but the evidence of this is by no means conclusive. On many occasions the apparent connexion between these two diseases has been noted. There can be little doubt, however, that some of the cases were examples of a generalized shingles, but in others true herpes zoster appeared to have been produced from contact with a patient suffering from varicella, and vice versa.

The following case is of interest, as it relates both to the question of the association of arsenic with herpes zoster and also to the question of generalized herpes zoster:

A naval officer, aged 54, was seized during January, 1916, with an attack of multiple adenitis, together with paresis of the lower limbs and retention of urine. Except for the fact that he had spent twenty-three years in India there is nothing in his history which appears to have any bearing upon his illness.

He was a stout man of close on 15 st. in weight. On admission to Haslar on February 25th, 1916, he was found to

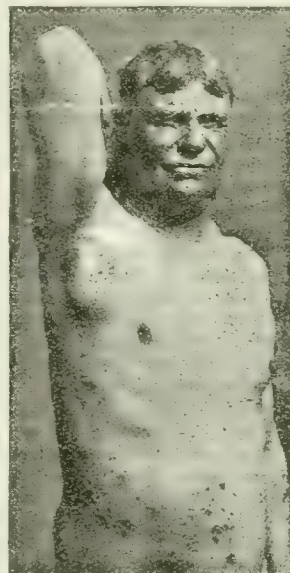
have almost complete paraplegia of the upper motor neurone type. The lymphatic glands in his cervical, pre-auricular, axillary, and inguinal regions were markedly enlarged and somewhat tender. There was no palpable enlargement of the spleen. The red cells were 4,500,000 and the white cells 3,000 per cubic millimetre. Of the latter, 50 per cent. were polymorphonuclears, and there were 2 per cent. of eosinophiles. The colour index was 0.77. His systolic blood pressure was 150 mm. of mercury. There were no visible haemorrhages. The Wassermann reaction of his serum was negative (Fildes). The cerebro-spinal fluid was not examined.

The connexion between the glandular enlargement and the paraplegia was not very evident, nor indeed was the nature of the adenitis. We were unable to obtain the consent of the patient to the removal of a gland. There was no evidence that the mediastinal glands were involved. Towards the end of March his general condition, other than that of the glands, had improved considerably. Treatment by liquor arsenicalis was commenced, and he continued with it until May 9th, 1916, when he went on convalescent leave.

On July 5th, 1916, he was readmitted, looking and feeling much better. He was able to walk quite well. The condition of the glands appeared to be about the same as when he was last seen. He told us that he had been taking the medicine throughout. On July 10th an eruption of herpes appeared on the right side of his abdomen. It assumed considerable dimensions, and covered roughly the area of skin corresponding to the eighth, ninth, and tenth dorsal segments of the cord. The eruption was not preceded by any pain but it was associated with pain when it was fully developed. By this date he had been taking 15 drops of Fowler's solution daily since March 23rd, a total of some 1,600 drops, or, roughly, 15 grains of arsenic. The eruption rapidly became generalized, vesicles appearing over the face, body, and limbs; the eyelids were considerably swollen. After a short time the eruption healed in the usual manner, and on July 28th the patient was discharged to his home. The condition of the glands was not materially altered. The temperature was normal throughout, except during the time when he was suffering from herpes.

REFERENCE.

¹ *British Journal of Dermatology*, March, 1916.



Photograph taken to show enlargement of glands and healing herpes on July 26th, 1916. A few of the generalized vesicles can be seen.

The Croonian Lectures ON

ADAPTATION AND DISEASE.

DELIVERED AT THE ROYAL COLLEGE OF PHYSICIANS,
LONDON, JUNE 26TH, 1917.

By J. G. ADAMI, M.D., F.R.S.,
TEMPORARY LIEUT.-COLONEL C.A.M.C.

LECTURE IV.

THE PHYSICO-CHEMICAL BASIS OF IMMUNITY AND
EVOLUTION.

(Abstract.)

In the previous lectures it had been shown that the studies upon pathogenic bacteria and upon immunity proved conclusively the existence of direct adaptation of a definite order, both in the lowest and in the highest forms of life. To the academic biologist such a suggestion of a direct action of external agencies as a prime cause of variation is as shocking and improper as would be the suggestion of a risqué story to some dear, modest elderly maiden lady. And yet it is along these lines that medical research is surely leading us.

Believing that we are in the right, where is it that the biologists have gone wrong? It was suggested that the

biologists, from the morphological trend of their studies, have perforce conjured up separate individual particles or structures, each the bearer of an individual property or group of properties. Their conceptions have perforce been in the terms of specific atoms. In his Pangenesis hypothesis Charles Darwin evolved such a conception, and in his great sanity cast it aside. Weismann rioted in such, with his *ids*, *idants*, and determinants, all figments of the imagination. The same tendency is shown and carried forward in full vigour by the modern Mendelians. It is because he cannot picture in his mind an atom or structure suddenly making a first appearance in the germ cell, after the manner of Venus rising from the sea foam, that Professor Bateson finds it impossible to imagine the positive acquirement of new properties by the individual or the race. He found himself in the predicament of the late King George of glorious memory and muddled, who could not imagine how the apple got into the dumpling.

Suppose we start instead from known facts and known phenomena, and upon these endeavour to build up our idea of the nature of the germ cell and of the organic basis of heredity. First, as to the constitution of living matter—we know that whatever form of life we investigate, animal or plant, mammoth or microbe, whatever form we analyse, or whatever tissue, leaving out of account water and certain vehicular salts to which no specific vital functions can be attributed, just one order of highly complex compounds is common to and to be isolated from all, and these are the proteins. This universal presence in itself indicates that they are intimately associated with vital functions. When isolated chemically they are inert; in other words, living matter contains proteinogenous, rather than protein substances. A large portion of the lecture was taken up with a study of the chemistry of the proteins in relationship to metabolism; the huge size of the protein molecule, close to the limits of visibility under the highest power of the microscope; its great molecular weight; the impossibility of gaining identical analyses of two samples of the same protein, even if, like haemoglobin, crystallizable; the structure of these molecules; their dissociation into smaller complexes, the peptones; their further dissociation into amino acids; the synthesis of the polypeptides. The protein molecule may, therefore, be represented as a ring or chain of linked peptone molecules, each having its ring of glyco-cell nuclei with swinging side-chains. In the much simpler bodies with which the organic chemist is in the main concerned, bodies like the carbohydrates or the benzol derivatives, we know how the transfer of a given radicle from the *alpha* to the *delta* position, for example, upon a ring, may bring about a profound change in the chemical and physical properties of the compound. When two carbon atoms are united together there are, or may be, six free affinities, and when these are satisfied by six different univalent groups, twelve different isomeric arrangements are possible. What must be the possibilities in a protein like haemoglobin, with 700 and more carbon atoms in the complex? and haemoglobin is simple compared with the nucleo-proteins.

If the biophores, or molecules of living matter, be at least proteinogenous, obviously it is not necessary to demand a separate determinant, a separate molecule for each specific property; it is simpler to regard properties inherent in the biophores as an expression of the constitution of the same, of the mode of linkage of the various nuclei, their number and the nature of their side-chains. This conception is within the bounds of physical possibility; Weismann's *ids* and *idants* certainly are not.

Accepting this conception of the chemical constitution of the essential living matter as a working hypothesis, we know that in conjugation the one element of the germ cells contributed in approximately equal portions by both parents to the zygote, or fertilized ovum, is the nuclear chromatin, and as heritage of properties may come equally from either parent, in the nuclear chromatin must reside the main heritable and character-determining material. The conclusion is inevitable that the essential biophoric molecules are conveyed in the nuclear chromatin. The cell wall, or membrane, the cytoplasm and the nuclear membrane, are all conservative agents, tending to preserve the biophores from sudden change from without, but while conservative, this system is exposed to constant change, particularly in the more active tissue cells. The system is not inert, but is constantly reacting with the external

medium in which the cell finds itself. The semi-permeable cell membrane, while preventing the entrance of some substances, freely permits the entrance of others, whether directly or after a preliminary dissociation into smaller molecules by the action of extracellular enzymes. Once foodstuffs are taken into the cytoplasm they are, if necessary, broken down into yet simpler molecules by intracellular enzyme action. Foodstuffs are not utilized by the cell as such, but only after dissociation and disintegration, and then either by oxidation to supply energy or, on the other hand, to be built up in growth.

This matter of growth is wholly neglected by the biologists. They speak of inorganic bodies (crystals) growing by agglutination, organic bodies by intussusception. "Intussusception," "imbibition," "intercalation," and "interpenetration" are all inane terms; they cannot possibly explain how two molecules of living matter appear where there was but one before, two grains of wheat where but one was put into the ground. Growth is one of the great underlying phenomena of living matter, and zoologists and botanists have in a simple Topsy-like manner been satisfied that the phenomenon occurs—and have left it at that. Increase in the amount of living matter means multiplication of the molecules of living matter, and this multiplication can only take place after the manner of the growth of a crystal, by ions arranging themselves into radicles, and radicles arranging themselves in a particular order, until in orderly sequence the necessary radicles become built up, identical in arrangement with the pre-existing molecule, in association with which the group has become developed. This conception is materially aided by the recognition that crystallization does not of necessity demand the production of rigid rectilinear figures. Lehmann in 1904 first called attention to the existence of "fluid crystals"; in 1906 Adami and Aschoff pointed out that these fluid crystals are frequent in the animal organism. As D'Arcy Thompson remarks, "The phenomenon of liquid crystallization does not destroy the distinction between crystalline and colloid forms, but gives added unity and continuity to the whole series of phenomena."

The lecturer then passed rapidly in review certain conclusions which develop out of this conception of living matter. Weismann's doctrine of the continuity of the germ plasma was shown to be erroneous; it is not the germ plasma which is eternal, merely there is a potential continuity of molecular arrangement and constitution. The functional and vegetative activities of the organism and the cell were passed in review, along with the essential nature of metabolism and enzyme action, all these in order to emphasize that these matters of adaptation and evolution have to be approached from the aspect of function and the dynamics of living matter, rather than from the point of view of cell statics. "Function precedes structure," and the study of cell function must afford the key.

As regards the acquirement of the new power of digesting and utilizing a foreign protein, it is seen from what has been said that these proteins are complexes of amino-acids, and the number of the individual amino-acids is limited. Proteolytic enzymes, already in existence, whether intracellular or extracellular, do not attack the foreign protein as a whole, but must be regarded as dissociating certain everyday amino-acids from the complex. But doing this, to take the simplest case, the relative number of molecules of the different amino-acids presented to the cell may come to differ from the normal; or, again, the simpler complexes due to the breaking down of the foreign proteins may not be identical in constitution with those which the cell and its biophores had been accustomed to utilize in growth. In either case the constitution of the biophores may become altered as they are built up. Where enzyme-like bodies such as the toxins and phytotoxins become introduced into the cytoplasm, their toxic function must be regarded as due to their power of dissociating the living molecules, by detaching certain radicles. If the toxin molecules be not present in too great a number, time is given for the living molecules to attract and build up again the lost radicles, and by the law of habit, if this process be constantly repeated, particular radicles are now built up in excess of the needs of the cell, and undergoing discharge become the antitoxin bodies of the blood and body fluids.

That this conception of the mechanism of immunity and

progressive adaptation is substantially correct was, he urged, strongly supported by the long-continued and admirable studies of Professor Victor C. Vaughan of the University of Michigan, and the later work of Abderhalden of Berlin and his pupils. These observations and their significance were discussed in some detail.

Colonel Adami next attacked the prevalent conception of the Mendelians that the parental unit-properties remain segregated in the germ cells. In the zygote, the fertilized germ cell, and in all the tissue cells derived therefrom, it is inconceivable that two orders of biophores or active living molecules can exist floating in a common nuclear sap, undergoing growth, building up side-chains and radicles, discharging certain of these or undergoing dissociation from time to time, without the two reacting upon each other and without a certain amount of interchange, without the one having a greater affinity for side-chains elaborated by the other, and building these into its system. There must be this interaction, and at a slower rate, due to their more latent state, this same interchange must take place in the germ cells. Along these lines it is still possible to interpret the facts of Mendelism, and indeed interpret not a few phenomena which by the hypothesis of determinants fail to obtain explanation.

Briefly, each species must be regarded as having for its essential living matter a distinct organic compound—a compound as distinct as any inorganic salt, but differing from that simpler salt in that whereas the central ring or chain is to be regarded as having a relatively fixed constitution, the radicles composing that ring or chain are to be regarded as capable of attracting and then reproducing a series of side-chains which may vary in constitution, so that within the species there may be various strains, just as we may speak of various strains of crystalline haemoglobin obtained from different samples of human blood.

It is possible to replace an impossible hypothesis based upon supposititious, independent, and transposable determinants by one based upon our present knowledge of the composition and properties of the main and outstanding constituent of living matter—the proteins. To one who regards life, not from the morphological point of view, in terms of form, but from the physiological, in terms of function, who regards life as a moving equilibrium, who regards it as in essence “a state of persistent and incomplete recurrent satisfaction and dissatisfaction of certain proteinogenous molecules” and metabolism as the primary and basal characteristic of living matter—for such a one Professor Bateson's stumbling-block does not exist.

The Batesonian hypothesis of a backward evolution by the progressive removal of inhibitory factors, like the baseless fabric of a vision, fades into nothingness once it is confronted by the proof that direct positive acquisitions can be brought about experimentally. It enters into the limbo of the past as an example of the Spencerian tragedy—that of a deduction destroyed by a fact.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

X-RAY TREATMENT IN LICHEN PLANUS.

IN the following case the immediate relief and rapid disappearance of intense itching, the prompt subsidence of the eruption, and the restoration of healthy circulation in the hands under x-ray treatment, as evidenced by the freedom from cold hands, swollen fingers, chilblains, and frost bites during the past exceptionally severe winter, are worthy of notice.

The patient was a girl aged 12 years, of delicate constitution, subject to cold hands and swollen fingers even in the summer, and to very severe chilblains and frostbites in mild winter even. She was given galvanic and faradic Schnee baths on September 19th, 23rd, 27th, and 30th, October 7th and 20th last, with the view of improving the feeble circulation in the hands. On October 7th the patient complained of slight pain and smarting at the séance. On October 20th the pain and smarting were worse, and on careful examination a few scattered papules were noticed on the hands and more on the forearms. The swollen condition of the fingers and the cold feeling in the hands improved under galvanic and faradic treatment. By October 28th the eruption had extended to all the fingers of both the hands and more up the forearms, becoming confluent in most places. It was very itchy, and consisted of slightly elevated

violaceous papules of the size of pinheads, with flattened glistening top, slight central depression, and dry rough surface. There was a return of the swelling of the fingers. No more Schnee baths were given.

In spite of ointments and internal medicine there was a rapid extension of the eruption, and a decided aggravation of the itching and other symptoms. The itching was so troublesome as to interfere with proper sleep.

A mild stimulating dose of x rays was given on November 15th. This was followed by marked relief of the itching, which disappeared altogether in about a week. There was no further extension of the eruption, which looked darker and flatter. A second dose was given on November 22nd. The patient was now quite free from the troublesome itching, and there was a retrogression of the eruption. By December 4th, when a third treatment was given, the eruption had almost disappeared from the right hand and forearm, and only a little was left on the other side. The swelling of the fingers had also subsided. The last x-ray treatment was given on December 18th. Desquamation commenced soon after and continued till about December 31st. The remnants of the eruption and every trace of the complaint had altogether disappeared by that time.

Note.—The patient, it appears, had some spots on the forearms for a couple of months before the Schnee baths were given. Apparently the baths, instead of acting beneficially, aggravated the complaint.

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PREVENTION OF CEREBRO-SPINAL FEVER.

COLONEL PARKES's communication¹ with reference to this subject is most interesting and instructive, especially to any one connected with soldiers. Last winter somewhat the same procedure was carried out by me in the battalion of which I am medical officer. I used three ounces of formalin to the gallon of water in a “Killgerm” sprayer. I had no opportunity to have the sick with infective throats examined bacteriologically, but all sick with any “catarrhs” were sent each morning to a large room in a billet, and whilst this was being sprayed the men were kept in it for twenty minutes. We had not the success of the New Zealanders in eradicating the disease. Out of a battalion whose strength at that time averaged 2,500 men, three cases of cerebro-spinal fever developed in the season.

The same treatment has been used again this season. The sprayer is set going in a large room each morning, and all “catarrhal sick” are put there for twenty minutes. I have varied the solution, sometimes using formalin and at others “pacolol,” which is really Pearson's lysol. The latter is less irritating, and much preferred by the men. We have had so far one case of cerebro-spinal fever whose history is somewhat instructive. In the case of this patient there was no question of overcrowding. His room was on the sea front, containing 1,680 cubic feet, and there were four men in it.

Pte. N., after eleven weeks' service, was passed fit for draft leave, January 31st to February 5th, 1917. On February 8th he reported sick, with eighteen of the same company, with sore throats and the usual catarrhal symptoms. He had no fever. Was ordered “medicine and no duty” on this and the following day; and “medicine and light duty” on February 10th. From the 10th to the 15th he went on duty and was apparently perfectly well.

On February 15th, at sick parade (7 a.m.), he reported ill, with diarrhoea and sickness. He was ordered “medicine and no duty.” At 2 p.m. he again reported, as directed; his temperature was then 103°, and he was dazed and almost collapsed. He was sent to hospital, and next day cerebro-spinal fever was diagnosed.

As a means of attacking the nasopharynx the steam sprayer is very well worth trial. I intend to use the 1 per cent. sulphate of zinc solution to see if there is any virtue in this drug.

AMB. ATKINSON,

Lieutenant R.A.M.C.

¹ BRITISH MEDICAL JOURNAL, February 24th, 1917, p. 262.

ACCORDING to the *Med. Klin.*, medical practitioners in Vienna are experiencing increasing difficulties in getting to and from their patients, owing to the shortage of vehicles and motor power. There are only a few motor cars and cabs available, and their proprietors refuse all but short journeys. For several months the electric trams have enabled practitioners to carry on, but, owing to the shortage of coal, this service has had to be greatly restricted. It is therefore proposed that doctors with patients in distant parts of the town should communicate over the telephone with colleagues living in these parts and get them to attend to the distant patient.

Rebielus.

ADRENAL INSUFFICIENCY.

THE articles making up Dr. E. SERGENT'S study of adrenal insufficiency¹ have all been published previously; the earlier ones date back to the time when Addison's disease was practically the only recognized symptom complex in connexion with the adrenals. By his numerous contributions the author has helped to build up our present views as to the important part played by acute adrenal inadequacy in the fatal outcome of acute infections and intoxications.

The first step was to describe, in conjunction with L. Bernard, the syndrome of acute adrenal insufficiency, which includes cases previously regarded as examples of acute Addison's disease or sudden death in the course of Addison's disease. In such cases there may be outstanding lesions of the adrenals which have been completely latent until under the influence of some acute infection or intoxication acute inadequacy occurs. Observation of cases of acute adrenal inadequacy with meningeal symptoms of sudden onset and fatal termination led to Sergent's emphasis on the sign of the "white line," the reverse of the familiar *tache cérébrale* and due to reflex vasomotor spasm, as a diagnostic manifestation of adrenal inadequacy. Thus it is constant in Addison's disease and is a phenomenon of low blood pressure, with which it varies directly, being therefore present in enteric fever, diphtheria and other analogous conditions. The significance thus attached to "the white line" has aroused criticism, especially from Sergent's former collaborator, Bernard, who considered that its inconstancy and its intermittency even in the same patient deprived it of any diagnostic importance.

Allied to Addison's disease, which is due to chronic and extreme adrenal inadequacy, is the condition termed "Addisonism" by Boinet. This is seen in patients with pulmonary tuberculosis who in the course of the disease present symptoms indicating more or less functional disturbance of the adrenals, such as pigmentation, muscular weakness, and low blood pressure. Chronic adrenal inadequacy is considered also to play a part in neurasthenia, psychasthenia, chorea mollis, shock, especially after operations, and in some cases of the uncontrollable vomiting of pregnancy in which the adrenals are damaged by the toxæmia caused by the syncytial cells.

The numerous conditions ascribed to adrenal insufficiency—ascriptions, in some instances, open to criticism—lend interest to the concluding section on the therapeutic uses of adrenal preparations. In dealing with their form and method of administration Sergent expresses a preference for the fresh glands or their extract in chronic or acute cases in which asthenia is the predominant symptom, and states that adrenalin is satisfactory for cases in which a low blood pressure is prominent. The daily dose of the fresh glands should be $1\frac{1}{2}$ to 2 grams at first, rising later to 5 grams. The oral administration of twenty to thirty drops of 1 in 1,000 solution of adrenalin daily acts so quickly that hypodermic injection is not regarded as necessary.

This series of articles will be of special interest to those attracted by the history of the evolution of our present knowledge of adrenal inadequacy.

THE BIOCHEMICAL TREATMENT OF CONSUMPTION.

THE sanguine prophecies for the speedy annihilation of consumption as a national disease have not been fulfilled. The incidence of tuberculosis is still appalling and the death-rate shows no signs of further reduction. By comparison with the figures of two generations ago, there has undoubtedly been improvement in both respects, but it would appear to have come to a standstill. Hygienic methods and the avoidance of foul air have done much for individuals, but the disease is still rampant in communities where it is fostered by overcrowding and other evils.

From the purely curative point of view it has long been obvious that sanatorium life is only successful in a limited

number of cases, and that the disease progresses in spite of it. In other words, the unaided forces within the body, even under the most favourable conditions, are insufficient to cope with the ever-increasing inroads of the pathogenic organisms with which they have to contend. Hence it has come about that effort is more concentrated upon the problem of aiding these natural forces by methods which have been worked out through laboratory experiments.

The destruction of the microbes *in situ* by purely chemical methods would seem to be a hopeless task, but it is claimed for a few such drugs that a certain measure of success can be achieved. In a recent work by Dr. CROFTON of Dublin on *Pulmonary Tuberculosis*,² the use of iodoform introduced direct into the venous circulation is advocated as a means of local treatment, to be used as supplementary to specially prepared vaccines to increase opsonic power, and tuberculin to aid specific immunity. Recognizing that catarrhal processes play an important part in all pulmonary affections, he emphasizes the need for preliminary treatment by means of special vaccines prepared from catarrh-producing microbes, to be followed by the more direct attack upon the tubercle itself aided by the general antiseptic effect of the iodine and ether introduced into the vein. The train of reasoning by which he has arrived at this somewhat ideal method is given in detail, and the various risks and untoward effects to which it may give rise are not overlooked. The treatment, however, was only begun in 1913, and has had to be to a great extent suspended during the past three years. The results, given only in percentages, would appear to be encouraging, but details are wanting. Dr. Crofton's book presents the whole subject of the treatment of consumption in the most modern light, but it remains to be seen whether his scheme is justified by experience as time goes on.

NOTES ON BOOKS.

FOUR volumes of collected papers have reached us from the United States, but owing to the great restrictions on our space, detailed account of their contents cannot be undertaken. This brief notice will, however, serve as a finger-post to readers in this country. *The Transactions of the Thirty-eighth Annual Meeting of the American Laryngological Association*,³ held at Washington last summer, contains some twenty-five communications, mainly on the surgery of the upper air passages and accessory sinuses, with a number of clear illustrations. *The Surgical Clinics of Chicago*,⁴ of which we have received the first number, is a new bi-monthly publication intended to take the place of the *Clinics* of the late Dr. John B. Murphy. The contributors include many well-known surgeons, and the graphic and rather informal style of the reports gives the idea that they have been taken down at the bedside or in the clinical lecture theatre. The illustrations are very good. *The Medical and Surgical Reports of the Episcopal Hospital*,⁵ Volume III, consist largely of papers based on work done in the Episcopal Hospital in Philadelphia, and cover a wide variety of subjects. A number of the articles are reprints from American periodicals. *The First Annual Report of the State Department of Health of Massachusetts*⁶ contains Dr. A. J. McLaughlin's report as Commissioner of Health on the work of his department. Until the end of 1914 Massachusetts had a State Board of Health; this was abolished, and in its place was set up a State Department of Health organized on a far more effective basis, of which an account is given in this report. The Commissioner of Health is the administrative head of the department, performing all the executive duties formerly required by law of the State Board of Health. Thus one full-time official, "skilled in sanitary science and experienced in public health administration," is made responsible instead of an unpaid Board of seven members.

² *Pulmonary Tuberculosis: its Diagnosis, Prevention, and Treatment*. By W. M. Crofton, M.D., Visiting Physician Royal National Hospital for Consumption in Ireland. London: J. and A. Churchill, 1917. (Cr. 8vo, pp. 122; illustrated. 6s. net.)

³ *Transactions of the American Laryngological Association*. Vol. III. New York: Published by the Association. 1916. (Demy 8vo, pp. 525; illustrated.)

⁴ *Surgical Clinics of Chicago*. Vol. I, No. 1. Philadelphia and London: W. B. Saunders Co. 1917. (Demy 8vo, pp. 221; 83 figures. Published every two months; price per year, foreign, £2 2s.)

⁵ *The Medical and Surgical Reports of the Episcopal Hospital*. Vol. III. Philadelphia: Wm. J. Dornan. 1915. (Demy 8vo, pp. 356; 124 figures.)

⁶ *State Department of Health of Massachusetts*. Boston: Wright and Potter Printing Co. 1916. (Demy 8vo, pp. 330.)

¹ *Études cliniques sur l'insuffisance surrénale, 1895-1914*. By Émile Sergent, Médecin de l'Hôpital de la Charité. Paris: A. Maloine. 1914. (Post 8vo, pp. 493.)

MEDICINAL AND DIETETIC PREPARATIONS.

Halazone for the Sterilization of Water.

IN the BRITISH MEDICAL JOURNAL of May 26th, 1917, p. 682, Dr. H. D. Dakin and Major E. K. Dunham (U.S.A.) described the preparation of *p*-sulphondichloraminobenzoic acid and its value as a disinfectant for polluted water. They proposed the name "Halazone" for the substance and suggested that it should be put up in tablets, each containing four milligrams. This suggestion has now been carried out by Messrs. Burroughs, Wellcome, and Co., who have made a "tabloid halazone" containing 4 mg. of the disinfectant, the quantity stated by Dakin and Dunham to be sufficient to sterilize a litre or quart of reasonably heavily contaminated water; in the case of extreme contamination a second tablet may be necessary. The tabloids made by Messrs. Burroughs, Wellcome, and Co. dissolve gradually in about five or ten minutes, and the water should be allowed to stand for about forty minutes before use. Dakin and Dunham insist upon the importance of the tablets being stable. Messrs. Burroughs, Wellcome, and Co. state that their tabloids fulfil this condition, but upon that we are not able to express any opinion. The tablets must be kept in amber bottles and not exposed to sunlight. They are supplied to the medical profession in bottles of 100 at 8d. each.

EPSOM COLLEGE.

THE sixty-fourth annual general meeting of the governors of Epsom College was held at the offices of the College in Soho Square on June 29th. Sir HENRY MORRIS, the treasurer, presided. The annual report stated that there had been a slight increase in the number of scholars, and that the athletic and social life of the school had been maintained as far as possible in spite of the war. The Council tendered its thanks to the honorary local secretaries, to the British Medical Association, and to numerous friends of the College, who had collected contributions on behalf of the foundation during the year; and also to the editors of the BRITISH MEDICAL JOURNAL and the *Lancet* for numerous favours.

Sir HENRY MORRIS said that he thought on the whole a very satisfactory state of things was disclosed, both with regard to the school and to the benevolent fund. So far as the benevolent side of the work was concerned, while there had been a considerable diminution in annual subscriptions, yet the assistance which had been forthcoming from the honorary local secretaries, from the British Medical Association, and from other friends of the College, as well as the continued and increased exertions of the secretary and his staff, had enabled the Council to avoid, what would have been a very untoward circumstance, diminishing the number either of the pensioners or of the foundation scholars. Among contributions to the general funds of the College was one of £300 in debentures, given by Sir Ernest Goodhart and his brother, Dr. Gordon Goodhart, as a memorial to their deceased father, the late Sir James Goodhart, who was an old Epsomian. A matter to which the Council had set itself was the establishment of an endowment fund with the object of assisting foundation scholars—or others who might come to be in necessitous circumstances after being entered at the College, and were the sons of medical men—on leaving the school. Since the report of last year 130 more boys of the College had joined the services, bringing the total serving to between 600 and 700; 41 had been killed, 4 had died in hospital, 53 had been wounded, 2 were missing, 3 were prisoners, while 18 had been mentioned in dispatches, 4 had received the D.S.O., and 13 the Military Cross.

After the statement had been adopted, Dr. WALTER RIGDEN proposed, and Major CHARLESWORTH seconded, that the following be re-elected members of the Council for a further period of three years: Sir John F. H. Broadbent, Sir Frederick Needham, Sir Frederick Taylor, Mr. T. Hollis Walker, K.C., and Dr. W. Essex Wynter; and that Sir Ernest Goodhart, Mr. E. Climson Greenwood, Mr. Purnell Purnell, Captain Harold Spitta, and Dr. H. Campbell Thomson be elected to the Council to fill vacancies. This was agreed to.

Sir JAMES REID, in proposing a vote of thanks to Sir Henry Morris, said that it was hardly possible to think of Epsom College without at the same time thinking of its Treasurer.

HEALTH OF MUNITION WORKERS.

THE object of all industrial organization is to ensure a maximum output—that is, the highest output of which each machine and each worker is capable, but without detriment to the well-being, mental and physical, of the worker.

Theoretically it might be supposed, and has been assumed, that self-interest would be a stimulus to both employer and employee effective to ensure this result. Experience has shown that this was not always, or, indeed, usually, the case, and there had grown up a vicious system under which the two parties in an industry—the employer and employee—looked the one upon the other, if not as open enemies, at least as classes having opposed interests. Hence arose a state of things in which the employer's effort to cut the wages of the employed in the hope of cheapening production was met by a systematic check on output, which had the effect of slowing the rate of production and increasing its cost.

Under the pressure of a great war which made it essential to the existence of the nation that the output of munitions of war, of clothing, food, transport, and all the thousand and one things that the Admiralty, the Ministry of Munitions, and the War Trade Department demanded for the fighting forces should be speeded up, the majority of the trade unions agreed to the suspension for the duration of the war of regulations, rules, customs, and usages to which they attached great importance. Mr. Lloyd George, the first Minister of Munitions, gave an unconditional pledge that after the war the working conditions should be reinstated on the basis of what they were before the war. It is, however, inconceivable that either party will wish to go back to the conditions previously existing. Representatives of employers' associations and trade unions sitting together in a subcommittee of the Reconstruction Committee have recently (June, 1917) reported that—

In the interests of the community it is vital that after the war the co-operation of all classes established during the war should continue, and more especially with regard to the relations between employers and employed. For securing improvement in the latter, it is essential that any proposals put forward should offer to workpeople the means of attaining improved conditions of employment and a higher standard of comfort generally, and involve the enlistment of their active and continuous co-operation in the promotion of industry.

The Government has approved the general principles of a scheme for the establishment of a system of national councils working with district councils and works' committees, on all of which employers and workers would be represented, to secure better utilization of practical knowledge, a greater share and responsibility for workers in determining conditions under which work is carried on, including questions of wages and piecework payment, to utilize industrial research and inventions, and to encourage co-operation in carrying new ideas into effect.

MINISTRY OF MUNITIONS.

The demands for munitions and other supplies for the navy and army have increased rapidly to enormous proportions far beyond the capacity of arsenals and munition works existing in time of peace. When a Ministry of Munitions was constituted in May-June, 1915, it stimulated production by encouraging the conversion of factories, previously used for various trades, to the manufacture of shells and other munitions, and the establishment of new works. In his statement to the House of Commons on June 28th, 1917, the present Minister of Munitions, Dr. Christopher Addison, said the Ministry was now responsible for the employment of two million persons.

The success of the appeal of the Ministry of Munitions to men and women of all classes to take their share in increasing the production of munitions of war in the immense proportion necessary involved shifting workers, and often their families, from one area to another, the conversion of factories designed for one purpose to another, the improvisation of many others, and it raised many problems, and of these the most difficult were those concerning the health of the workers, including their housing, transport, the regulation of their hours of work, their feeding, and the general construction and administration of the factories themselves.

HEALTH OF MUNITION WORKERS COMMITTEE.

The medical side of the Factory Department of the Home Office developed for the administration of the Factories Acts, which may be said to date from 1833, though an Act dealing with allied questions was passed as early as 1819, had acquired a great deal of information as to the means of safeguarding workers from the diseases and accidents to which they were specially liable. But it was early understood by the first Minister of Munitions, Mr. Lloyd George, and his lieutenant, Dr. Christopher Addison, that the immense increase in the numbers engaged in a special class of work demanded an intensive study. They accordingly appointed a Health of Munition Workers Committee, under the chairmanship of Sir George Newman, Medical Officer to the Board of Education, comprising scientific medical men drawn from the National Medical Research Committee and the Factory Department of the Home Office, as well as representatives of employers of labour, and of women workers. It has taken evidence from employers and workers; it has visited factories and workshops; and it has set going special studies on fatigue, on the ventilation of factories, on the dietary of workers; on systems of wages as incentive to work, on the relative efficiency of night and day work, and a variety of other subjects. For these inquiries the services have been enlisted of physiologists such as Dr. H. M. Vernon and Professors Leonard Hill and Benjamin Moore; of medical officers such as Captain T. H. Agnew, R.A.M.C.; of selected women medical officers, of women inspectors of factories, of economists (Professor T. Loveday and Mr. Sargent Florence), and of a medical statistician, Captain M. Greenwood.

SUNDAY LABOUR.

In the first crisis created by the war work was carried on by night and day shifts and without intermission on Sundays. When it was realized that the war would be protracted, and on an ever-increasing scale of magnitude, it became obvious that the initial sprint could not be kept up in a long race, and that disastrous results might occur if provision for rest were not made.

The evidence received by the Committee led it to express a strong opinion that if the maximum output is to be secured and maintained for any length of time, a weekly period of rest must be allowed. Except for quite short periods, continuous work is an economical mistake, for output is not increased.

INDUSTRIAL FATIGUE.

The performance of work depends on the activities of (1) the complex nervous mechanisms of the brain and spinal cord which initiate and distribute impulses to action; (2) the nerves which conduct the impulses to muscles; (3) the muscles themselves. Fatigue is not to be compared with the running down of a clock weight, but with the clogging of the wheels by dirt. During rest the chemical products of activity are removed by the blood, and the active material restored. There is a definite relation between the degree of any given activity and the time necessary for the completion of the subsequent restorative process. Although, in the tired man, the symptoms of fatigue are referred to the muscles, which ache or give under him, yet the problems of industrial fatigue are primarily, and almost wholly, problems of fatigue in the nervous system and of its direct and indirect effects. The nervous system displays a wide adaptability in response to training and use. It is the problem of scientific management to discover, in the interests of output and of the maintenance of the health of the workers, what are the maximal efficiency and rhythms for the various faculties of the human machine. If the pace of machinery imposes too fast a rhythm upon the worker the result will be accumulated fatigue and diminished output. Practically the whole of the mechanical energy and heat yielded by the body during work comes from the chemical energy stored in the muscles. In proportion as this store is called upon it must be made good by supplies from the blood and ultimately from the food; the relation of good feeding to capacity for strenuous work is direct. Hence the enormous value of proper canteen arrangements and adequate wages.

The signs and symptoms of fatigue depend upon the nature of the particular work done. Its onset is insidious. A man's capacity for work may diminish from this cause

without obvious sign and without his knowing it himself. His time is then spent uneconomically, and for scientific factory management this point must be determined, since the results of overstrain not only reduce capacity at the moment, but do damage of a permanent kind, affecting capacity for periods far beyond the next normal period of rest. As the accumulated results of fatigue are damaging to general health, they will be reflected in the sickness returns and in the returns of lost time. It is, however, obvious that, without complete analysis of other variables, sickness returns will be only an indirect guide in the study of fatigue as such.

The most direct test of fatigue is afforded by the measurement of output in work under ordinary conditions and by methods which do not allow the workers to know when the tests are being made. The results of work expressed in output must be corrected by allowance for all variable factors such as changes in supply of power and of raw material. The output must be estimated for successive short periods (for example, each hour) of the day's work, so that the phenomena of "beginning-spurt" and "end-spurt," and other variations complicating the course of fatigue as such, may be traced and taken into account. Isolated tests of output taken sporadically will be meaningless. The records must also extend over longer periods to show the onset of fatigue over the whole day and over the whole week, and under particular seasonal or other conditions, in order to detect and measure the results of accumulating fatigue. In many factory processes it is easily possible to measure the output of particular individuals, and surprising variations of individual output, independent of personal willingness and industry, and generally quite unsuspected by the workers and their supervisors before the test, have been found. Information so gained is valuable in two respects. Good individual output is often the result of escape from fatigue by conscious or unconscious adoption of particular habits of manipulation or of rhythm. Its discovery allows the propagation of good method among the other workers. In the second place, these tests of individual capacity (or its loss by fatigue) give an opportunity for a rearrangement of workers and their assignment to particular processes. Astonishing results, bringing advantage both to employers and employed, have been gained by the careful selection of individuals for particular tasks, based, not upon the impressions of foremen, but upon the results of experiment.

In so far as hours of work in excess of those suitable for maximal efficiency have been imposed upon the workers a tradition of slowed labour has arisen, probably in large part automatically, as a kind of physiological self-protection.

In the present time of crisis patriotic incentive has done much to abolish customary reduction of effort among munition workers, but a special and strenuous voluntary effort in labour, if it be maintained under a badly arranged time-table of work and rest, does not necessarily bring increased output over a long period, however praiseworthy the intention of the effort may be.

In war time the workers may be willing, as they have shown in so many directions, to forego comfort and to work nearer the margin of accumulating fatigue than in time of peace, but the country cannot afford the extravagance of paying for work done during incapacity from fatigue just because so many hours are spent upon it, or the further extravagance of urging armies of workmen towards relative incapacity by neglect of physiological law.

HOURS OF WORK.

Great conflict of opinion was found to exist as to the number of hours that can be worked profitably by adult males. At the one extreme were the advocates of forty-eight hours a week, who held that all overtime beyond that was bad, and doubted whether even when worked to meet urgent demands the output of the factory were increased. At the other extreme were those who defended fifteen hours' work a day (6 a.m. to 9 p.m.), which was worked in peace time to meet temporary trade pressure.

After full consideration of the evidence of witnesses and the results of physiological investigation, the Committee came to the following conclusions:

1. The average weekly hours of war workers, exclusive of meal times, should not exceed sixty-five to sixty-seven a week, including overtime. Hours in excess of sixty-five

should be worked only for short periods to meet sudden and unexpected circumstances, and a rather lower limit for work requiring close individual attention is desirable.

2. The overtime should be limited to three or four days in the week, preferably not consecutive.

3. If overtime is worked, there should be no Sunday work.

4. Every effort should be made not to work boys under 16 for more than sixty hours a week, and where overtime is allowed substantial relief should be insisted upon at the week ends, so as to permit outdoor recreation.

5. The hours of work for women and girls should be even more closely safeguarded than for men and boys, and continuous work in excess of the normal legal limit of sixty hours a week discontinued.

Shifts.

The consideration that it is uneconomical to allow machinery to stand still is met better by the system of working in shifts than by overtime, whether the workers be men, women, or young persons; the two most common systems are a double shift, day and night, or three shifts, each of eight hours. The great advantages of regular shifts are that they involve less strain on foremen and workers, enable the machines to be used for the whole twenty-four hours, and produce a better and more uniform output. Difficulties of shortage of supervision and of housing and transit have interfered with the establishment of the system of eight-hour shifts for male workers, but not for women to the same extent. Girls under 18 should not be employed on night shifts, but where, owing to shortage of labour, this must be allowed, it should be restricted to girls over 16 years of age carefully selected for the work.

NIGHT WORK.

The imperative necessity of war has revived, after almost a century of disuse, the night employment of women in factories. Prohibited for the textile trades by the factory legislation of 1844, it disappeared gradually until it was banished by international agreement from the twelve European countries which signed the convention at Berne in 1906. The reports to the International Conference showed that deterioration in health was caused by the difficulty of securing sufficient rest by day, that the work done by night was inferior to that done by day, and that disturbance of home life had injurious effects upon the children also. If women are allowed to do night work adequate pauses for rest and meals are indispensable. The temperature of the human body exhibits a distinct rhythm during the twenty-four hours, with a maximum between 4 p.m. and 8 p.m. and a minimum between 2 a.m. and 6 a.m. The natural explanation of the rhythm is that it reflects the diurnal variations of bodily combustion, in particular that going on in the muscles. There is, however, no inherent reason why the accustomed routine of work and rest should not be reversed, for on travelling round the globe the reversal takes place, the temperature cycle conforming to local time. Against replacing day by night work is the influence of sunlight on health, but this influence is far less in factory and indoor than in outdoor workers. The average life of those who survive the age of 15 years is 67 in purely agricultural and 50 in purely manufacturing districts. The deprivation of the stimulating, health-giving effects of sun and wind must have a large share in shortening the life of the factory worker.

Inquiry has shown that night work has proved less exhausting than had been feared (except in the case of married women with children). A fair proportion of girls preferred it to the day shift, partly because of the higher wages earned, and partly because they gained a little time for recreation or shopping; most seemed able to sleep sufficiently well by day. The output of munition factories where the shifts change weekly from day to night in fact seems to be almost as well maintained by night as by day. Any considerable difference—exceeding, for instance, 10 per cent. or 12 per cent.—points to the existence of some defect in organization, and should be regarded as a danger signal calling for special inquiry as to the conditions of work.

The permanent employment of women in night shifts is inferior, whether measured in terms of hourly output or of lost time and inconstancy of employment. This inferiority, although not sufficient to make it imperative to prohibit

the system in the case of old-established factories, is of an extent to make it undesirable to adopt continuous night shifts in any shops not at present using it or not yet opened. This inferiority may ultimately be referred to a failure to secure proper rest and sleep in the daytime. Women on permanent night work may be relied on to perform domestic duties which, when they work alternately in the two shifts, is impracticable; and this extra domestic strain may account for the inferior results of their industrial activities.

LOSS OF WORKING TIME.

Professor T. Loveday has made a special study for the Committee of the chief causes of "lost time." Some are found to be in the main unavoidable under present conditions, such as the necessity of employing persons of inferior physique or irregular habits, lack of housing accommodation, lack of transport facilities, bad weather and dark streets, lack of material coming from outside, domestic duties in the case of married women, sickness, and accident. Others, in the main avoidable, are alcoholism, indifference, discontent with conditions of work, the early morning "quarter," overtime work, and faulty factory organization.

Holidays may untune the worker just as the nerve-racked soldier may be untuned by the over-sympathy of relations. Over-indulgence in food, drink, and sexual relations may contribute to this untuning. The regularity with which a greater number of quarters of days are lost on certain days indicates deliberate choice of these days; the preference for "sleeping in" on Monday, even when there has been no Sunday shift, disproves any direct connexion between overtime and much of the loss of early hours. If definite fatigue were the main motive the tendency would be, among men not engaged in work on Sunday, for most absences to occur in the second part of the week. Another negative argument is the heavy loss of quarters on the day after a general holiday. The true motive here, as on Mondays, is the drag of the flesh against beginning the same old grind again.

The important conclusion is reached that the early hours suitable for agriculture are an anachronism for factory hands. Work before breakfast yields an inferior output, lowers health, and leads to a great loss of time owing to the shortness of the first spell. In certain kinds of work the early quarter has been abolished with advantage. Absences of workmen, especially when unexpected, entail a certain amount of disorganization, and therefore (quite apart from questions of fatigue) so far as early hours or overtime cause loss of normal time, cost is increased and efficiency lowered.

JUVENILE EMPLOYMENT.

The problems of juvenile employment first became the subject of public discussion and legislative enactment more than a century ago. For a long time the English Factory Acts concerned only textile trades, but in 1867 they were extended to other industries. At the present time, when the war is destroying so much of the country's best manhood, it is necessary to guard not only against immediate breakdown, but also against the imposition of strains which may stunt future growth and development. Long hours of work by day or by night, often coupled with unsatisfactory conditions of housing and transit, late hours and lack of parental care, the monotonous toil and absence of opportunity for healthy recreation, make the dangers grave and immediate.

Under the Factory and Workshops Act, 1901, boys and girls under 18, and legally exempt from school, may be employed for twelve hours (ten and a half exclusive of meals) a day, and eight (seven and a half) on Saturdays—a maximum of sixty-two and a half hours weekly. Sunday work, overtime, and night work, subject to some exceptions, are forbidden. These regulations have been relaxed under the stress of the present emergency, and sixty-seven hours and even more—up to fourteen and even fifteen hours daily—have been worked; night work has been common, and Sunday work allowed, though latterly largely discontinued. Boys under 16 are probably more delicate than girls, and eight hours of sleep are essential, nine hours much better. Many get only six or seven!

In addition to the usual evidences of fatigue, muscular pains, aching feet, restlessness, sleepiness, and tired feeling, overworked boys have a vacant expression and a dry skin

with a rash. In a factory where conditions were bad the boys were spiritless, dull, and weary, while boys doing more than sixty hours' work a week in a factory where the conditions were good, whose homes were not in confined courts, and who had opportunities for open-air recreation, presented a striking contrast.

Welfare Supervision.

Bad time-keeping by boys may be the outcome of genuine fatigue, illness, home troubles, discontent, and lack of discipline. Boy visitors are being appointed at all the larger munition works to get at the true causes. When boys first go to a factory they find all the conditions strange, and one of the duties of a boy visitor is to look after the new boy during this period, and afterwards keep a record of his progress. The boy visitor would be entitled, after inquiry, to represent complaints to the proper authorities, to encourage recreation and sports among the boys in their spare hours, and generally to supervise their food and health. The plans for recreation include a playground, a boys' club, and a standing country camp for short rest periods during the summer. In some factories the new boys work together under special supervision, or in a gallery containing types of machines where they can be instructed in their use. While the high wages now earned by boys are beneficial by bringing good food and clothing within the reach of all, they may encourage thriftlessness, gambling, and extravagance. To encourage thrift patriotism is appealed to, and very simple systems for the receipt of savings established. It is believed that the records of the boys' careers will be of permanent value in throwing light on the many difficult problems arising out of the effect of occupation in youth upon the health.

KINDS OF WORK DONE BY WOMEN.

A special inquiry was made into the kinds of work done by women. The tool-setter's is a skilled art. It consists in making the automatic machines run smoothly, removing the tools for grinding and replacing them as expeditiously as possible. Trained tool-setters, who were limited in number, each now has a gang of learners under him. Very little skill is required from the automatic machine minder, but dexterity is necessary. The human element tells in the feeding of the machines. It must be continuous, and the materials fed must be put into the machine the right way on, for great delay will occur if the very delicately constituted machines are thrown out of gear. Lathe work requires slightly more concentration. Power and hand press work require considerable concentration, and the risk of accident is always present; in the hand press muscular action enters into account as well as mental strain. Examining and gauging are simple operations, but demand thought and attention, and require a quickened intelligence.

Munition factory work, though often monotonous and tedious, is not, as a rule, particularly exacting; the workers are not putting forth their whole energy all the time.

Protection of their Health.

The munition workers of to-day include women who were dressmakers, laundry workers, textile workers, domestic servants, clerks, shop assistants, university and art students—women and girls of every social grade who often had no previous wage-earning experience. They include also, in large numbers, wives and widows of soldiers, and many other married women who had given up industrial work and many who had never entered it. Conditions of work are accepted without question and without complaint which, immediately detrimental to output, would, if continued, be ultimately disastrous to health. It is for the nation to safeguard the devotion of these workers, and it may be that in the entanglement of problems new and old the coming of the new and their imperative claim for solution will help the solving of the old. The well-being of young girls fresh from school, of the prospective mother, and of the mother during the first months of her infant's life, more than ever call for sympathetic recognition. If proper care and forethought are exercised there seems no reason why women and girls, if suitably selected and supervised, should not carry out many operations, hitherto considered fit only for

men, without permanent detriment to their future health. A medical inquiry into the health of women workers showed that out of 1,326 examined 763 were healthy, 451 suffered from slight fatigue, and 112 from marked fatigue. The ailments most frequent were indigestion, constipation, headache, anaemia, and muscular pains. In one factory, nearly all the workers, especially the younger ones, took salts two or three times a week to obviate the effect of sedentary occupation and lack of open-air exercise; dental treatment appreciably lessened the amount of headache. Anaemia was particularly common where canteen and transit arrangements were defective. Disorders of menstruation under the conditions of employment were less marked than anticipated.

The general impression was that home duties and worries on the top of long shifts and night work formed too heavy a burden for the average married woman. A day began, owing to difficulties of transit, at 4 or even 3.30 a.m. for work at 6 a.m., followed by fourteen hours in the factory, and another two or two and a half hours on the journey back, might end at 10 or 10.30 p.m. in a home or lodging where the prevailing degree of overcrowding precluded comfortable rest. In one instance inquiry showed that of seventy-five women employed from 6 a.m. to 8 p.m. most lived within a mile or a mile and a half of the factory, but that none of them got more than seven and a half hours' sleep, and many less than seven hours. The majority rose before 5 a.m.; of these workers nineteen were over 21 years, but many between 16 and 18. If workers live near the factories they are not only spared the fatigue entailed by a journey in a crowded train or tram before and after work, but are able to take many meals at home and to have increased time for exercise and recreation, with a consequent distinctly good effect on their health. The fatigue of standing in a crowded car after a struggle to gain admission adds considerably to the severity of the day's work, and many of the girls complained of muscular pains in the feet and back.

The provision of seats where the work allows it, and for rest, is important. At one factory muscular pains were observed in 26 per cent. of the workers; seats were provided, and six months later the complaints of fatigue and headache had markedly diminished. Suitable seats of the deck-chair type can be made by fixing two strong horizontal rails, one 12 inches from the ground and the other 30 inches in front of it and 36 inches from the ground. Between the rails are fastened a series of strips of strong material 54 inches long and 18 inches wide.

Pauses for rest well distributed and adapted in length to the needs of the workers are of the highest value. The Factory Acts permit in textile factories a maximum of four and a half hours of unbroken work, in non-textile, five. Many managers think four hours a better limit, and a ten-minute interval within this period has been found to give excellent results. Factories ought to be planned in garden cities so that workers can go out into playgrounds for an interval of games and exercise whenever the weather allows it. The hygiene of the school in relation to work and play intervals should be extended to the factory. The vast size of modern workshops militates against this, for it takes too long to empty and fill them; the ideal, therefore, is to establish small shops each with its playground.

(To be continued.)

THE *Annals of Medical History* is a new quarterly periodical, the first number of which appeared in April. The four issues—Spring, Summer, Autumn, Winter—will make an annual volume of 500 to 600 pages. The new publication will contain original contributions, illustrated when necessary, on subjects connected with the history of medicine, with occasional reprints of epoch-making monographs. It is hoped in time to add special departments, such as abstracts, reviews, bibliographies, incunabula, notes and queries, and so forth. The Editor-in-chief is Dr. Francis R. Packard, of Philadelphia, and the publisher is Paul B. Hoeber, 67-69, East 59th Street, New York. Among the contents of the first number are papers by Dr. and Mrs. Singer on Girolamo Fracastoro, with special reference to his theory of infection; on the Greek Cult of the Dead and the Chthonian deities in ancient medicine by Dr. Garrison; on Voltaire's relation to medicine by Dr. Pearce Bailey; and on Hebrew prayers for the sick by Dr. C. D. Spivak of Denver.

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SATURDAY, JULY 7TH, 1917.

INDIA AND MESOPOTAMIA.

VISCOUNT HARDINGE'S speech in defence of his administration in India (p. 21) may have the effect of steadying public opinion by showing the number and magnitude of the problems with which the Government of India was faced immediately after the outbreak of war. It provided an army corps for France and Egypt, it furnished two expeditions to East Africa, and it undertook the Mesopotamia campaign. At the same time, it had to face serious attacks by the tribes on the North-West frontier more numerous and determined than had been experienced since 1897. It had also to keep a very watchful eye upon unrest in India, especially in the Punjab in the spring of 1915, and at the end of that year had to make extensive preparations to foil the German conspiracy to organize rebellion in Bengal and elsewhere. Lord Hardinge said that within three months of the outbreak of war the supply of hospital ships and of permanent hospital staff had been exhausted, and that it was only by great effort that many more ambulances, hospitals, and medical personnel were dispatched from India to the various theatres of war during 1915. He attributed the principal share of the breakdown of the medical service on the Tigris to the absence of sufficient river transport, though it was only, he said, in June and July, 1915, that the pressure first showed itself, and it was not until December that the facts as to the sufferings endured by the wounded began to trickle down from Mesopotamia to Bombay and Delhi.

This, in brief outline, is Lord Hardinge's apologia, and every point in it seems to apply with equal or greater force to the position of the Director of Medical Services in India. Surgeon-General Sir William Babbie took up the duties of that office in March, 1914. In the middle of February, 1915, he was detached to Egypt in connexion with war problems which had arisen there; he returned to India in March, 1915, and was finally withdrawn from India in June of that year because the need of his ability was experienced elsewhere in connexion with the war. The Parliamentary Commission recognizes that he showed promptitude and firmness in pressing war provisions on the Indian Government necessary for the overseas expeditions generally, and that on the outbreak of war he urged the formation of a fleet of ocean hospital ships, the construction of hospital trains, and the expansion of the Army Bearer Corps, a reform long overdue. The complaint of the Commission against Sir William Babbie is founded upon the belief that, as in other phases of the expedition, Mesopotamia was, in medical matters also, regarded as a "small side-show." It seems abundantly clear that it was so regarded by the Government of India, and not without good reason at the beginning. To quote Lord Hardinge with regard to river transport, this "could only have been met by preparation far in advance, which the gradual development of policy in Mesopotamia did not permit."

The report of the Commission is a voluminous document, very full of detail, and only a very close study with careful comparison of dates can enable a sound judgement to be reached, but it seems very clear

that even the Governor-General's Council was not made aware of the gradual development of policy. "Gradual development" is, perhaps, a rather euphuistic expression when it is made to include the hesitation and vacillation of the Home and Indian Governments and their military advisers with regard to the advance on Baghdad. Sir William Babbie told the Parliamentary Commission that he was not made aware of any intention of an extensive campaign up the rivers, that his preparations were made for a campaign limited to the conquest and retention of Basra and the oil fields, and that "if there had been a hint of Baghdad the arrangements would have had to be absolutely put into the melting-pot." He admitted that he knew from hearsay that both Amara and Nasariyeh were necessary for the defence of Basra and the oil fields, but hearsay is not enough for a responsible officer to act upon, and does not give him firm enough ground for making an appeal to a parsimonious finance department to disburse large sums of money which the Finance Minister desired to retain in order to make a flourishing financial statement showing that "our chief economy occurs under the military services."

With regard to equipment and personnel also, the same baleful influence has long been at work in India. Years ago a strong committee of medical officers recommended the introduction of the station hospital system with proper dieting and hospital clothing and bedding. It started, however, under the ban that anything it recommended was not to cost more money, but should, if possible, show a saving. Subject to this it made a recommendation, among others, for the introduction of the station hospital system, but nothing was done. The position with regard to the supply of instruments, dressings, etc., to British hospitals in India was practically the same, and the same thing happened in the case of medical supplies in the field, although by the persistence of the Director of Medical Services in India improvements in the equipment and the arrangements of the hospitals were approved and the establishment of station hospitals sanctioned, but afterwards cancelled. Sir Bruce Seton, who for thirteen years held appointments in the head quarters of the Government Secretariat in India, in a letter to the *Times*, in which he gives some of these particulars, says "no man could have done more than Sir William Babbie and his predecessor [Sir Alfred Sloggett] to avoid the very disasters which they foresaw, and no man could have supported them more heartily than the present Director-General I.M.S." (Sir Pardey Lukis).

We do not accept the conclusions of the Parliamentary Commission in the supplementary part of its report (Part X, par. 111), that the medical defects disclosed in Mesopotamia were not due to the shortage of river transport, that the sufferings of the sick and wounded were not, or need not have been, materially affected by the shortage of river steamers, and that such shortage did not prevent sufficient doctors and assistant surgeons being sent to the expedition up to the end of 1915, or prevent it from being supplied with sufficient hospitals. These opinions are in direct conflict with innumerable other passages in the report, and clash with its whole tenor. We unhesitatingly accept the conclusion of the Vincent-Bingley Commission that the fundamental defect was the shortage of river transport, which reacted on the medical organization both directly and indirectly. Its direct effects were not only to prevent a permanent allotment of river steamers to the medical services for use as hospitals and frequently

to retard the dispatch of medical units and stores to the front, but also on many occasions to force the military authorities to curtail the equipment and personnel of medical units in the field to a dangerous extent. Its indirect effects, the Vincent-Bingley Commission found, had been equally important, since it delayed the completion of hospital buildings, impeded provision of comforts for the sick, and affected the health of the troops, as it was the cause of incomplete rations being supplied to them. Moreover, that Commission held that if river transport had been more plentiful, better arrangements would have been made for supplying the troops with pure drinking water. The considered opinion of Lord Hardinge is that "it was principally due to the absence of sufficient river transport that the medical service on the Tigris broke down."

We are not interested to defend any medical officer who did not rise to the occasion, but we feel that the Parliamentary Commission has failed in its duty and deserves censure for ignoring the personal responsibility of the men who have for many years used their positions in the military finance branch and finance department of the Government of India to block every military medical reform.

ADAPTATION AND DISEASE.

AMONG the results of the special demands of the war on the medical profession there must be recognized a practical cessation of ordinary research work. For, owing to the shortage of the profession and the vast increase of routine laboratory investigations, there is little time for research into problems other than those of military importance. This is borne out by the recent Croonian lectures before the Royal Society and the Royal College of Physicians, which, as it happens, were both given by Fellows of the Royal Society (of which Croone was an original Fellow) hailing from Cambridge, the founder's Alma Mater. The lecturers, who are whole-time scientific workers and in peaceful circumstances might have been free to pursue fresh lines of experiment, in both instances developed as their themes the outcome of activities during fifteen or more years before the war. Colonel Adami's subject for the four lectures before the Royal College of Physicians was "Adaptation and Disease," a frontier subject between medicine and the ancillary science of biology, two such jealous mistresses that few indeed are qualified to speak with authority for both. From his work and association at Cambridge with biologists in the Eighties, and his pathological chair during the last twenty-five years at Montreal, Professor Adami is exceptionally fitted to attack this thorny problem and to dictate just terms between the rival territories of the normal and morbid biology, the champions of which, it must be admitted, often treat each other with a silence not entirely born of sympathy and respect. That he does so fearlessly and with some vigour is the outcome of loyalty to the medical profession and of pious regard for his physiological teacher and friend, the late W. H. Gaskell, whose great work on the origin of the Vertebrata met with such a chilly reception. Since 1892 Professor Adami has written on subjects allied to the present, such as the variability of bacteria, the inheritance of acquired conditions in man, a trenchant criticism of Weismann's theory (1901), adaptation and tuberculosis (1905), and heredity (Osler and McCrae's *System of Medicine*, 1907); and the time for such discussion is more than ripe, especially as Crile in various

publications, and most recently in *Man—an Adaptive Mechanism* (1916), has dealt with it on rather different lines.

The problem of evolution turns on the cause or causes of variation, whether, as most academic biologists maintain, variation is intrinsic and due to inherent tendencies in living matter, or whether it is the result of extrinsic influences—in other and more formal words, a direct adaptation in response to a specific alteration in the environment. Professor Adami naturally advocates the second alternative, and vigorously attacks Professor W. Bateson's considered, but to the medical mind surprising, dictum that when a new property appears in any individual of any species it is in reality not new, not an addition, but due to subtraction, namely, to the loss of some inhibitory factor which allows a primaeval property previously latent or recessive to become dominant. Pushed to its logical conclusion, this means, the lecturer argued, that the primal unit or units of protoplasm from which all living animal and vegetable forms have descended must have contained in a latent form the originals of every organ and every detail of the organs of all forms of life. Thus the leader of the Mendelians and Sir Ray Lankester—foemen worthy of his steel—will be in the lists against the Croonian lecturer, who by a review of the evolution of the infections and of the influence of environment on bacteria brings forward proof of the power of external factors to produce impressed variations in bacteria—for instance, to change a saprophytic into a pathogenic organism. He is, of course, fully aware of his opponents' objection that such modifications in unicellular organisms are irrelevant because there is no distinction between germinal and somatic matter, apart from which the concept of modifications is of no value (J. A. Thomson, 1912), and this contention he anticipates to some extent.

In the third lecture the argument is transferred to the consideration of adaptation in the higher animals to morbid agencies, and immunity, a subject with which biologists do not appear seriously to have dealt in this connexion, is brought forward as an illustration. There seems to be no reason to regard the production of antibodies as a persistence of a chance variation or as a primaeval property previously kept latent by an inhibitory factor now removed. The series of intercellular reactions and counteractions, constituting immunity, thus set in motion is not necessarily a temporary acquisition, as witness the period, after complete recovery from enteric fever, during which agglutinative changes may remain. This persistence or "law of habit" is also seen in metaplasia, neoplasms, and nervous tics. These considerations militate against the Batesonian hypothesis of evolution by progressive removal of inhibitory factors.

As to the inheritance of acquired conditions, it is pointed out, after allowing for the difficulties introduced in mammals by the intrauterine existence of the fetus and by other factors, that this may be direct or indirect. Instances of direct or identical inheritance are rare, and are confined to cases in which the influences affecting the body cells modify their internal secretions, and through these internal secretions so tell upon the germ cells and their metabolism as to set up similar defects and similar disorders of the internal secretions in the offspring—and here it need hardly be pointed out what an important influence hormones exert on growth; as examples of direct inheritance, the diatheses, the gouty and rheumatoid, are given. Regarding indirect inheritance, it must be remembered that the germ cells may be influenced by

factors involving the body at large; this is well shown by the effect on the offspring (high proportion of stillbirths) induced by plumbic, mercurial, and abrin intoxication of the father. The essential point in these observations is that as the mother is normal, no complications are induced by modifications acquired by the offspring while *in utero*.

Professor Adami insists on the importance of the chemical rather than of the morphological factors in heredity. The highly complex proteinogenous molecules of living matter or biophores possess inherent properties as an expression of their constitution, of the mode of linkage of the various nuclei, their number and the nature of their side-chains. This conception of the chemical constitution of living matter, and the recognition that function precedes structure and that environment leads to direct adaptation, should be substituted for the morphological hypothesis that individual properties are handed down by individual particles.

The abstracted form in which the lectures have necessarily so far appeared has not only the disadvantage inherent in the condensation of a close argument, but also that the charm of the lecturer's style is less obvious than usual. It is therefore doubly desirable that the lectures should be published in full. In the meanwhile it may be noted that biological authority is not entirely ranged against Adami's views; thus, in giving a rational account of the recapitulatory theory of development (in other words that the larval phase of development represents a former condition of the adults of the stock to which it belongs) Professor E. W. MacBride,¹ apparently independently, advocates adaptation from environment, and brings forward evidence from the new science of experimental embryology in support of the part played by hormones in connexion with the inheritance of acquired characters.

THE WAR EXHIBITION AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

IN May, 1915, the Council of the Royal College of Surgeons undertook to "preserve, classify, and register specimens forwarded from military hospitals." Towards the end of last year it became apparent to all who realized the educative value such a collection possessed for army medical officers that its display should not await the end of the war, and, as our readers are aware, the exhibition of pathological specimens was opened in the museum of the Royal College of Surgeons early this year. We were able to state last week that this has since been materially enlarged. The College can, at the present time, devote three of the largest rooms in the museum to the exhibition. Although in its scope it may be less wide than the collection now shown at Val-de-Grâce, yet it will be wide enough to include not only actual specimens of wounds of all parts of the body, and of the diseases and consequences of military wounds, but will also embrace samples of the missiles causing wounds, the various means of treatment adopted by military surgeons, and the results obtained so far as such results can be accurately represented by drawings, photographs, casts, and models. A valuable series of accurate pathological drawings is being collected from France, where Mr. A. K. Maxwell has been placed by the War Office and the Medical Research Committee for this special purpose. It is intended that every special department of surgery should be represented—orthopaedic surgery, plastic surgery, the treatment of face, mouth, and jaw deformities, of limb deformities, the fashioning of stumps, and the supply of artificial limbs. A special radiographic section is par-

ticularly desirable—one which will include radiograms of wounds in all parts of the body and at all stages of healing, as well as a series of radiograms showing the normal uninjured condition of all regions of the body, from all points of view. There can be no doubt that the material for such an extensive collection is already in existence, and it would be a grave mistake—a national misfortune—if steps are not taken now to gather into a whole what is at present scattered at various hospitals and institutions. So far as means and material are concerned, the realization of such a central or national exhibition offers no difficulty; the heads of the medical departments of the army have given everything that has been asked for the preservation and mounting of specimens, but in the matter of labour they have been unable to give any help. There is only the depleted staff of the museum to undertake a work which is very much greater than falls to the full staff in peace time. The aim, however, is to have a complete and extensive series of specimens ready for exhibition in the first week of next October. Meanwhile, the collection already displayed, which is open from 10 a.m. to 6 p.m. (on Saturdays to 1 p.m.), will well repay examination.

INFECTIOUS JAUNDICE.

IN America there have been a few epidemic or endemic cases of infectious jaundice; and though it has not been proved that they were due to the *Spirochaeta ictero-haemorrhagiae*, it appears probable that this is so from Noguchi's¹ recent observation that wild rats captured in America contain this organism in their kidneys, just as it has been shown that rats captured on the Western front in France, both in districts where the disease occurs in man and also at a distance from human cases, act as a "reservoir" for the spirochaete. Emulsions made from the kidneys of American wild rats were injected into guinea-pigs, and caused a typical ictero-haemorrhagic spirochaetosis exactly like that seen in guinea-pigs injected with the Japanese and Belgian strains of *Spirochaeta ictero-haemorrhagiae*. The attack of this spirochaete on the human body is probably a comparatively recent event, and it is suggested that the disease was originally epizootic among certain rodents, especially wild rats, and that after a long sojourn in these hosts its virulence for them has become so reduced that a state of tolerance for the spirochaete results. By means of a special technique Noguchi has for the first time cultivated artificially the Belgian and the American strains of the spirochaete, and by immunization experiments he finds that the Japanese, Belgian, and American strains are probably identical. Morphologically they are also identical, and present differences from other spirochaetes, so that a new genus should be recognized, for which the name *Leptospira*, on account of its fine and minute windings, is suggested. In commenting on the contrast between the mortality of 38 per cent. among the Japanese and of 3 per cent. among European soldiers, Noguchi points out that it is reasonable to assume that the Japanese strain has already acquired a marked increase in virulence for human beings, probably as the result of more frequent passage from man to man. Successive passage of the American strain through guinea-pigs increased its virulence. The results of further investigations will be published later. The discovery of this causal organism in American rats reveals a danger which remains latent as long as sanitary conditions are satisfactory.

TERRITORIAL À LA SUITE OFFICERS.

IN our issue of June 9th appeared a leading article on the position of medical officers who are *à la suite* of a Territorial general hospital. In this it was argued that the removal of these medical officers by the War Office for overseas service should not be carried out without

¹ MacBride: *Textbook of Embryology*. Edited by W. Heape. Vol. I. pp. 649-654. Macmillan, 1914.

¹ Hideyo Noguchi: *Journ. Exper. Med.*, Baltimore, 1917, vol. xxv, pp. 755-763.

consultation with the Central Medical War Committee, which alone is in a position to say, in each instance, who can be spared and who is indispensable for the needs of the civil community. A correspondent serving abroad in the Territorial medical force has read into this article an attempt to establish a special case for the *à la suite* medical officer of military age, and writes a long letter to rebuke us for championing this section of the medical profession at the expense of the ordinary Territorial medical officer, whose real and pressing grievances he accuses us of ignoring. We find it difficult to understand how any one could so misread our argument. In this article, as in those which came before and after, our principal concern was with the medical needs of the civilian population. So far from holding a brief for the *à la suite* officer, we suggested that proper co-ordination between the War Office and the central professional bodies would lead to the setting free of a number of these practitioners for service abroad without endangering the consultant or specialist attendance upon the civil population. We would remind our critic that under the original scheme for *à la suite* Territorial medical officers it was contemplated that these practitioners would be available for civil needs, although in khaki and in receipt of military pay. By accepting the imperial service obligation they placed themselves wholly under the War Office and outside the control of the Central Medical War Committee. There was thus no guarantee that their services would be retained when they were really wanted; hence our plea for co-operation between the Army Medical Department and the Committee. We understand, indeed, that the Army Medical Department has now agreed to inform the Central Medical War Committee whenever it is proposed to call up an *à la suite* officer for service away from his home; and that it will be open to the Committee to make representations in any case in which it seems likely that the treatment of the civil community will suffer as a result of the withdrawal of the officer from the civil side of his work. This reasonable understanding appears to offer a satisfactory settlement of a difficult question. As to the grievances of the ordinary Territorial officer, we are in full sympathy with our correspondent, and we are glad to see that the Naval and Military Committee of the British Medical Association has taken up this matter, and made strong representations to the Parliamentary Committee now sitting.

BABY WEEK, 1917.

THE first national baby week, which is now drawing to a close, was inaugurated on Sunday last by services at Westminster Abbey and in many churches. The movement has not been confined to the metropolis, and celebrations have been held throughout the three kingdoms. The Child Welfare Exhibition at Westminster, to which we refer below, was opened on Monday by the Queen, and has remained open throughout the week. On the same afternoon the Lord Mayor of London presided over a meeting for health workers at the Guildhall, at which Lord Rhondda, Mr. H. A. L. Fisher, President of the Board of Education, Mr. Hayes Fisher, the new President of the Local Government Board, and other speakers dwelt upon the need for a great national effort to safeguard the life of children and improve the conditions under which they are reared. Among provincial cities taking part in baby week, Liverpool has been particularly active, and a very full programme has been carried out under the patronage of the Lord Mayor and the Countess of Derby. In Dublin the arrangements were directed by a special committee in association with the Infant Aid Society and other organizations, and included a fête in Lord Iveagh's grounds on Wednesday afternoon. The exhibition organized by a number of maternity and child welfare associations at the Central Hall, Westminster, has been most interesting and instructive. Purely trade displays were

ruled out, with the result that each of the forty or fifty stalls had its own distinctive lesson to enforce in relation to the general plan. The largest single exhibit was an elaborate model, measuring forty square feet, of the maternity and infant department of the Royal Free Hospital, together with a more detailed reproduction of the nursing section. Another hospital exhibit was from the Infants' Hospital in Vincent Square, and illustrated feeding and nursing methods. The National Association for the Prevention of Consumption, in addition to a big display of photographs, had a model exhibiting side by side the well-kept and the slatternly dwelling. A gigantic reproduction of *Musca domestica*, measuring 15 ft. across the wings, was shown by the Women's Imperial Health Association, and at the same stand were fresh house-fly larvae and other microscopical specimens from the Lister Institute. Elsewhere demonstrations of breast and artificial feeding were in progress, and Dr. Eric Pritchard had also arranged a demonstration in the use of dried milk. Dental clinics, model infant consultations, nurseries and kindergartens, and minor ailment treatment centres, were also illustrated, the last-named showing first aid for children in cases of cuts and burns, the care of the teeth, and the care of eyes, ears, nose, and throat. These were undertaken respectively by the Queen Victoria's Jubilee Institute for Nurses, the School Dentists' Society, and the Scottish Union of Women Workers. Some of the London polytechnics illustrated their training departments for domestic science and hygiene; the Eugenics Education Society undertook the subject of healthy parentage; in fact, no side of infant life and care went without its ocular demonstration. The Exhibition Committee is to be congratulated upon an excellent piece of work.

AN EDUCATIONAL GARDEN.

THE somewhat novel experiment of using a private garden for educational purposes has of recent years been tried by Dr. J. B. Hurry at Reading. A number of plots have been laid out in his garden in which are grown a variety of plants used in industry and commerce. Series A includes plants used in medicine—for example, eucalyptus, belladonna, aconite, stramonium, gentian, liquorice, podophyllin, asafoetida, valerian, henbane, castor oil, cinchona, and the opium poppy. Series B includes plants used for food,—for example, maize, millet, sugar-cane, rice, bananas, arrowroot, ginger, chicory, pepper, olive, and cardamoms. Series C includes plants used for clothing and textiles, such as flax, hemp, cotton, jute, New Zealand flax, and ramie nettle. Series D includes plants that yield dyes, such as woad, indigo, madder, dyer's weed, turmeric, annatto, and alkanet. In the adjacent conservatories are exhibited more delicate economic plants, such as tea, coffee, soya beans, monkey-nuts, guava, chick-pea, cinnamon, and camphor. Next to the conservatories is a small museum in which are collected various products made from the above-mentioned plants, every article being accompanied by a descriptive label, so that the living plant can be studied in conjunction with the economic products derived from it. Every summer the garden, conservatories, and museum are thrown open free on several half-holidays to visitors, teachers, and the older school children of the borough, who in large numbers avail themselves of the privilege of seeing some of the important plants used in industry. A printed catalogue is supplied to every visitor, and from time to time demonstrations of the more interesting exhibits are given by Dr. Hurry and his assistants.

THE HALF-YEARLY INDEXES FOR 1917.

THE usual half-yearly indexes to the JOURNAL, to the EPITOME, and to the SUPPLEMENT have been prepared, and will be printed. They will, however, not be issued with all copies of the JOURNAL. Any member or subscriber who desires to have one or all three of the indexes can

obtain a copy of what he wants, post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2. Such copies will be dispatched shortly after the middle of July.

Medical Notes in Parliament.

Lord Hardinge on Mesopotamia.

VISCOUNT HARDINGE, who was Viceroy of India during the earlier operations in Mesopotamia, made his defence of his administration in the House of Lords on July 3rd. He dwelt on the multiplicity of calls made by the war on the Government of India: it sent an expeditionary force consisting of an army corps to France and Egypt, it sent two expeditions to East Africa, and finally was called upon to furnish an expedition to Mesopotamia. At the same time the North-West frontier of India between the autumn of 1914 and the end of 1915 was very disturbed, no fewer than seven serious attacks being made by the tribes. All were dealt with effectively, but it had to be remembered that at the most critical period of the war India was carrying out the largest military operations on the frontier that it had had to undertake since the frontier campaign of 1897. In addition, there was great unrest in India in the spring of 1915, traceable to the return to India from Canada and the United States of 7,000 revolutionaries, who initiated a campaign of murder and terrorism in the Punjab, necessitating the arrest in one week of no fewer than 3,500 revolutionary hooligans. Later on the German conspiracy to organize rebellion in Bengal and elsewhere, planned to break out on Christmas Day, 1915, was discovered, necessitating military preparations and naval patrols in the Bay of Bengal; and although this conspiracy was foiled by the arrest of the leaders ten days before the plan was to mature, at Christmas every officer, both military and civil, had to be at his post, and the troops in troop trains at the railway junctions ready for any emergency. He frankly and regretfully admitted that the medical arrangements in Mesopotamia, after the battle of Ctesiphon and during the retirement to Kut, and in later operations, disclosed serious shortcomings in the provision made. He shared the horror and indignation that the revelation of these sufferings had created, but in his own defence he said that information as to what was happening only began to trickle down to Bombay and Delhi during December, and he had proposed to send Lord Chelmsford and Surgeon-General MacNeece on a mission of inquiry. Lord Chelmsford did not go because it became known that he had been designated to succeed Lord Hardinge as Viceroy. As he was not satisfied with Surgeon-General MacNeece's report the Vincent-Bingley Commission was appointed. The heavy demands made upon India for the provision of ambulances and hospitals and their personnel in England, France, Mesopotamia, Egypt, and East Africa soon exhausted an organization never intended or prepared for operations out of India. Within three months of the outbreak of war the supply of hospital ships and of permanent hospital staff had been exhausted. Nevertheless, by making a great effort, many more ambulances, hospitals, and medical personnel were dispatched from India to the various theatres of war during 1915. It was principally due to the absence of sufficient river transport that the medical service on the Tigris broke down, but it was only in June and July, 1915, that the pressure first showed itself, and orders were then at once placed at home, but some delay occurred at the Admiralty in placing them. The Army Department fully realized the importance of river transport, and during the whole of the succeeding months strained every nerve to meet the demand. Ships and barges of shallow draught from every river in India, Burma, Shanghai, Hong Kong, the Nile, and even penny steamers from the Thames, were bought or commandeered, but a large proportion of them unfortunately foundered on their way to the Persian Gulf. All ready-built craft purchased proved ineffective in some way, while new construction in England was uncertain and subordinate to Admiralty demands. The situation could only have been met by preparations far in advance, which he considered the gradual development of policy in Mesopotamia did not

permit. Even in January, 1916, when there were only two divisions in Mesopotamia, the shortage of river transport was a serious obstacle to the efficiency of military operations, and this was greatly intensified when, within two months, the two divisions were increased to six, and the difficulties were increased when, as happened in the case of the two Indian divisions from France, the troops arrived without a large proportion of their ambulances, but, owing to military exigencies, were pushed up to the front without delay. He defended his use of private telegrams on the ground that the practice was established before his time.

Munition Workers.—In a speech in the House of Commons on June 28th, in which the Minister of Munitions, Dr. Addison, gave an account of the extraordinary development of that Ministry, the multiplicity of its departments, and the establishment and extension of munition works; he said that the Ministry was now responsible for the employment of over two million persons. He expressed the belief that in the rates of pay of women workers, which had risen from an average of 12s. a week to an average of 25s. a week, in the reduction of the hours of labour, in the introduction of more humane methods of employment, as well as in many other directions, the Labour Department of the Ministry had made an enduring contribution of high value towards the improvement of industrial methods. The employment of so many workers, especially women, away from their homes, raised social and other problems very difficult to deal with. It was not easy to obtain personal and tactful assistants of the right kind, but the Billeting Board was endeavouring to organize and direct local committees. The Government had assisted local authorities to provide permanent housing and had itself constructed temporary cottages or hostels. Great progress in the establishment of canteens had been made during the last twelve months, and altogether provision had been made for supplying meals to 810,000 persons daily at a cheap but self-supporting rate. Mr. Montagu congratulated Dr. Addison on the work accomplished, and Sir Worthington Evans, in a general reply, dealt with various points raised during the debate. It ended by the adoption of the vote for the Ministry without a division.

Pensions for Officers.—In reply to Colonel Yate, who asked when the new Royal Warrant enlarging pensions for officers would be issued, Sir Arthur Griffith-Boscawen said that he could only repeat the assurance that neither officers nor nurses would suffer any disadvantage from the delay, as the new warrant would operate from April 1st. It is understood that the differences between the Treasury and the Pensions Department are on only a few matters of detail in the scale and should soon be adjusted.

Recognition for Major Carter, I.M.S.—Mr. Chamberlain stated on July 5th, in reply to questions, that Major Carter, I.M.S., had suffered no injury, and would suffer none, in his career on account of the efforts he made to bring to notice and to secure a remedy for the deplorable defects in the medical arrangements in Mesopotamia. Mr. Chamberlain added that he was only waiting till copies of the report of the Commission could reach India to bring Major Carter's conduct to the notice of the Government of India with a view to his services receiving suitable recognition. He had been brought home in May, 1916, to advise as to the fitting out of hospital ships, etc., for Mesopotamia, and the War Office had informed the Government of India, who had applied for his services, that he could not be spared. He was granted the temporary rank of Lieutenant-Colonel on August 8th, 1916; he had held the rank of Major for three years previously. He joined the Indian Medical Service in 1902, at the age of 26.

The Sale of Morphine.—In reply to Sir William Collins, the Home Secretary said, on June 28th, that Regulation 40 B of the Order of Council, No. 501, of the 28th July, 1916, which restricts the traffic in opium and cocaine to that required for medicinal purposes, did not apply to morphine. The regulation was an emergency provision made under the powers of the Defence of the Realm Act, and he was not aware of any special grounds arising out of the present emergency for exercising those powers in regard to morphine. The inclusion of opium in the regulation was necessary in order to put a stop to the illicit export of opium in contravention of the proclamation.

Public Vaccination in Chester.—Mr. Hayes Fisher relieved the curiosity of Mr. Snowden as to the recent payment by the Chester Town Council of £112 7s. towards the salary of Dr. George Harrison, the public vaccinator, in respect of vaccination cases during four years ended September, 1914. The sum was an award in respect of vaccinations performed between April, 1910, and September, 1914. Awards to public vaccinators

had generally been delayed owing to the inability of the Local Government Board in present circumstances to make the necessary inquiries in the usual way.

Army Medical Re-examination.

EVIDENCE BEFORE PARLIAMENTARY COMMITTEE.

The House of Commons Committee on the Working of the Military Service Act, with special reference to the medical re-examination, began to take evidence on July 2nd. Mr. E. Shortt, K.C., presided.

The Director of Recruiting.

The Director of Recruiting (Brigadier General A. K. Geddes) was the first witness, and was in the chair throughout the sitting. He described the recruiting machinery as it had been increased during the war. At the beginning its capacity was only for the enlistment of 50,000 men per annum. The Registration Act of August, 1915, formed the basis of the military register. Men as they attested were marked off, but, as time went on, it got further and further out of date. He pointed to the difficulties due to changes of address and to persons bearing the same name. In Stepney subarea there were thirty-three Abraham Cohens, all of whom had changed their addresses since attestation. When the Review of Exceptions Act was passed, in May, 1917, there were approximately a million errors in the military register, and there was no plan to get that right. At the outbreak of war no precautions were taken to avoid trickery. Thus men unfit obtained papers marked rejected, and they could be sold afterwards to fit men at an average price of £15. There was evidence that medical cards had been forged, and false classification cards printed. Last August a plan was adopted by which no fewer than six million entries on the books had since been verified. But this was verification of entries, not of men; one million men who held rejection forms could not be touched. The intention for the future was to form a separate special department of the War Office to do the discriminating work. Deputy Directors of Recruiting had been appointed with charge areas corresponding to employment bureau areas. By getting the register up to date it was hoped that by the end of the year the machine would be absolutely right and sound. Colonel Galloway, Senior Physician to the Charing Cross Hospital, was appointed last December as the chief of a special branch at head quarters, which became responsible for advising in the arrangements of medical boards. Colonel Galloway and inspectors went about the country looking into medical board arrangements and advising doctors as to the standards of fitness. The standards which the boards now kept were much more uniform, fewer men were getting into the army who were unsuitable for the work to which they were allotted. The special medical examinations were carried out by the special board. Altogether he anticipated errors to the amount of 1 per cent., but that was including cases of impersonation. A man would go before a medical board and be classified. He would receive his calling up notices and a hopelessly unfit man would report in his stead. Thus they had a case of a man with two wooden legs reporting himself. Re-examinations were necessary. In illustration General Geddes referred to "doping" by recruits, remarking that in some cases everything had been done to make the work of the medical board difficult. The certificates of private practitioners had, in some instances, been a source of difficulty. A board would get a certificate, "I have examined John Smith," but there was not always the means of saying whether the person referred to was the one who came before the board. In the army there was room for men of lower class physique. There was no man able to make his living in civil life who could not find some employment in the army, but a man classified C 3 had no more chance of seeing the trenches than he would have if he remained in civilian life. In order to fill gaps caused by casualties the War Office had to get powers to approach men who had been in the service of the country. A good deal of public misapprehension existed as to the scope of these powers, but these were fully laid down in the Act. There had been organized opposition to re-examination. In some cases the men were not liable under the terms of the Review of Exceptions Act itself, or under the promise made in the House by the Under Secretary for War. It was true that notices had been sent to the dead; it was true also that men discharged and with the silver badge had been notified, but they had only to say they were ineligible and the matter dropped.

A member of the Committee asked General Geddes whether it was not a fact that medical boards, by marking

papers "R.R. two months" defeated the purposes of the Act, which said that no re-examination should take place under six months. The witness replied that if such were the case it would be so. Doctors could not be expected to be thoroughly cognizant of the Act, and no doubt they sometimes marked papers in ignorance. He doubted much if the recruiting officer would act in accordance with such markings. In reply to Sir Godfrey Baring, the witness acknowledged that recruiting sergeants had often exceeded, and sometimes ignored, instructions. He would personally honour a certificate given by a medical man who had attended a man for some time, but could place no credence on the word of a casual specialist called in at the last minute.

Sir Alfred Keogh, G.C.B.

The sitting of the Committee on July 3rd was occupied with the evidence of Sir Alfred Keogh. He explained the system of medical examination of recruits. When the war broke out every expert in the medical service had to be mobilized, and the system, under which medical inspectors of recruits were sent to centres at different times to see individual medical men so as to obtain a common standard, fell into abeyance. In November, 1914, the medical inspectors of recruits were restored, and by issuing instructions to every recruiting authority an endeavour made to check the disorder which undoubtedly existed. When Lord Derby suggested his group system of recruiting the opportunity arose of adopting a system of medical boards for examining recruits. A good deal must be allowed quite legitimately for negligence, and he had no doubt many men were passed who ought not to have been passed; but on the other hand, a great number of men were rejected who ought to have been passed under the category system. It was difficult to get medical practitioners to understand that a man who could do anything in civil life could do that thing in the army.

In answer to the Chairman, Sir Alfred said that if the president of a medical board disagreed with any member of the board as to the particular category in which a man should be placed he would express his dissent, and the general officer commanding the district would decide. On the question whether inquiries had been made into cases where rejected men had been found afterwards to be passed into B and C and sometimes into A classes, he said the differences might be due to the differences of opinion of the medical board; that, however, could not altogether explain the matter. Men who had been doing this work had become much more proficient. Whether that greater proficiency had led to more rejections or more acceptances he could not say. Invited by Mr. Pringle to account for a case in which it was said that the medical board had passed as fit 75 per cent. of the men who had previously been rejected, the witness could only attribute that to the increased efficiency of the board. No general instructions had been issued for lowering the standard. Occasionally there had been "round table" meetings of inspectors, but no record of the meetings had been kept. As a result of such meetings a letter would sometimes be sent to a board saying that there had been too many or too few rejections in a district, as the case might appear to be.

Mr. Nield called attention to an Army Council Order stating that no recruit who had at any time been under treatment for pulmonary tuberculosis should be accepted, and asked whether Sir Alfred would be surprised to know that a certain board always honoured that rule in the breach. Sir Alfred replied that he should certainly be surprised. Mr. Nield: Would you pass a man suffering from duodenal ulcer?—No. "Then," said Mr. Nield, "it would surprise you to know that such cases are being passed?" Sir Alfred Keogh agreed, and added that in the case of a man with duodenal ulcer coming before a board and evidence in the form of a certificate from his family practitioner being handed in, if any doubt existed as to the bona fides of the certificate, he would pass such a man with the idea of sending him into a military hospital for examination. Duodenal ulcer was most difficult to diagnose. Mr. Nield: What, pass him into the army and make him amenable to military law?—Yes, my idea being to get him into hospital. You cannot send a man into a military hospital unless he is in the army. Regarding reports as to the Gifford and Mill Hill boards, Sir Alfred, on a further question by Mr. Nield, said that if complaints were sent to him he would make recommendations to the Army Council, and might give instructions to his deputy to make inquiry as to the circumstances. If a board were found incompetent, action would be taken to bring about changes.

Colonel Galloway, C.B., A.M.S.

Colonel Galloway gave evidence on July 4th. He first gave an account of the constitution and working of the medical boards, mentioning that there are now 135 in England, Scotland, and Wales. The boards, as he found them when he entered upon his duties last December, might be said to have arisen in two or three ways. There were boards which evolved themselves from the old establishment of recruiting. In many cases the members were retired officers of the military services. Some were practically civilians, often having retired pretty early in life, and having identified themselves with the population around them. In other cases members were gentlemen who had long been out of practice. In a number of cases the boards had been chosen after consultation with the chairman of the Local Medical War Committee. Another sort of board was composed almost exclusively of officers, but in these instances it often happened that although all the members of the board were in khaki, they were Territorial or temporary officers and had civilian associations. Difficulties had been found in some areas in getting the accommodation required; private houses with a number of small rooms did not afford easy opportunity for consultations, and the enforced separation probably had something to do with complaints which were made. A medical board as a rule consisted of a president and four members. Frequently the president was a retired officer, but the number of presidents of this kind was becoming fewer as many of the older men could not stand the work. Their places were being taken in a number of cases by Territorial officers who had seen service at the front. Without reflection upon regulars, Colonel Galloway spoke of these doctors as exceeding suitable for the duty. He had tried the experiment of nominating two doctors who had no experience whatever of the army to undertake the presidency of board. In one instance the experiment was successful; but he did not think that this plan was advisable for general adoption. The duty undertaken by these doctors was purely patriotic and the rate of pay quite inadequate. The maximum rate for civilian doctors was £2 a day and only £1 was received for half a day's work. Colonel Galloway mentioned this in reference to the self-denying action of local practitioners who took turns often on alternate days or for parts of days while endeavouring to keep up their practices.

Colonel Galloway afterwards traced the formation of the special medical boards, which began with the establishment of an appeal medical board in London last September. Doctors of the very highest repute accepted this service. Cases began to be sent up in such number that this London board was nearly snowed under, and later in the year two other boards of a similar kind were created at Leeds and Edinburgh, and then a second board was set up in London. He next dealt with the method of examination adopted by medical boards generally. The first was a single medical examination by one member of the board, with such opinion as might be obtained from any other who might be a specialist; he then conferred with the president, and the two determined the classification of the man. The second method was the examination of the man by the full board, the members examining different parts and functions of the body in rotation. The president collated the information. Colonel Galloway was understood to indicate a preference for the latter method. But, speaking broadly, he said the difficulty of the medical profession in this matter of examination was that it had been asked by the War Office to perform an impossible task. In pre-war days they were asked to select fit men for the army; now they had also to take unfit men—for the lower categories. When the categories were limited to A, B, C, it was not so hard to make distinctions, but now the classes were further divided. In these circumstances he could not imagine two sets of boards agreeing continuously in their classification of the same men. They had not only to consider the present condition of a man, but also what it was likely to be in other circumstances—that is to say, what he could do. In regard to these matters, medical opinion had changed a good deal, and thus there was reason for variety. Moreover, it was necessary to remember, in noticing the differences of classification, various kinds of fraud—doping by recruits, the infection of sputa from other sources, and other frauds. Colonel Galloway acknowledged quite frankly that there had been numerous mistakes in diagnosis, but said he had been impressed by the general competence of the work of the boards. He attached great importance to certificates from a man's own medical attendant. Such statements of fact were valuable, but the witness did not attach the same importance to the certificates of specialists save in exceptional cases, his reason being that the board itself was

able to make its own examination, and therefore the opinion of a specialist upon one examination did not greatly weigh with them.

In reply to the Chairman, Colonel Galloway said that it was now his custom in making his inspections of medical boards through the country to walk in without any warning of his visit being given. The Chairman put it to the witness that he could hardly anticipate that faults which were charged against boards, such as haste and tearing up certificates, would be repeated in his presence. Asked if he had taken steps to have independent examination in a case of complaint, Colonel Galloway said that he did not do so at the beginning; he had advised that when opinions differed the man should be given the benefit of the doubt. In reply to a question as to whether medical boards examined as carefully in the case of re-examination as when a recruit came for the first time, the witness said that the re-examination, in view of the Exceptions Act, had been quite as careful, or even more careful, than formerly, owing to the difficulties encountered. Replying to Sir Godfrey Baring, Colonel Galloway denied that a president had the power to overrule other members of the board in a decision, but agreed that a certain latent power existed in a case of difference between the president and two members of the board. In answer to Colonel Grattan the witness said he had had occasion to make adverse reports, and that action had been taken by the War Office on these reports where necessary. In answer to another member of the committee, the witness added that he had taken notice of exhibitions of temper by members of the medical board even though they were under strain. He held, of course, that it was wrong for a president to classify without consultation, and he could not imagine that it was done. In reply to Mr. Pringle, he said he did not know of any instructions or understanding that in consequence of the change from open to trench warfare men of a lower standard could be classed "A." There had, however, in the nature of things, been a lowering of the standard. There had been a definite lowering in the eyesight standard.

Mr. Nield, K.C., and Mr. Sutton both put questions as to particular cases, and the witness intimated that he should be glad to have further particulars of these matters. Mr. Sutton, who was mainly concerned with allegations from Manchester, said he had already sent a mass of communications to the secretary. Colonel Galloway said he had seen a good deal of the working of the Manchester boards, and he considered that Mr. Sutton had been inaccurately informed when he said that the president had classified without consultation. Mr. Sutton retorted that Colonel Galloway could only speak of what took place when he was there. The witness took up readily a challenge as to the raising of the classification of recruits after they had been in training for a while. He maintained that it was thoroughly sound and right when, as frequently might happen, the condition of a man improved. Fresh air, training, or even the army kitchen might make a great difference.

THE Hon. Arthur Stanley, M.P., has been elected treasurer of St. Thomas's Hospital in succession to Mr. J. G. Wainwright. Mr. Stanley has been chairman since its formation of the joint committee of the British Red Cross and St. John Ambulance Association.

SILVER medals of the Royal Society of Arts have been awarded to Mr. F. A. Hocking, pharmacist to the London Hospital, for his paper on the war and our supply of drugs, and to Sir Arthur Pearson for his paper on the blind sufferers from the war and their future employment.

DR. V. H. RUTHERFORD has been appointed honorary secretary to the Wounded Allies Relief Committee in succession to Sir Lindsay Smith. Dr. Rutherford has already given valuable service in the organization of the committee's hospitals in France, Serbia, and Montenegro.

University College Hospital and the National Hospital for the Paralysed and Epileptic, Queen Square, London, have appointed a joint committee to manage a school of massage, etc., on behalf of the two hospitals. The school is situated in Queen Square, Bloomsbury, and has been named "The National Hospital and University College Hospital School of Massage and Electrical Treatment." The curriculum will include massage, remedial exercises, and medical electricity, and it is expected that the first term will commence early in October. There is a hostel in connexion with the school for the use of students who desire it.

THE MESOPOTAMIA COMMISSION.

[SECOND NOTICE.]

THE fact that the discussion of the Mesopotamia report in the public press and in conversation has turned so largely on the medical breakdown at a certain stage in the operations, and the further fact that, as Sir Victor Horsley anticipated, an attempt has been made in the interests of politicians to make a scapegoat of the medical services, render it necessary to go into some detail as to the origin of the military operations and their gradual extension.

The Parliamentary Commission, in speaking of Sir William Babbie's omissions in regard to the Mesopotamia campaign, says that they are all the more remarkable because of his promptitude and firmness in pressing war

provisions on the Indian Government necessary for the overseas expeditions generally, and they note that on the outbreak of war he urged the formation of a fleet of ocean hospital ships, the construction of hospital trains, and the extension of the Army Beaver Corps, a course already sanctioned before the war, although opportunity had not been found to carry it out. The Commission continues: "It may be that, as we have noticed in other phases of the expedition, Mesopotamia was in medical matters also regarded as a 'small side show,' and did not for that reason receive proper attention to its special and unique requirements." Here it is to be observed that at first there was good

reason for looking upon Mesopotamia as a "side show." India at the outbreak of hostilities was called upon to furnish three other expeditionary forces—A, to France and Egypt; B, a defensive expedition to East Africa; and C, an offensive expedition to East Africa. The position and strengths of these expeditions were settled by the end of September, 1914—that is to say, before the Mesopotamia expedition known as Force D was decided upon. India also had to repulse seven serious attacks on the north-west frontier between November 29th, 1914, and September 5th, 1915, and to deal with unrest in the Punjab early in 1915, and the German conspiracy to organize rebellion in Bengal at Christmas, 1915.

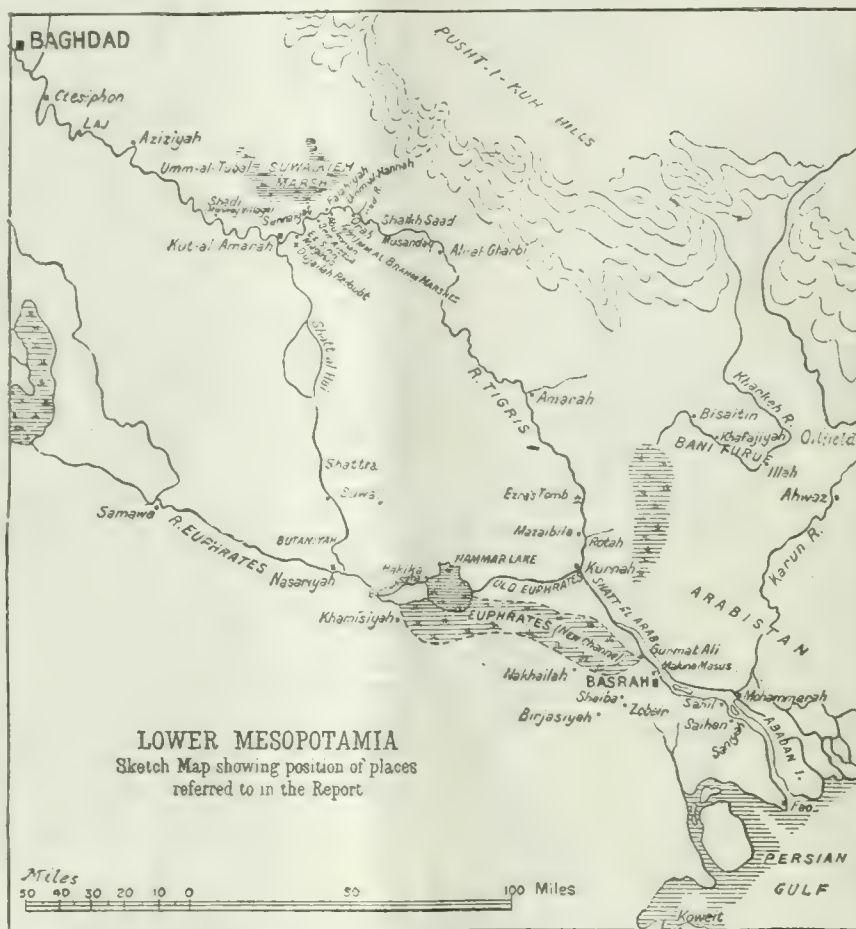
Mesopotamia, though etymologically it may be limited to the country between the Euphrates and the Tigris, really includes the country around the lower courses of these rivers for about five hundred miles, and also the whole of the course of the river Karun. The increasing German

influence in Turkey, overtly shown by the energy with which the Constantinople-Baghdad railway was pushed on, which, when complete, would have given direct railway communication between Berlin and Baghdad, was recognized as a menace to the British empire, and an agreement had been reached with Russia to divide Persia into spheres of interest, Southern Persia with the Persian Gulf coming under British influence. Great Britain had patrolled the Gulf for many years, and recently the Anglo-Persian Oil Company, with the support of the British Government, had established a pipe line from the oil fields among the foot-hills of the Pusht-i-Kuh along the left bank of the Karun river to Mohammerah, a port below Basra which could be reached by ocean-going steamers. The Euphrates and Tigris meet at Kurna; below that the waterway is

known as the Shatt-al-Arab, and the Karun debouches into the Shatt-al-Arab at Mohammerah, just north of the island of Abadan. The greater part of the country from the Gulf to near Kut-el-Amara is included in the vilayet of Basra, a town of some 80,000 inhabitants, at the head of the waterway for ocean-going ships. The original plan was to protect the oil installation at Abadan and the oil pipe line on the Karun river, but war with Turkey had been declared on November 5th, 1914, and General W. C. Barratt, who arrived in Mesopotamia on November 14th to command the expedition, was instructed by the Indian Government to go on to Basra if he con-

sidered his force strong enough. This he did, occupying the town on November 23rd, 1914, the Turkish forces retiring to Kurna, at the junction of the Tigris and Euphrates. The India Office in London thereupon advised an advance to Kurna, which town was occupied on December 9th. At that time the force consisted of one division (6th) with the equipment, including medical equipment, for a frontier expedition.

A threat on the oil pipe by Arabs reinforced by Turks—a threat which was carried out—induced the Government of India, under pressure from Whitehall, to send out reinforcements which eventually formed another division (the 12th), and the whole expedition was now reorganized as an army corps under General Nixon, who landed at Basra on April 9th, 1915. The Home Government was mainly responsible for the expansion of the operations and the increase of the force, the Indian Government for its equipment, and also for the instructions given to General



Distances by River: Sea to Basra 70 miles; Basra to Kurna 50, Kurna to Amara 90, Amara to Kut 150, Kut to Baghdad 212—Basra to Baghdad 502 miles; Kurna to Nasariyeh 68 miles. The channel from Basra to Kurna has a depth of about 7½ ft. of water in the dry season, but there is an extremely difficult piece of navigation in the narrows for 28 miles above Ezra's tomb. From Kurna to Amara the depth is about 4½ ft. in the dry season. From Amara to Kut navigation is easier, but from Kut to Baghdad the river is extremely tortuous, and not more than 3½ ft. of water can be relied on.

Nixon. The position at the beginning of April, 1915, was that the expeditionary force had its sea base at Basra, and its first line at Kurna, fifty miles up the river.

The Commission states that, though the force was doubled, the medical equipment sent to the last two brigades was not up to the authorized scale, and practically two divisions had medical equipment for only one, and that upon the Indian and not the British scale. Neither was there made such an addition to the river steamer transport as to bring its proportions up to the requirements of the increased forces. "These deficiencies," the Commission states, "do not seem to have had sufficient recognition by the Government of India."

General Nixon was instructed by the Commander-in-Chief in India not only to prepare a plan for the effective occupation of the Basra vilayet, but also a plan for a subsequent advance on Baghdad; he was instructed also to report on the need for a light railway, on mechanical transport, and on the adequacy of the river transport. These instructions were not communicated to the Home Government, and the Viceroy does not remember to have seen them; but at the end of May the Home Government accepted the Viceroy's recommendation that General Nixon should advance to Amara, 90 miles beyond Kurna. Then took place what was called "Townshend's Regatta," when, with a small force in boats of light draught converted into light armoured gunboats, the enemy was pursued, and, in spite of the sweltering heat and difficulties of navigation, driven from position to position, until on June 2nd General Townshend, with twenty-two sailors and soldiers, achieved the surrender of the garrison of Amara, consisting of 700 Turks.

Next, on July 25th, a successful expedition was made to Nasariyeh, a town 68 miles west of Kurna, a few miles above the spot where the channel called the Shatt-al-Hai, which communicates with the Tigris at Kut, opens into the Euphrates, after a course of over a hundred miles. Immediately afterwards, at the instance of the Viceroy and the Secretary of State, the Home Government agreed that the occupation of Kut itself had become a strategic necessity. The move northward began early in September, and Kut was entered by the 6th Division under General Townshend, after severe fighting, on September 29th, 1915.

The military operations of the previous three months had been extraordinarily successful, but they had been obtained after much hard fighting, and from the time the expedition moved above Kurna the river transport had been either insufficient or barely sufficient for its wants, and could not sustain additional pressure, yet the provision of the type of steamer and barge adapted to the Tigris had been delayed, and railway schemes had either been put on one side or not pressed by the Government of India. The chief of General Nixon's staff on July 10th forwarded a memorandum to the Government of India in which he enlarged on the risk of breakdown, and stated that the formation of a properly equipped river fleet was the special and most important need of the time; he, however, appears to have made no reference to the need for hospital steamers. Although it was known that it would have taken from eight to ten months to build river transport steamers and a further period to get them to Basra, so that under no circumstances could they have been available in Mesopotamia until towards the middle of 1916, the Indian Government only gave the order for them after a lengthy correspondence.

In July, 1915, the medical equipment was not up to its proper strength, even according to the low scale of Indian regulations, and the wounded and sick from the actions on the Karun river, at Nasariyeh and at Kut had been put to considerable discomfort through lack of ambulance transport, stationary hospital accommodation, and river hospital steamers, while the medical personnel was barely sufficient. All along, however, even in October, 1914, the Indian Government had contemplated an advance to Baghdad. As already stated, Sir Beauchamp Duff instructed General Nixon to prepare a plan for the subsequent advance on Baghdad; after the taking of Kut the proposal was much canvassed between India, Mesopotamia, and Whitehall. Both Whitehall and Simla proceeded on the assumption that Baghdad could be reached; the question with them was whether it could be held with the force then available against

expected reinforcements of the enemy; the soldiers on the spot wavered in their opinion. In October the War Cabinet at home was telegraphing to the Viceroy urging the great importance of the capture of Baghdad if it could subsequently be held. The War Office undertook to give two Indian divisions from France, but nothing more; in view of the "great need of striking success in the East" the advance to Baghdad was not only approved, but urged by the India Office at home. An extraordinary thing, however, is that though on October 21st Mr. Chamberlain in a private telegram warned Lord Hardinge of a possible concentration of 60,000 Turks in Baghdad in January, 1916, this information was not transmitted to General Nixon. The task of going on to Baghdad, if that move was to be decided on, would fall on General Townshend and the Sixth Division, which had already suffered severely from previous fighting and from sickness, so that British battalions were reduced to half their strength. General Townshend, an officer not wanting in enterprise, was reluctant to advance when he discovered that the enemy in front of him was reorganized; his reluctance was due partly to his insufficient and tired force, partly to the inadequacy of his transport, which had already failed him, and partly to the great length of his line of communications.

Nevertheless, some time early in November it was decided to advance without waiting for reinforcements, and Townshend concentrated a force of 11,000 effectives on the left bank of the Tigris at Laj, about nine miles below Ctesiphon. Although the Turkish forces at Ctesiphon consisted of 11,000 to 13,000 men in a strong line of trenches, the head quarters and administrative staff estimated probable casualties at 500 severely wounded; two river steamers—the *Mosul* and the *Jubbar*—were put on one side to be temporarily fitted up by Surgeon-General Hathaway for the reception of wounded, the arrangement being that the more seriously wounded were to be moved down to Kut in these vessels and the more lightly wounded taken on to Baghdad. The attack on the Turkish lines at Ctesiphon on November 22nd was partly successful. The next day (November 23rd) was spent in reorganizing positions captured and collecting the wounded, who on the two following days (November 24th and 25th) were evacuated to the river side at Laj. The casualties numbered 690 killed and 3,800 wounded. The enemy had been largely reinforced, and Townshend had to withdraw his force to Laj on November 25th, and then by stages to Kut, which he reached on December 3rd, 1915; the investment of Kut by the Turks began on December 7th, 1915.

The Parliamentary Commission adopts the opinion of the Vincent-Bingley Commission that the medical establishment at Ctesiphon was inadequate and the arrangements for collecting the wounded on the battlefield and accommodating them pending the evacuation of the river bank far from satisfactory. The last of the wounded were not got down to Laj until November 25th, and in the meantime many suffered from exposure, want of food, and inadequate attention, due to shortage of medical personnel. Save for two motor ambulances, no proper ambulance land transport was provided, and ordinary transport carts had to be used. In spite of this, however, the Parliamentary Commission recognizes that the evacuation of the wounded from Ctesiphon to Kut was a remarkable military achievement, carried out during a hazardous retreat against overwhelming odds, and with lines of communication threatened and at times cut by marauding Arabs.

It is reasonable, on the whole, to conclude that if there had been a sufficient number of hospital steamers at Laj the sufferings of the sick and wounded from that point downwards, though considerable, would have been, perhaps, no greater than are inevitable after an unsuccessful military operation. The two prepared steamers, however, could only accommodate a small proportion of the wounded; the remainder had to be put in any craft available, and so hurriedly that when vessels which had carried up animals were utilized there was no time to clear them of their accumulation of filth and dung. Surgeon-General Hathaway admitted to the Parliamentary Commission that the arrangements made "were absolutely inadequate, and that the wounded suffered intolerable discomfort," and Sir John Nixon agreed. Of the actual dispositions at Ctesiphon which were made by Colonel Hehir, the Parliamentary Commission expresses

the opinion "that having regard to the inadequate means at his disposal, we do not consider that his dispositions were open to serious criticism," wherein they differ from the Vincent-Bingley Commission. The Parliamentary Commission, however, goes on to express the view that Colonel Hehir should have taken more vigorous steps to report the shortages of medical personnel and equipment before both the battle of Kut and the battle of Ctesiphon.

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN J. E. BRYDON, R.A.M.C.(T.F.).

Captain John Earnsleugh Brydon, R.A.M.C.(T.F.), died of gas poisoning on June 27th, aged 31. He was the fourth son of Mr. John Brydon, of Millburn, Darlington, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1908. After filling the posts of house-surgeon at the Bristol Children's Hospital and at Darlington Hospital he went into practice at Chagford, Devonshire. He took a commission in the Northumbrian Divisional Ammunition Column, Royal Field Artillery (T.F.), as lieutenant and medical officer on January 3rd, 1915, and was promoted to captain a year later. He was attached to the Yorkshire Regiment when killed.

CAPTAIN M. GREER, R.A.M.C.(T.F.).

Captain Morrice Greer, R.A.M.C.(T.F.), was reported as killed in action in the casualty list published on June 29th. He was educated at Liverpool University, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1907. After filling the posts of house-surgeon of Leeds Public Dispensary, of assistant surgeon of Liverpool Dispensary, and of senior house-surgeon of the Liverpool Stanley Hospital, he went into practice at Corris, Merionethshire, where he was medical officer and public vaccinator of the Tallylin district of Dolgelly Union, certifying factory surgeon, and medical officer of the Post Office. He joined the 7th (Montgomery and Merionethshire) Territorial Battalion of the Royal Welsh Fusiliers as medical officer, with the rank of lieutenant, on July 21st, 1913, and had since been promoted to captain. He was attached to that regiment when killed.

CAPTAIN S. POOL, M.C., R.A.M.C.

Captain Samuel Pool, M.C., R.A.M.C., was reported as killed in action in the casualty list published on June 27th. He was educated at Liverpool University, where he graduated M.B. and Ch.B. in 1916, filling the posts of obstetric assistant at the Liverpool Maternity Hospital and house-surgeon of the Liverpool Royal Infirmary. He took a temporary commission as lieutenant in the R.A.M.C. in April, 1916, was promoted to captain on completion of a year's service, and was attached to the Leicestershire Regiment when killed. He received the Military Cross on November 27th, 1916.

Died on Service.

CAPTAIN A. L. M. CHURCHILL, R.A.M.C.(T.F.).

Captain Arthur Lindsay Maury Churchill, R.A.M.C.(T.F.), died on active service on June 24th. He was the son of the late J. F. Churchill, Esq., of the Department of Public Works, Ceylon, and was educated at Westminster Hospital, taking the diplomas of L.S.A. in 1895 and the L.M.S.S.A. in 1907. After serving as assistant medical officer at Wonford Hospital, and as pathologist and assistant medical officer of the County Asylum, Lancaster, he went into practice at Mervagissey, in Cornwall. He took a commission as lieutenant and medical officer in the 1st Hampshire (Southampton) Battalion of Royal Field Artillery (T.F.) on December 17th, 1914, and was promoted to captain on completion of a year's service. He was attached to the London Regiment at the time of his death.

CAPTAIN F. H. KNAGGS, R.A.M.C.

Captain Francis Henry Knaggs, R.A.M.C., died at Oak House, Huddersfield, on June 24th, aged 56. He was educated at Guy's Hospital, and took the diplomas of

M.R.C.S. in 1885, and the L.R.C.P.Lond. in 1887. After filling the posts of resident obstetrician at Guy's, clinical assistant to the ophthalmic department of Leeds Infirmary, and house-surgeon of Gloucester Infirmary, he went into practice at Huddersfield, till he took a temporary commission in the R.A.M.C. He was ophthalmic and aural surgeon to the Huddersfield Infirmary, and ex-secretary of the Huddersfield Medical Society.

CAPTAIN F. C. H. PIGGOTT, R.A.M.C.

Captain Frederick Cecil Holman Piggott, R.A.M.C., died suddenly at Sutton Veny on June 26th, aged 57. He was educated at Emmanuel College, Cambridge, where he held a foundation scholarship from 1878 to 1882, and graduated B.A., with second class honours, in the Natural Science Tripos in 1882, M.B. and B.C. in 1886, and M.D. in 1890, and acted for some time as demonstrator to the professor of physiology, and at St. Thomas's Hospital, taking the diplomas of M.R.C.S. and L.S.A. in 1884. He subsequently served as surgeon to the National Aid Society in the Sudan campaign of 1885, and for some time acted as British consul in the Eastern Sudan in that year, and received the Egyptian medal, with a clasp for Suakin, and the Khedive's bronze star. After acting as clinical assistant at the Hospital for Diseases of the Skin at Blackfriars he went into practice at Teignmouth, in Devonshire, where he was honorary consulting physician to the Teignmouth Hospital, medical officer of health of Teignmouth port and urban district, medical superintendent of Bitton Isolation Hospital, honorary medical referee for the Royal National Hospital for Consumption, Ventnor, and medical officer of the Post Office. He took a temporary commission as lieutenant in the R.A.M.C. in the latter half of 1915, and was promoted to captain on completion of a year's service.

Wounded.

Lieut.-Colonel R. H. L. Cordner, R.A.M.C.

Captain J. L. Baskin, R.A.M.C.(T.F.).

Captain C. H. Binney, R.A.M.C. (temporary).

Captain L. Campbell, R.A.M.C. (temporary).

Captain H. D. Clementi Smith, R.A.M.C.(T.F.).

Captain W. V. Corbett, R.A.M.C.

Captain G. F. Fawn, R.A.M.C. (temporary).

Captain A. Juett, Australian A.M.C.

Captain L. H. Skene, R.A.M.C. (temporary).

Captain A. J. Smith, R.A.M.C. (temporary).

Captain A. E. Sutton, M.C., R.A.M.C. (temporary).

Lieutenant V. T. C. Bent, R.A.M.C. (temporary).

Lieutenant J. S. Clark, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Barrett, C. R., Second Lieutenant Royal Field Artillery, second son of Dr. W. P. Barrett, of Folkestone, died on June 25th of wounds received the previous day, aged 26.

Compton, William Horace Gordon, Second Lieutenant Royal Field Artillery, eldest son of Captain W. H. Compton, R.A.M.C., of Brighton, killed June 17th. He was educated at Banister Court School, Southampton, enlisted in February, 1915, in the 3rd Home Counties (Cinque Ports) Brigade of R.F.A., was transferred to the Honourable Artillery Company, and got his commission in July, 1916.

Davy, Francis Lempriere, Captain, serving with the 47th Battalion, Australian Imperial Forces, killed on June 7th by the bursting of a high explosive shell while leading his company in an attack. He was the son of Lieut.-Colonel Henry Davy, C.B., of Exeter, consulting physician to the Southern Command. The commanding officer of the battalion writes that he died doing his duty like the soldier and the man he always was, and his loss is a heavy blow to the battalion he served so faithfully and well. His bravery on this and on many previous occasions was an outstanding feature. His loss is deeply deplored by officers and men. He had been recommended for his majority before going into action.

Goodall, Clarence William, Second Lieutenant 2nd South Staffordshire Regiment, aged 20, reported missing after the attack on Beaumont Hamel, November 13th, 1916, now officially reported killed, was attached at the time to the King's Liverpool Regiment, and was known to have been hit while leading his platoon against the German trenches. He was the second son of Dr. E. W. Goodall, medical superintendent, North-Western Hospital, Metropolitan Asylums Board, and was educated at Arnold House, Llandulas, and University College School, enlisted in the A.S.C. in January, 1915, and served in it till he went to the Military College, Sandhurst, in September, 1915. He was gazetted second lieutenant in January, 1916, and went to France with his regiment in July, 1916.

Gulland, Alexander Falkland, Captain the Buffs (East Kent Regiment), only surviving son of Surgeon-General Gulland, of Cheltenham, died of wounds on June 16th, aged 26. He got his commission on November 24th, 1914.

Lewis, Vincent James, Royal Field Artillery, eldest son of Dr. Lewis, of Twickenham, died June 20th, of wounds received on June 16th.

Menzies, William Alan, Second Lieutenant Royal Garrison Artillery, only son of Dr. J. A. Menzies, of Folkestone, killed June 14th, aged 19. He was born at Ootacamund, in India, in 1897, and educated at Rugby. He enlisted in the London Scottish in October, 1914, got his commission in January, 1916, and went to the front last Christmas.

Spanton, John Woodfield, Second Lieutenant Rifle Brigade, third and only surviving son of Mr. W. D. Spanton, F.R.C.S., of Hastings, formerly of Hanley, Staffordshire, died of wounds on June 13th. He was educated at Hereford School and at Cambridge, and was in practice as a solicitor at Leicester till the war began, when he enlisted in the Public Schools Battalion. He was wounded on April 26th.

Taylor, Philip Churton, Captain London Regiment, fourth son of the late Dr. Herbert Taylor of Kennington, reported missing on September 15th, 1916, now presumed killed on that date. He was educated at Aldenham School, got a commission on August 29th, 1914, went to Malta in September, and to France in January, 1915. He was wounded in February, 1915, became lieutenant in October, 1915, returned to the front in January, 1916, and was promoted to captain in June, 1916.

Underwood, George Milne, Second Lieutenant Royal Flying Corps, younger son of the late Dr. Underwood, of Kiukiang, China, previously reported missing on March 6th, 1917, and now as killed on that date, aged 19. He was educated at Merchiston School, and had entered Edinburgh University as a medical student. He joined the Royal Flying Corps last August.

Wall, Richard Ralph Baldwin, Major Royal Field Artillery, sixth son of the late Surgeon-General Thomas Frederick Wall, killed on June 8th. He was educated at Hermitage School, Bath, joined the army in 1899, and served in the Boer war, gaining the Queen's Medal with three clasps. He went out to France with the original expeditionary force.

Watson, P. G., Private, Royal Berkshire Regiment, elder son of Dr. S. G. Watson, of Southsea, and formerly of Brighton, killed in action.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

Captain R. H. M. S. Saundby, of the Royal Warwickshire Regiment and Royal Flying Corps, who has received the Military Cross in recognition of conspicuous gallantry in attacking and destroying an enemy airship, is the second son of Professor Robert Saundby of Birmingham.

England and Wales.

THE MEDICAL RE-EXAMINATIONS IN MANCHESTER AND SALFORD.

As the agitation about the medical re-examinations under the Military Service (Review of Exceptions) Act largely originated in Manchester and Salford, it may be of use to explain the procedure generally adopted there so far as the medical boards are concerned. The boards consisted, we believe, without exception of four medical men, the president being always chosen by the military authorities, and being either a colonel, major, or captain. In the choice of the other three members the Local Medical War Committees were consulted and asked to provide doctors; and as the committees found it impossible to obtain a sufficient number who could devote the whole day to the work a kind of rota was formed, some doctors undertaking to act every morning or every afternoon, while others could only attend one or two sessions a week; comparatively few gave their whole time to the work. But in practically every case the board consisted of four doctors who were expected strictly to keep their appointment or find a substitute, and only through some unavoidable circumstance was any board for a single sitting less than four in number. It is perhaps necessary to note that the medical boards had nothing to do with selecting what men should be medically examined. Complaints were frequently heard that men with perhaps only one arm or one leg, or cripples from birth, were summoned to be medically examined after, as it was asserted in some cases, ten or twelve previous rejections. So far as there may be any blame for causing such needless trouble the recruiting authorities are entirely responsible, as the medical boards had simply to examine all who were presented to them.

In most of the boards, by arrangement between the

doctors themselves, one of the three civilian doctors occupied himself chiefly with the recording of measurements and noting any defects of sight or hearing, dictating what he found to a clerk, who entered it on the medical history sheet. The recruit then passed to the second doctor, who noted identification marks, vaccination marks, general condition, and signs of any disease or cause of incapacity. Next the recruit went to the third doctor, who devoted his attention specially to the heart and lungs. In every board the three doctors were in close contiguity and frequently consulted together on doubtful points. The recruit then went before the president of the board, who had thus before him in writing all the essential facts found by the three doctors. It was definitely understood that the president alone had the right to determine the classification of the recruit, and was under no compulsion to consult the three civilian doctors, but on some boards the president distinctly requested the three doctors to write in pencil on the margin of the medical form what class they suggested for each person, and if the president disagreed he consulted with them, when there was a full exchange of opinions, and it was by no means rare for the president to defer to them. In other boards the president rather insisted on his right to decide the classification alone and less frequently consulted with the other doctors, simply reading the notes which they had dictated, doing any further examination which he thought necessary and at once deciding the class. Only in cases where the president decided on absolute rejection was it necessary for him to have the signature of the other doctors.

Complaints were made of the way in which recruits were treated, but it is to be remembered as a fact to be deplored, that 99 out of every 100 of the men were most anxious to obtain rejection, and in some cases resorted to every imaginable sort of trick to make themselves out as unfit for service. Without the fullest investigation little credit need be given to reports of rough treatment by examining doctors, though a degree of military brusqueness not understood might be shown by some of the presidents. When tricks to deceive the doctors were so common and often so easily exposed, to the evident chagrin of the trickster, it is hardly to be wondered at if at times some impatience were shown towards obvious malingering. Some of the men presented three or four private medical certificates, often of ancient date, detailing various diseases, some the merest trifles, elaborately expressed in medical terms, and some absolutely non-existent, and it is greatly to be regretted that a few doctors obtained a notoriety for the easy way in which they gave certificates exaggerating trifling ailments into disabilities. One will become almost classical, as it solemnly stated that the recipient was suffering from "paralysis of all the glands of the body." The cases certified as suffering from V.D.H. were very numerous, though in not a small proportion none of the four examining doctors of the board could find any trace of any form of heart disease or weakness. On the whole, however, certificates from civilian doctors were most helpful to the boards, and every attention was paid to them.

It has been repeatedly stated that the boards had instructions from the War Office what men to accept and what to reject, but a medical man who served on four boards informs us that he never saw or heard of any such instructions unless it be possible thus to describe a type-written document referring to various diseases, and stating how they might reasonably be expected to affect classification. This was of special value to presidents holding temporary medical commissions who had never seen active service abroad, but in no case did this document interfere with the unfettered discretion of the president to classify as he thought fit. It is of course impossible to assert categorically that no mistakes were made and no hardship entailed, but a close acquaintance with the work of the boards in Manchester and Salford satisfies our correspondent that except in one respect it would be difficult to imagine a system fairer all round. The one exception is that the presidents of boards should be instructed in every case to consult with the three civilian doctors and to defer to their unanimous opinion. It ought not to be possible for any president who may be so inclined to place a recruit in a high class when the other three doctors unanimously think he should be rejected or relegated to the reserve.

HOSPITALS AND THE CALLING UP OF DOCTORS.

Whilst President of the Local Government Board, Lord Rhondda received a letter from the President of Guy's Hospital referring to the effect on hospitals of the calling up of medical men. The governors of Guy's Hospital particularly referred to the difficulty in which hospitals with medical schools would be placed unless steps were taken to prevent further depletion of their staffs. Owing to the existing diminution in the personnel of hospitals and the small number of students available for rendering assistance, some specialists of military age were now carrying on almost single-handed the entire work of very important departments, which would have to be closed if these specialists were absorbed into the army. Lord Rhondda, in his reply, expressed the hope that the provision already made under the Military Service Act, 1916, would prevent any undue hardship being caused to these valuable institutions. He pointed out that the Committee of Reference of the Royal Colleges of Physicians and Surgeons had been set up for the special purpose of dealing with members of hospital staffs. After referring to Lord Derby's agreement not to grant commissions to doctors for the present except on the recommendation of the Central Medical War Committee, Lord Rhondda concluded: "Perhaps I may add that while I fully realize the patriotism exhibited by the medical and surgical staffs of the hospitals in their readiness to undertake military duties, I earnestly hope that specialists and others who are responsible for essential departments of the large hospitals—for example, the treatment of children's diseases—will carefully consider the claims of their hospitals and the importance of the work they are doing for the country. The maintenance of the health of the population at home is a matter of vital necessity."

WAR BREAD.

Dr. J. Campbell, at the request of the Metropolitan Committee for War Savings, has drawn up a preliminary report on "G. R." flour and war bread, with special reference to complaints as to palatability and digestibility. G. R. flour is wheaten flour (milled to 81 per cent.) mixed with products of such cereals as maize, barley, oatmeal, rye, rice, and bean flour. The mixture is usually made before milling. The non-wheaten cereals must be present between the limits of 20 per cent. and 50 per cent., but not more than 5 per cent. of beans is allowed. The wheaten flour present in the mixture contains much more of the berry than white flour. Owing to the presence of ferments acting on the gluten, G. R. flour does not keep so well as white flour, and is not so easy to bake, and the resulting loaf is of a close, heavy texture, with a comparatively high percentage of cellulose and of fibre. As the composition of G. R. flour may vary within such wide limits, it is easy to understand why war bread from different bakers shows marked differences in composition, palatability, and digestibility. Methods of baking have to be modified for the production of good war bread. Dr. Campbell is satisfied that many people, especially elderly persons, find war bread difficult of digestion. He considers it unsuitable food for the majority of old people, but for the young, and for the healthy adult, properly made war bread is nutritious, and if thoroughly masticated there is no undue strain on the digestive system. Among various improvements which he suggests, Dr. Campbell considers that an effort should be made to obtain greater uniformity of quality and properties in G. R. flour.

Scotland.

THE Carnegie trustees have promised a grant of £5,000 in aid of the advanced technical and higher education provided by the Royal Blind Asylum, Edinburgh, and made a further offer of £1 for every £1 (up to a limit of £5,000) raised otherwise. The trustees have also given a sum of £1,000 to defray the cost of stereotyping Braille plates. It has been resolved to increase the rate of board to children in the school from £20 to £30, and an appeal is made for subscriptions to meet maintenance expenses.

RECENT CASES OF SCURVY IN GLASGOW.

In a report submitted to the Glasgow Health Committee on June 27th the M.O.H., Dr. A. K. Chalmers, states that

during June a death from scurvy was registered as occurring in one of the Poor Law hospitals in Glasgow. Under normal conditions three or four cases of scurvy are admitted annually to each of the Poor Law hospitals (Barnhill and Merryflatts). Since the middle of February, however, 50 cases have been admitted, distributed thus:

February 15th to March 14th	...	...	2 cases.
March 15th to April 14th	...	...	7 "
April 15th to May 14th	...	...	15 "
May 15th to June 14th	...	...	22 "
Since June 15th	...	...	4 "
Total	...	...	50 cases.

The experience of these hospitals is that under ordinary circumstances in Glasgow the disease is confined to males, and not a single case in a female has been recognized in the present outbreak. The disease appears to be occurring only in men who are dwellers in model lodging-houses, or who live alone—a fact which suggests indifferent attention to the selection and preparation of meals. The Medical Superintendent of Barnhill is of opinion that the origin lies in the recent shortage of potatoes, this being the only form of fresh vegetable food which this class of patients is accustomed to prepare. From Dr. Liston it was learnt that the history of the Merryflatts patients conforms with this in more than half the cases, although in others it was not possible to ascertain that any alteration in diet had occurred over a prolonged period before the onset of symptoms. Apart from the lodging-house population occasional cases would appear also to be occurring among the general community, and the superintendents of the Royal, Western and Victoria Infirmaries state that several cases, seven in all, have been admitted for treatment since April, one of them from a rural district near Glasgow. Deaths from scurvy are now exceedingly infrequent in Great Britain. In Scotland in 1912, 4 were registered; in 1913, 3; and in 1915, 2; while in Glasgow during these years only one is known to have occurred.

Dr. Chalmers points out that the facts have a practical importance for the public at the present time. Potatoes have long been known to possess antiscorbutic properties. Their richness in starch has probably led to the too easy assumption that during the present scarcity an equivalent may readily be obtained from rice or other cereal also rich in starch. It was found, for example, that the Poor Law patients replaced the potato by bread, but neither bread nor rice have the antiscorbutic properties of the potato. These can most readily be obtained from fresh vegetables. All forms of fresh vegetables are valuable for the purpose, but cabbage has an established reputation for its antiscorbutic properties. Fresh vegetables, however, in some form or another are essential if the risk of scurvy is to be avoided, and where the ordinary forms are scarce a readily obtainable substitute, especially at the present time, may be found in the plentiful supply of young turnip plants which are being uprooted in singling, and which can readily be cooked much as spinach is.

Correspondence.

THE LATE DR. HACKMAN OF PORTSMOUTH.

SIR,—Will you allow us, on behalf of the Portsmouth Division of the Association, to bring before the notice of your readers the circumstances of the death of Dr. L. K. H. Hackman, late honorary secretary of the Division?

From the outbreak of hostilities to the time of his illness (epidemic cerebro-spinal meningitis) he was a civil medical practitioner doing duty at the Reception Hospital, at Cambridge Barracks, and attending the wives and families of soldiers resident in the town. There is little doubt that he contracted the disease in the discharge of his military duties.

Dr. Hackman was a devoted Association man; he did splendid service in the fight over the National Insurance Act, and as secretary of the Local Medical War Committee he was instrumental in recruiting about thirty men for the R.A.M.C.

The Executive of the Division decided to start a subscription for a memorial, the proceeds of which are to be devoted to placing his sons out in the world and eking out the slender provision he had made for his wife.

At the beginning of the war he had nine sons; one was killed at Neuve Chapelle, one was wounded at Vimy Ridge (the latter and three others are still serving in the ranks). A younger son has just passed out of Sandhurst and joined the Royal Flying Corps. An older son is a clergyman in Canada. One is an invalid, working, without wages, on a farm with a view to his restoration to health, and the youngest boy is just leaving school and entering as a probationer, without present salary, in a bank. Owing to the size of his family Dr. Hackman was able to save very little, and on account of the shortage of doctors Mrs. Hackman has been unable to dispose of his private practice except his panel which was not a large one.

The amount raised by the Division and Branch has reached nearly £530, but we do not expect to realize much more, and we venture to appeal to the profession for additional help.

Subscriptions may be sent to Mr. James Green (Brandon House, Mile End, Portsmouth), who is acting as secretary and treasurer to the fund.—We remain, etc.,

L. COLE-BAKER,
Chairman, Local Medical War Committee.
J. H. FREDERICK WAY,
Hon. Secretary, Local Medical War Committee.
T. A. MULCAHY,
Chairman, Portsmouth Division, B.M.A.
JAMES GREEN,
Honorary Secretary, Southern Branch.

Portsmouth, June 28th.

DYSENTERY AT GALLIPOLI.

SIR,—In a leading article of your issue of June 2nd, 1917, entitled "Dysentery at Gallipoli," occur certain statements and inferences, with regard to the relative incidence of amoebic and bacillary dysentery in that area, on which we would desire briefly to comment.

The acute dysentery of war has, as you state, been usually regarded as predominantly bacillary, and from our experience of, and observations on, this disease during the present war in all the Eastern fronts, including Mesopotamia, we can state with some assurance that the collected data from various laboratories in the East will, when published, indicate an overwhelming preponderance of the bacillary form, constituting probably 80 per cent. or more of all the acute dysenteries. With the ever-increasing laboratory organizations in the Eastern fronts and the introduction of protozoological experts, the extent of the participation of pathogenic entamoebae in the causation of acute dysentery has been very precisely defined, and there is no evidence that they have been responsible for more than 20 to 25 per cent. of the acute dysenteries in any area, and generally for much less. Nor, in our opinion, did the Gallipoli dysentery form any exception to the rule.

While granting that the worker at home is at a disadvantage from the fact that convalescents mainly come under his purview, the fact remains that expert bacteriologists and protozoologists in London found no evidence of a preponderance of amoebic infections from that area. Only about 10 to 15 per cent. of these convalescents were found to be infected with amoebae, and this figure includes probably a large proportion who were merely carriers and had never exhibited the classical symptoms of dysentery. Had the cases examined in London with negative results been originally infected with amoebae, then the emetine as given at Gallipoli must have had a much higher sterilizing effect on amoebae than it has since proved to have. The results obtained at home from cultural and serological tests indicated, indeed, that the dysentery bacilli had been responsible for at least 50 per cent. and perhaps more of the dysentery infections.

Archibald, Hadfield, Logan, and Campbell concluded from observations on the spot that the amoebic form was the predominant, if not the only form, during the period July to October, 1915, and that subsequently the type changed completely to bacillary. Yet the convalescents returning to England during the first period did not show a higher percentage of *E. histolytica* infections than those returning later from Egypt, where amoebic infections were undoubtedly very much fewer than bacillary.

The discordant opinion with regard to the nature of the Gallipoli dysentery, especially during the period May to October, 1915, finds a parallel in our experience in Mesopotamia.

During our stay there special inquiry in various parts of the area showed that amoebic dysentery formed only 15 per cent. of all the true dysenteries. Yet the examination of dysentery convalescents in India produced the impression that the amoebic was the predominant type in Mesopotamia, and it is just possible that the examination of Gallipoli convalescents in Egypt during the closing months of 1915 and the early part of 1916, produced a similarly erroneous view of the nature of the Gallipoli outbreak. It was at this period that the lack of trained protozoologists was chiefly felt, and it would be rather a strange coincidence if with the arrival of these experts the type should suddenly have changed to bacillary.

With regard to the use of emetine, which was advocated in every case of dysentery at that time by Sir Ronald Ross, we feel that probably there was some justification for the recommendation, considering the difficulties then involved in securing accurate and extensive laboratory diagnoses. It would be a grave disservice, however, to suggest the reintroduction of any such unscientific procedure.

You refer to the view expressed by Captain Bartlett that the Gallipoli dysentery was primarily amoebic and that bacillary infections when present were superimposed on, or predisposed to by, some primary amoebic infection. So far as we are aware, there are no facts to support a generalization of this kind, though the occurrence of mixed infections has long been recognized, as also the facts that amoebic ulcers may be secondarily infected with bacteria and that amoebic ulceration is not infrequently found *post mortem* when there has been no indication of this disease during life.—We are, etc.,

J. C. G. LEDINGHAM, Lieut.-Col., R.A.M.C.
C. M. WENYON, Lieut.-Col., R.A.M.C.

London, June 18th.

SIR VICTOR HORSLEY'S OPINION ON MEDICAL ARRANGEMENTS IN MESOPOTAMIA.

SIR,—In your sympathetic reference to my husband, Sir Victor Horsley, and to his letter to you on the subject of the medical breakdown in Mesopotamia and in India, you bear testimony to the exactness of his summary of the facts, and you draw a certain inference from his remarks—namely, that he feared there would be an attempt to make the medical service the scapegoat to bear the sins of the other departments. In the light of his letters and diary I do not think this inference, otherwise a perfectly possible interpretation of his words, at all expresses his real views.

The facts of the medical situation in India were to his eyes so glaring that, in the short space of time of his stay there (hardly a fortnight) he was able to put his finger on practically all the points since published by the Parliamentary Commission, and his fear was not that the medical service as a whole, nor the authorities in that service, would become the scapegoat for others, but that the case of the local medical officers in Mesopotamia would suffer for results produced by causes for which they were not responsible. The point is of importance, and I hope therefore you will allow me the opportunity to express what I know to have been his view of the situation.—I am, etc.,

London, W., July 4th.

ELDRED HORSLEY.

QUO VADIS (VEL CUI BONO)?

SIR,—Doctors who went through the conflict in 1911 and 1912, guided by their political instinct to follow the windings of political intrigue, must be alarmed by renewed signs of divided counsels in the profession. Each of us is entitled to his own opinion as to the burden of blame for past failure only if that opinion be in accordance with the facts. The statement in Dr. F. J. Smith's letter that

Extra remuneration was sufficient to cause the defeat of the avowed and official policy of the Association through its sufficiency to tempt the weaker brethren to break their pledge

is entirely misleading. The actual cause was quite different. Mr. Lloyd George and his subordinates made no secret of the fact that they had a whole time State Medical Service scheme and the necessary staff ready to work it, in the event of a medical "strike." The ignorant said this was mere bluff; the well informed knew it to be true, and happily the information was sufficiently diffused

to demonstrate the futility of resistance. Judged by any moral standard, the real "weaker brethren" were those who stealthily sought appointments in a prospective State Medical Service, and had everything to gain, not the men whose capital was already invested in a practice and had everything to lose. Let Dr. Smith be just to the panel practitioner. It is not fitting that a member of the Council which directed the policy of the Association in 1911 should impute blame to others.

No useful purpose can now be served by recrimination. The errors of the past may serve as warnings for the future. Dr. Smith is on surer ground when he describes the Association's new plan of campaign "as a strike, though it is disguised under the name of a general refusal on the part of insurance practitioners to renew their contracts." The panel practitioner is not likely to play the game of the enemy in any such simple-minded way. We have already found that the enemy is within our gates, and no partial "strike" of the profession could be otherwise than disastrous to the strikers. Medical men do not readily combine for any object of common interest, and the project of combination in the form of a trade union is doomed from the outset, because the essential condition of effectiveness, namely, the disciplinary control of the entire body of registered medical men, cannot be secured by any known means.—I am, etc.,

Cambridge, July 2nd.

B. E. FORDYCE.

THE CO-ORDINATION OF BRITISH MEDICAL POLICY.

SIR,—In your issue for June 23rd appears a letter signed W. Coode Adams, which commences, "As an active and loyal member of the British Medical Association." I believe Dr. Coode Adams is the president of the Panel Medico-Political Union, whose honorary treasurer has recently announced his resignation because of that union's campaign against the Association. In the *Medical World* and in all his published speeches Dr. Adams does everything to prove (to his own satisfaction) the utter incompetence of the British Medical Association and of all who are responsible for its policy, thereby seeking to unsettle its members and to transfer their allegiance to his pet union.

I suppose we must remember that "faithful are the wounds of a friend"; but for a new interpretation of what is usually understood to be conveyed by the words "active and loyal" we must feel ourselves very much indebted now to Dr. W. Coode Adams.—I am, etc.,

Hove, June 30th.

E. ROWLAND FOTHERGILL.

SIR,—It has frequently been said, and again lately by Dr. Fred. J. Smith, that the Association failed the profession in the matter of the Insurance Act, and that the weaker brethren accepted the Act when given a bribe. This is not a true presentment of the case. I, and many others, recognized that a very effective attempt was being made to better the conditions of club practice; and even if I lost somewhat I was quite prepared to forego something in order to better the lot of others who were, by local conditions, bound to engage in that kind of work. When, as the result of the opposition of the Association, better terms were obtained I was ready to accept the conditions proposed. As to the financial result of insurance practice, I think I am rather better off than I was before, though the difference is not considerable. But the conditions under which I work are more favourable. I hate book-keeping and sending out accounts, and I have much less of that to do under the insurance scheme. The clerk finds out what I have earned and pays me. I never question the amounts. But far more agreeable is the being able to treat cases effectually. I am able to give as much medicine as the patients require without considering the cost to them, and to see them as often as I think desirable free from any suspicion of piling up a bill. I am not aware of any moral deterioration so far.

As to the future, no doubt there will be alterations, some of which may press hardly on us. We may not be fairly treated, and we may have new duties thrust upon us. As long as they are not too suggestive of the three-legged stool and statistics I can await their development without much anxiety.

As to whether proposed changes can be best met by the Association or by trade unions, I would again point out

that the Association already possesses the confidence of politicians. They refer matters to it, and they seek its advice, because the Association represents as nothing else does the whole profession, both that part which works under the Acts and that part which is not affected by them. Any union formed by insurance practitioners in their own interests is out of court at once. They are the opposition. It is of no use consulting them; they are to be bridled. Moreover, trade union methods can never be employed by us. Picketings, peaceful or otherwise, cannot be used by us; nor can we leave the sick poor of any locality untended for a week or a fortnight while we and the administrators are wrangling over the inclusion of dependants of the insured or persons "broke in the wars."

What we have to consider seriously is how to stimulate the apathetic, to make them members of the Association, and to induce them when they are members to attend the Divisional and Branch meetings. When out of a Branch membership of about 150 only some 20 or 30 attend any meetings, there is cause for self-examination.

We must make our meetings attractive, and we must show that we value fellow members more than the man in the street. Whatever we do, let no one mention the word reorganization. No alteration to a more democratic, or, preferably, to a more oligarchic form, will infuse keenness among the apathetic. Personal influence alone can effect that.—I am, etc.,

Bournemouth, July 1st.

GEORGE MAHOMED.

Obituary.

SIR GEORGE BIRDWOOD, K.C.I.E., C.S.I., M.D.

SIR GEORGE BIRDWOOD, who died at Ealing on June 28th, in his 85th year, was a remarkable man, not only by reason of his learning and what he accomplished, but through the geniality, generosity, and eagerness of his temperament. He had a solid knowledge of the natural products of India, of the art and history of its peoples, and a fund of curious information which made it a maxim of the India Office when a puzzling question of fact or custom arose to "ask Birdwood." He was not less ready to help inquirers who had no special claim on him, and there were two advantages in asking Birdwood: the first was that nine times out of ten he knew, and the second that if he did not he said so frankly. But, with all this, his name might have been unknown by any save a few officials and specialists had he not possessed a clear and lively style and a sprightly humour which brightened all he wrote.

He came of a family which has been for four generations connected with India, and has in this generation produced General Sir W. R. Birdwood, who commanded the Australian and New Zealand troops at the Dardanelles. George Birdwood was born at Belgaum, in the Deccan, the eldest son of General Christopher Birdwood. At the age of 7 he was sent to Plymouth, the home of his family, and went to the New Grammar School there and afterwards to Edinburgh, where he graduated M.D. in 1854. In the same year he entered the Bombay Medical Service. He spent some years in military employment, and served in the *Ajdaha* frigate in the Gulf during the Persian war of 1856-7, receiving the medal and clasp. In the spring of 1857 he was appointed professor of anatomy and physiology in Grant Medical College, Bombay, and afterwards held the chair of botany and materia medica. His sympathy with Indian aspirations made him the interpreter of native opinion to the Government, as he was later in life to the home public. With the help of Hindu and Parsee merchants he reconstituted the Bombay Central Museum at the Victoria and Albert Museum at a cost of over £200,000, and produced a *Catalogue of the Economic Products of the Presidency of Bombay*, which has served as a model for other similar publications. Owing to a breakdown in health he came home in 1868, but in the following year was entrusted with the task of organizing a series of special exhibitions of the Indian collections at South Kensington. In 1871 he was permanently appointed to do such work at the India Office, but he soon went beyond this, and his report on the old records in the office led to the reconstitution of the Records Branch, and to the institution of a serial publication in which such records

have since been printed. Birdwood arranged the exhibition of the presents received by King Edward VII when, as Prince of Wales, he visited India, and in 1878 he organized the Indian Section of the Paris Exhibition of that year; he wrote a *Handbook* for the section, and later on handbooks to *The Industrial Arts of India*, and *The Arts of India*. He contributed many articles to learned societies, but his real work as a writer was to explain India to the rest of the British empire, and perhaps a little to itself.

He received the C.S.I. when Queen Victoria was proclaimed Empress of India (January 1st, 1877), and the K.C.I.E. in 1881; Cambridge gave him the honorary LL.D. in 1886.

EDGAR ATHELSTANE BROWNE, F.R.C.S. EDIN.,

M.Ch. LIVERPOOL,

CONSULTING SURGEON TO THE EYE AND EAR INFIRMARY; LATE LECTURER IN OPHTHALMOLOGY, UNIVERSITY OF LIVERPOOL.

It is with great regret that we have to record the death of Mr. Edgar A. Browne, which took place on June 27th at West Kirby, where he lived after retiring from practice over a year ago. He had been declining for some months, and his end was not unexpected, having reached his seventy-sixth year. The loss of this distinguished member of our profession is a severe one; many of his friends had hoped that his relinquishing active practice would herald for him a serene old age, and have preserved him to us for many a year. Mr. Browne's father, Hablot K. Browne, was "Phiz," the artist who illustrated some of Dickens's earlier works. Of Huguenot extraction, Mr. Edgar A. Browne was born in London, educated at a school of which the father of the celebrated Rowland Hill was principal. Mr. Browne met many famous Victorian writers at his father's house, and his recollections and impressions were published in a work under the title *Phiz and Dickens* in 1913. He began the study of medicine at St. Thomas's Hospital, took the diplomas of M.R.C.S. and L.M. in 1864, of L.S.A. in 1865, and shortly afterwards settled in general practice in Liverpool. He was a demonstrator of anatomy with Dr. T. R. Glynn at the School of Medicine, and was appointed surgeon to St. George's Hospital for Skin Diseases and assistant surgeon to the Eye and Ear Infirmary. At that time it would appear that there was nothing incongruous in a young man devoting his energies to more than one speciality. Evidence of his ability and powers of accurate observation is to be found in papers published in 1870 in the *Liverpool Medical and Surgical Reports* on eczema and on early stages of syphilis as affecting the skin. When the new Liverpool Eye and Ear Infirmary was built, Mr. Browne's energies were wholly devoted to the diseases of the eye, and he held the post of honorary surgeon for many years, and in 1884 succeeded Mr. Shadford Walker as lecturer on ophthalmology at the university, and only a few months ago resigned the post. In 1886 he became F.R.C.S. Edin., and as a recognition of his academic worth he received in 1907 from the University of Liverpool M.Ch. *honoris causa*. Mr. Browne contributed many papers on eye diseases to the *Liverpool Medico-Chirurgical Journal*. He wrote an excellent practical book, entitled *How to Use the Ophthalmoscope*, which has run through many editions, and, in conjunction with Dr. Hope, published a *Manual of School Hygiene*. Mr. Browne was a member of the Ophthalmological Society and of the Société Française d'Ophthalmologie, and many of his writings are to be found in the transactions of these societies. He was president of the Dickens Fellowship (Liverpool Branch), and those who heard him speak at the meetings or read extracts from the great author's works thoroughly enjoyed the experience. He was president of the Liverpool Medical Institution 1900-2, and delivered two addresses during his period of office—"Theory and Science" and "Intellectual Aspects of Medical Knowledge," which attracted a good deal of attention outside medical circles. In March, 1916, he celebrated his jubilee of membership of the Medical Institution, and numerous friends were present to honour him.

Mr. Edgar A. Browne was a lovable man; he attracted by his personal worth men famous in literature, art, and science. In literature and art his opinion was gladly sought by those whose high aim is to foster these amenities of life in a large commercial centre like Liverpool. He enjoyed life as a spectator, appreciated alike the good

points of man and his foibles, which he often caricatured with his ever ready pencil. His humour was of the brilliant type never sardonic, and if sometimes tinged with irony it was never mordant. All his intimate friends must have at one time or another realized that he could detect and humorously exhibit their little weaknesses in caricature. As a lecturer not only did he make his subject matter live, but he embroidered it with ornaments of speech, and gave it finishing touches of humour.

Mr. Browne was twice married, and by his first marriage had four sons and two daughters. Of these three sons survive; the eldest, Hablot J. M. Browne, is a well-known practitioner in Hoylake. His second wife survives him. A representative gathering of medical men, friends, university colleagues, members of literary and artistic circles were present at the funeral service held at St. Margaret's, Prince's Road, on June 30th.

We regret to record the death of Dr. C. T. EWART, who was temporarily appointed last September to the post of medical superintendent of the London County Council's Asylum at Claybury, of which he had been senior assistant medical officer. After studying at the Universities of Aberdeen and Edinburgh he graduated M.B. and C.M. Aberd. in 1878, and proceeded to the M.D. degree in 1892. His career was bound up with asylum work, for which he had in a high degree the special qualities of mind and disposition which make the successful medical officer to a large institution. In spite of a philosophical tendency of mind, which found expression in a number of contributions to serious reviews, he was one of the earliest to draw practical attention to the value of special industrial colonies for the epileptic, and may be correctly described as the originator of the scheme adopted later by the London County Council when the colony for the insane epileptic was founded at Epsom. He was the first to institute the training of nurses in the London asylums on the basis of the syllabus of the St. John Ambulance Association. He took the greatest interest in physical drill for mental patients, many of whom in asylums need encouragement to perform muscular movements, especially those of a general, orderly, and sustained kind. He was deeply interested in all things pertaining to the welfare and comfort of the insane. In his dealings with the patients he showed unfailing sympathy and kindness, never turning a deaf ear to the most trivial or unreasonable complaint. He was an ardent naturalist, and skilled in many branches of athletics. In private life he was greatly loved by colleagues and friends, from one of whom we have received a glowing account of the charm and sincerity of his character. Dr. Ewart married, whilst at Claybury, the daughter of the late Mr. Abraham Flint, who, with one daughter, survives him.

Universities and Colleges.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—Mercy D. Barber, W. T. G. Boul, Hilda K. Brade, Frances G. Bullough, Kathleen L. Cass, Ruth E. Conway, J. Holker, N. Kletz, E. N. P. Martland, A. B. Platt, J. Shlosberg, D. M. Sutherland, H. Taylor.
Medicine.—C. F. J. Carruthers, Elizabeth C. Powell.
Surgery.—Elizabeth C. Powell.
Obstetrics.—C. F. J. Carruthers, J. C. T. Fiddes, R. S. Paterson.
Forensic Medicine and Toxicology.—T. H. Almond, Sybil Bailey, Mary G. Cardwell, J. Charnley, J. C. T. Fiddes, F. L. Hean, J. Mills, Kathleen O'Donnell, M. C. Paterson, Harriet R. L. Reid, Norah H. Schuster, L. J. Schwartz, V. T. Smith, Marie Wardman.

* Recommended for distinction in Medicine and Surgery.

† Recommended for distinction in Medicine.

UNIVERSITY OF SHEFFIELD.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—Winifred H. Wells (with first-class honours and distinction in medicine and surgery), Annie Clark, Ethel M. Mathews.

The Kaye scholarship has been awarded to Dorothy E. Mathews, and the Clinical Gold Medal to Winifred H. Wells.

UNIVERSITY OF ST. ANDREWS.

At a meeting of the General Council of the University of St. Andrews on June 30th a report was received from a committee recommending the institution of a degree in commerce, and urging the establishment of a chair or lectureship on colonial and imperial history, and arrangements for teaching Italian, Spanish, and Russian. The committee also recommended that it should have powers to urge the claims of the university to subsidies from the Government or any other body for the development of research work, now hindered by the reduction of the Government grant. The Council referred the report to the University Court for its favourable consideration. At the same meeting Dr. W. Barrie Dow (Dunfermline) was re-elected an assessor on the University Court, and it was announced that the following had completed all the examinations for the degrees of M.B., Ch.B.:

Sheila Bridgeford, Annie R. Campbell, F. J. Carlton, Mary I. S. Cuthbert, J. Irvine, J. Kinnear, A. M. MacGillivray, Flora M. Macdonald.

UNIVERSITY OF DURHAM.

At the convocation held on June 26th the following degrees were conferred:

M.D.—W. Hudson, N. F. Rowstron.
M.D. (*For Practitioners of Fifteen Years' Standing*).—J. V. Arkle, E. Down.
M.B. AND B.S.—P. V. Anderson, G. A. Clark, W. Duncan, E. C. Dunlop, M. J. Hilton, R. Hunter, C. G. Irwin, H. M. Leete, Phyllis Marriott, Freda Newman, T. W. Shaw, Sadek Abdel Shheid.
D.P.H.—W. E. R. Saunders.

The Services.

INDIAN MEDICAL SERVICE.

Promotion in India.

A CORRESPONDENT calls attention to the circumstance that a recent order with reference to the promotion of officers of the Indian army, sanctioning the promotion of a second lieutenant to lieutenant after one year's service, the promotion of a lieutenant to a captaincy after four years' service, and of a captain to a majority after fifteen years' service for promotion, does not apply to the Indian Medical Service. Previous to this order an officer in the Indian army received his majority after eighteen years' service for promotion and an officer in the Indian Medical Service after twelve years' service for promotion, because the latter was allowed an average of six years' study as an undergraduate. As a result of this order and the refusal of its application to the members of the Indian Medical Service, it follows that a combatant officer with eleven years' service as a captain becomes senior to an I.M.S. man who previous to the order was senior to him.

Medical News.

SIR GEORGE NEWMAN, Chief Medical Officer of the Board of Education, has joined the committee appointed by the President of the Board of Agriculture to investigate the production and distribution of milk.

SIR MALCOLM MORRIS has been elected president of the Institute of Hygiene in succession to Sir William Bennett, who has held the post for the past ten years, and will continue his association with the institute as vice-president.

AMONG the civil list pensions granted in 1916-17 are awards to Mrs. Charlton Bastian of £100, in consideration of the services to science of her late husband, Dr. Charlton Bastian, and of her straitened circumstances; and to Mrs. Minchin of £75, in consideration of the scientific work of her late husband, Professor E. A. Minchin, and of her straitened circumstances.

THE Harben gold medal of the Royal Institute of Public Health, given every third year for eminent services rendered to the public health, has been awarded this year to Surgeon-General Sir Alfred Keogh, G.C.B., Director-General A.M.S., and the gold medal for conspicuous services rendered to the cause of preventive medicine to Dr. E. W. Hope, M.O.H. for the city and port of Liverpool, and professor of public health in the university.

AT the meeting of the court of the Royal Victoria Infirmary, Newcastle-upon-Tyne, on June 28th, it was announced that on the occasion of his retiring from the office of honorary surgeon under the age limit, Colonel J. V. W. Rutherford had presented the institution with the sum of £1,000 to endow a bed in memory of his father, who had taken a deep and active interest in the infirmary when it was on the old site. Colonel Rutherford was at the same meeting appointed consulting surgeon to the infirmary.

AN American Association for the Control of Syphilis has been formed to disseminate knowledge of syphilis among medical men, medical institutions, boards of health, hospital boards, dispensary attendants, and boards and other organizations having the care and treatment of syphilis. It is hoped to collect standardized statistics from the various institutions now treating syphilis; to further the establishment of free clinics and dispensaries for the diagnosis and treatment of syphilis, and to encourage the more comprehensive teaching of syphilis in medical schools.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Antiology, Westrand London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES.

T. W. A. asks for information as to the treatment of gastroptosis, especially in regard to diet, prognosis, value, and form of electric treatment, drugs, lavage, and the best fluid for use, and any references to literature dealing with the subject.

MEDICAL MANAGEMENT OF CHILDREN'S HOMES.

M.R.C.S. would be glad to know of any books bearing upon the medical management of children's cottage homes, orphan asylums, and such institutions.

* * We cannot hear of any work specifically on this subject, but the inquirer might find something serviceable in Dr. A. D. Edwards's article on the medical examination of children under the Poor Law and in orphanages, in Dr. Kelyack's *Medical Examination of Schools and Scholars* (Westminster: P. S. King, 1910.).

LETTERS, NOTES, ETC.

THE "MEDICAL DIRECTORY."

THE Editors of the *Medical Directory*, 7, Great Marlborough Street, London, W.) write: The annual circular asking for information for the *Medical Directory* for 1918, was posted to members of the profession on July 3rd. We are anxious that these forms be returned to us as promptly as possible. If in any cases the circular has not been received a duplicate will be sent on application. It is especially desirable that those practitioners whose addresses are included in the London postal district should return the new district numbers.

CINNAMON AS A PROPHYLACTIC IN MEASLES AND GERMAN MEASLES.

DR. J. R. S. ROBERTSON (Hayling Island) writes with reference to Dr. W. B. Drummond's note on this subject on June 9th to say that he has recently made use of the suggestion in a V.A. hospital of fifty beds established in that island. A patient who had been admitted some days previously developed the typical rash of German measles while mixing freely with the other men. He was isolated as far as it was possible to do so, and all the patients and nursing staff were put on two daily doses of pulv. cinnamomi, as much as would lie on a shilling. At the end of four weeks there was no other case of German measles.

ERRATUM.

IN the announcement last week of two medical calls to the Bar, the name of Major Hugh Neville Adam Taylor was incorrectly given as Major Hugh Neville Adam.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0 5 0
Each additional line	0 0 8
A whole column	3 10 0
A page	10 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

MEDICAL AND SURGICAL NOTES FROM MESOPOTAMIA.

BY

G. GREY TURNER, MAJOR R.A.M.C.(T.).

PART I.

THE WEATHER.

I WENT out to Mesopotamia with a British general hospital and landed in Basra in the beginning of April, 1916, and I am now writing at the end of December, so that my experience is of the dry season and not of the rains. True, after I first arrived there were some thunderstorms, with just enough rain to introduce me to the universal, intolerably slippery mud of the winter, but from April 15th to the end of October one day succeeded another with unfailing blue sky, bright hot sun, and an average maximum temperature of just 100° F. Very rarely a cloud appeared, and now and again there were penetrating dust storms, though usually there was not even a breeze, for the Shamal (north-west wind) almost completely failed. October, November, and December may be looked upon as the autumn. During these months it was hot in the sun and a topee was necessary, but the early mornings and evenings were beautiful, and those who were first introduced to the climate at this time thought it wellnigh perfect. The nights were cool and sometimes very cold, and in December the temperature once dropped to 42° F. On November 5th we had our first shower since April, but there was no heavy rain until December 26th. The monotony of the summer weather was only relieved by the interest taken by some of us in the temperature. I kept records of the maximum and minimum for the whole of my stay, and the main facts of my observations are set out in the following table. My thermometer was of English make, but not registered at Kew, though, on comparing it with others, variation was negligible. I lived in an E.P.I.P. tent with a double roof and with either the sides down or all the doors open. The thermometer was hung about half-way up one of the tent poles, and though the conditions were not such as would be selected for permanent meteorological records, the temperatures shown are those in which one actually lived and are thus of especial interest.

Record of Temperatures in Mesopotamia during Nine Months of 1916.

Month and Number of Days on which Observations were made.	Highest Maximum.	Lowest Maximum.	Average Maximum.	Lowest Minimum.	Highest Minimum.	Average Minimum.
April ... 18 days ...	100	74	87	60	74	65
May ... 30 ..	118	92	102	67	80	75
June ... 27 ..	118	90	105	70	84	75
July ... 22 ..	122	101	112	74	86	79
August ... 17 ..	118	104	108	70	83	75
September, 29 ..	112	93	103	58	77	66
October, 30 ..	100	83	89	50	66	58
November, 30 ..	89	67	81	46	73	57
December, 24 ..	74	42	66	42	59	46

The range of temperature was often remarkable, and on September 13th was as much as 47°, that is, from a maximum of 108° F. to a minimum of 61° F. It is interesting to compare the temperatures in July with those recorded at home for that month. (The latter are observations made at Newton-on-the-Moor, Northumberland, and published in a local newspaper. I am informed that the summer of 1916 in England was unusually dull and cold.)

Temperatures in July, 1916.

	England (Northumberland).	Mesopotamia (Amara).
Average maximum ...	66° F.	112° F.
Average minimum ...	50.5° F.	79° F.
Highest maximum ...	79° F.	122° F.
Lowest minimum ...	42° F.	74° F.
Greatest range ...	29° C.	46° F.
Rainfall ...	3.72 inches	None

Unfortunately I was not able to compare systematically the wet and dry bulb temperatures, but on what I call a typical "Basra day" in December the record gave 82° F. for the dry bulb and 80° F. for the wet. This amount of saturation alone has been proved to raise the body temperature,¹ and this question of humidity had undoubtedly a great deal to do with the frequency with which heat exhaustion and heat-stroke occurred.

The continuity of the temperature throughout the twenty-four hours was extraordinary, and as the following records show, at all times of day and night it is very hot.

May 18th.			July 28th.		
A.M.		P.M.	A.M.		P.M.
6.30 ... 86° F.	1	114° F.	6.45 ... 86° F.	1.30 ... 113° F.	
7 ... 82°	1.30 ... 115°		8.15 ... 100°	3.30 ... 110°	
7.45 ... 86°	3.30 ... 110°		11.30 ... 114°	4 ... 108°	
11.30 ... 110°	5.30 ... 102°		12 noon ... 114°	4.45 ... 107°	
	6.20 ... 95°			9.15 ... 92°	
	7.45 ... 88°				
Maximum for 24 hours ... 115° F.			Maximum for 24 hours ... 114° F.		
Minimum for 24 hours ... 75° F.			Minimum for 24 hours ... 82° F.		

Paradoxical as it may seem, it is nevertheless a fact that the heat is not always worst when the temperature is highest, and the most trying time was undoubtedly the moist heat of Basra in May and June. During these months perspiration literally poured from one. It began with the exertion of drying after the morning bath and continued until tardy slumber temporarily buried in oblivion the discomforts of a wet pillow, for there was "no freshness in the dawn," and each succeeding day brought the same discomforts. The constant state of perspiration in which one lived was a great trial, and in spite of the heat I found it a comfort to stand in front of the open fire which we used for sterilizing our drinking water. I believe that this extraordinary perspiration is partly paralytic, but even so it is a wonderful example of the power of the sweat glands, and it would have been interesting to try and measure the amount of fluid lost in this way. As a result renal secretion was much diminished, and most people only urinated twice or thrice in the twenty-four hours.

This excessive loss of fluid may also have accounted for the low blood pressure which I found to prevail. In a small series of observations made on comparatively healthy men the average was only 87½ mm. of mercury, and in the case of an officer whose pressure in England was never less than 135 mm. of Hg the manometer never registered more than 120 mm. Quite apart from the serious effects of the heat it is generally depressant, and vitality and resistance are both at a low ebb.

The temperature was usually highest about 2 o'clock in the afternoon, and it was between then and 3 o'clock that cases of abnormal pyrexia occurred among the patients in the wards. In fact it was so common that medical officers got into the habit of visiting their wards about that time, and quite often some case of dangerous pyrexia was discovered. For those who were up and about the most trying time was in the evening from about 5.30 to 6.30, and it was then that one appreciated the benefit of a little alcohol.

Food is of immense importance, and the principal difficulty is to secure enough variety. For a time vegetables were very scarce, but hospitals will become more or less independent as more attention is paid to gardens. Some of the Indian hospitals at Amara grow enough vegetables very considerably to augment the resources of the commissariat. This is a very important matter, for scurvy has been rife among the native troops. The lack of local grown fruit is very disappointing, for one rather expected luxuries in the Garden of Eden; but perhaps it is as well, for all who have lived for any length of time in the East warn one against eating uncooked fruit, and the temptation to do so would be great. Raw fruit is very liable to set up diarrhoea, which is always dangerous, and there seems to be a definite relation between the consumption of raw melon and the onset of cholera. Where dangerous infective intestinal diseases are so common it is a good rule to eat only such food as has come off the fire.

The quantity of liquid one consumes is almost as interesting as the quality, and while at Basra I never drank less than a gallon a day. I am a great believer in hot water as a thirst quencher, and used often to drink as much as a pint once or twice in the course of the morning. One of the effects of the heat is to cause loss of weight, and it was surprising how the "large men" of our unit diminished in size, though we all suffered to some extent. Even the Indian troops felt the heat very much; at first this may seem strange, for in many parts of India the heat is as great and as trying as in Mesopotamia, but the conditions under which they live in their own country lessen the discomforts materially. Nearly all the troops in Mesopotamia lived under canvas, but buildings either of stone or brick or mud with few windows, and those properly shaded, are the only suitable dwellings. In fact, in the hottest weather even the natives dig big holes in the river banks resembling caves, into which they retire as a means of shelter from the sun. The superiority of buildings as a protection from the heat was well illustrated on a day in June when the temperature in my tent was 100° F., for in the ante-room of the operating theatre, which was a building with thick brick walls, verandah, and double roof, the thermometer only registered 87° F. Of course, the living arrangements were more or less improvised, and though the patients were housed in good huts the staff and personnel for the most part lived under canvas, and neither punkas nor electric fans were universal.

The question of exercise during the hot weather is interesting, and one certainly requires very much less than at home. At Basra I did a good deal of walking, and I think that on the whole I did myself harm. But it is quite possible to work on the hottest days, and I was accustomed to operate and to work in the wards or *post-mortem* room with a temperature of 110° to 120° F., and I am sure one feels the heat less when well employed. The way the cooks were able to work, in spite of the heat and exposure, was a constant source of astonishment to me. Of course abundance of sleep is essential, and the natives always rest from about 11 a.m. to 3 p.m. during the hottest part of the year. I found it difficult to sleep in the afternoon, but it is surprising how much refreshment can be secured by merely resting with nothing but a towel across the pelvis, and, if very hot, a wet cloth tied round the head. The mental attitude has much to do with the way people tolerate the climate, and those who suffered most, and sometimes seriously, were often of a nervous, irritable disposition, and all through the depressing weather men of the Mark Tapley stamp were an invaluable leaven in the unit. There are many physiological points of interest to be worked out, and any one condemned to spend a hot season in the country might devote his spare time to their solution. For instance, the trivial amount of haemorrhage following the extraction of teeth, etc., led me to believe that the blood coagulated more readily than at home, and a small series of observations in the estimation of the "blood coagulation time" confirmed my suspicions.

INSECTS.

Of all the minor troubles none are so distressing as the insect bites, and, owing to their liability to become infected, they often lead to grave disability extending into

weeks or months; men were often in and out of hospital all the summer for no other reason. In my own case some infected bites on one of my feet were two months in healing, though I was never off duty. The insects are legion, but of all the many varieties probably only a small proportion bite, for which we were devoutly thankful.

It was a great and pleasant surprise to me to find that the men were not infected with lice, for after what one heard of the conditions in France I expected this "minor horror" to be very troublesome. Of course my experience has been limited to the hot weather, and I am told that in the winter lice did flourish. In the hot season the men are very lightly clad and their clothes are perforce exposed to the very powerful rays of the sun, which we know is too much for these parasites. Is it not Shipley who records the experience of a private who told him, "We strips and we picks 'em off and we places 'em in the sun, and it kind o' breaks the little beggars' 'earts"? But all through the hot weather body lice were very common among the native troops, and this small matter leads me to remark that in many ways the native and British troops are not comparable, and generalizations applicable to both cannot be drawn from the observation of either. When as consulting surgeon I had opportunities of seeing numbers of natives the differences in their resistance, attitude to disease, incidence of certain disease, etc., struck me very much. Of course, these are matters which must be very well known to all medical officers who have worked in India, but to the new-comer they are a surprise.

In one of the camps in which I lived the flea was responsible for an immense amount of discomfort; one officer of my acquaintance caught no fewer than thirteen on or about his person before breakfast one morning! But, of all the minor horrors, fleas are the most amenable to treatment, and Keating's powder, properly used, is a specific. It should be dusted on the socks and in between the folds of the putties, when it will furnish almost absolute protection. I do not know when the flea season commences, but it usually comes to an end about the middle of June. In the spring of 1916 they were only an inconvenience, but since the appearance of plague at Basra they may prove a very real danger.

Sand-flies are fearfully troublesome in certain localities, and I have never been so miserable as when the victim of their attentions, for the loss of sleep which they entail tends to make one very depressed. If it is not possible to sleep away from where they abound, a good deal can be done to discourage their attentions by smearing the face, neck, and ears with eucalyptus vaseline, and by wearing socks on both feet and hands, taking great care to tuck the pyjamas into the top of the socks. A solution of lysol freely daubed on the exposed parts and sprinkled on bed and pillows also helps to ward them off, but I was never fortunate enough to discover a specific, though I tried all the plans recommended. Though their bites are exceedingly sharp, the irritation only lasts a very short time, but they may give rise to phlebotomus fever, from which we have nearly all suffered, an irritable temper during convalescence being pathognomonic.

Mosquito bites are serious because of the malarial parasite which they may convey, but the most uncomfortable bites are those of some insect which produces a swollen area that may remain irritable for days. They may be infected sand-flies or infected mosquitos or some entirely different variety, but whatever their identity their effects may be serious. In my own case these bites produced large oedematous areas, which were attended with recurrent irritation for as long as a week at a time. The irritation usually came on when the part was exposed to the air, and, in fact, the only real relief is to keep the part protected from exposure. It is almost impossible to prevent scratching, and this almost invariably breaks the skin and introduces sepsis. Frequently ulceration developed, and some cases were attended with cellulitis and lymphangitis. I have often seen men covered with these sores; they were very slow in healing. The minor sepsis met with in this country is of a very resistant sort, and the defences of the body are at a low ebb.

Every gradation in the effects of sepsis was represented, and the relation between infection and resistance is

sometimes so low that a general infection may occur. I saw fatal septicaemia arise as a complication of what was apparently but a trivial sore.

The patient, a big well-built man of 22, was admitted with cellulitis of the foot, which had followed ulceration produced by wearing his boots continuously in the trenches for a fortnight. From the time of admission he was very ill, and had a high temperature. In spite of free incisions the ankle-joint became infected, and after a rigor the leg was amputated. Though he improved a little as the result of the intravenous injection of eusol death occurred a week later.

A mild and chronic form of pyaemia is quite common. Abscesses at first develop in the course of the lymphatics running from the affected part, but later subcutaneous abscesses form in distant areas as the result of the blood infection. Such patients have long-continued pyrexia and get exceedingly thin, but ultimately recover as the infection becomes attenuated. Sometimes a blood infection persists, and I am sure that it was the cause of the various unexplained cases of spontaneous joint effusion met with. In all such cases there was some antecedent history of septic sores which had been long in healing. I used to think that there was no leishmaniasis in connexion with these bites, and though I never saw what might have been a Baghdad boil, many of the cases were exactly like the descriptions of oriental sores or veldt sores, and just before leaving Amara I saw cases in which the Leishman-Donovan body was found. They must be looked for in the softened foci before ulceration actually occurs, or the discharge must be washed away from the ulcers and material selected from beneath the overhanging edges, for secondary staphylococcal infection very soon occurs. Quite apart from the question of leishmaniasis there is nothing like taking these troubles seriously at the outset, and it often pays to take a man into hospital for what may look like a very trivial condition. After treating any cellulitis by fomentations, etc., I found that there was nothing better than a few applications of iodine to sterilize the surrounding skin, followed by a simple spirit dressing, great care being taken never to let the part remain uncovered. Granulating sores must be treated *secundum artem*. Doubtless many other plans of treatment will do equally well, but this I found to answer admirably.

There is a manifestation of minor sepsis that is characteristic and very troublesome. It begins as a pustule, usually on a finger. At first it looks most trivial, but within twenty-four hours it is surrounded by an area of induration, but without much pain, lymphangitis, or constitutional disturbance. After another twenty-four hours it either bursts or has to be incised, disclosing a large slough, which separates, leaving an equally large granulating area. The process often extends to the bone, and the amount of sloughing is out of all proportion to the severity of the initial lesion. It was very common on the fingers of nurses and ward orderlies. This type of sepsis ought to be very carefully worked out bacteriologically, but the laboratory accommodation has been in such demand for other and more important things that, so far, it has not been possible to deal with this interesting subject as it deserves.

The seasonal variation among the insects was very remarkable. This is very well understood in connexion with those which have been the object of close study, such as the mosquito, but it may also explain the incidence of other diseases that are not yet recognized as being insect-borne.

Of other types of vermin I have said nothing, for I have not seen the bites of scorpions or tarantulas. We had men bitten by jackals. Naturally jackals are shy creatures; when they run amok they are most probably hydrophobic, and those bitten by them had to be sent for treatment to the Pasteur Institute at Kasauli (India).

MALARIA.

The types of disease varied very much in the few months of our stay. At Basra we had a large amount of malaria, but it is always common there at certain seasons of the year, and the up-river natives speak of it as "Basra fever." Every precaution was taken to protect the men from this scourge, but in a district which is riddled with creeks, and which during certain seasons is inundated, the difficulties of the sanitarian are great, and the most impor-

tant prophylactic measures are personal. The men were furnished with mosquito nets, and the orders were that each should take 5 grains of quinine daily. Anybody who has used a net will know how difficult it is to be sure that it is always efficient, especially as it adds so much to the intolerable stuffiness of the nights, and many authorities express grave doubt as to the value of quinine as a prophylactic. If the latter is to have a fair chance it is essential that it should be taken in an assimilable form. I made some observations on various kinds of tablets, and found that a very popular variety did not even disintegrate in water after twenty-four hours, and that the addition of an amount of hydrochloric acid equal to that in the gastric juice, or of a "ration" of lime juice, made very little difference. Our O.C. then issued the quinine in solution, and although it was very nasty I think there was some evidence that it helped to diminish the incidence of malaria among our own staff. In all cases of pyrexia malaria must be first excluded, and in a busy hospital with between thirty and forty admissions a day this was a very big undertaking for the pathologist. Some of the cases of malaria were of a very severe type, and there were quite a number of the malignant and cerebral varieties. Though it is recognized as the most protean of diseases, its manifestations were a surprise to most of us. Gastric irritability with persistent vomiting was common, and such patients could not take quinine by the mouth. Many times the great value of intramuscular injection was demonstrated, and no case of tetanus occurred as a result. Fortunately tetanus is rare after wounds in Mesopotamia, and most medical officers had never seen a case, but as the ground over which we are now fighting has been fouled since the spring of 1916, the conditions may prove different. I always injected 15 grains of the acid hydrochloride into the vastus externus muscle, and never saw any ill effect, either local or general. The situation appears to me to be much better than either the deltoid or gluteal region, for there are no considerable vessels or nerves that might be injured. Many patients with the cerebral type of disease died in spite of treatment, and there is no doubt that many so-called cases of heat-stroke were of this nature. In some cases the pathologist was able to demonstrate the parasites in the cerebral vessels after death. Though it was common to find the spleen palpable, the "ague cake" was rarely met with, and is only to be expected in very chronic cases. In one man who died of malaria I found a large collection of blood in the peritoneum, due to spontaneous rupture of the moderately enlarged spleen.² We had many illustrations of the lighting up of a latent malaria as the result of some operative interference, and this possibility must always be borne in mind and provided for by the exhibition of quinine. After any operation an unexpected rise of temperature is an indication for a blood examination rather than a sign of alarm.

CHOLERA.

Cholera, fortunately, was only sporadic, and there have really not been many cases. Though it is often taught that it is entirely a water-borne disease, many men with tropical experience are inclined to suspect the common fly as one of the main factors in its spread, and, as with all these diseases, attach the greatest importance to carriers. The treatment of cholera by the transfusion of hypertonic saline was attended with considerable success. These patients are so denuded of body fluids that they are positively shrivelled up, and the immediate effect of supplying some pints of fluid to the tissues is very remarkable. I have often heard the method spoken of disdainfully, but I feel sure that the criticism is not fair, and if there has been a want of success it is probably because the careful directions of Leonard Rogers and his co-workers have not been carried out. As cholera is more or less endemic on the Tigris it is indeed remarkable that it did not occur in epidemic form when we consider the possibilities of infection and the ignorance of the soldier in matters sanitary. Frequently men filled their water bottles at the nearest creek rather than go a little further or wait a little longer for a purified supply. Even in hospital I intercepted a patient going to the creek in order to fill a feeding cup for one of his fellows. On another occasion an orderly of more than average intelligence was found carefully sterilizing a piece of ice by washing it in

permanganate solution before allowing it to melt in his drinking water! It is also very difficult to prevent men patronizing the native vendors of cold drinks, sweetmeats, and other commodities, which are all potential germ carriers.

It is difficult for any one at home to realize the amount of pollution to which the creeks of this country are subjected. They are at once the sole water supply and the main sewer. Every sort of abomination is thrown into them, and it is the commonest of sights to see offal floating on the surface. Our water was pumped from the creek near the hospital, was then sedimented and chlorinated in water carts, and was finally boiled. For the latter purpose two tanks were employed, and no water was used until it had boiled for half an hour. The result was a most beautiful water, the only difficulty being that it could not be easily cooled; but this was a very small price to pay for a pure supply. Later on this difficulty was got over by storing the boiled water in large chatties, which were covered; the demand was so great that the water was never there long enough to get contaminated. As showing the necessity of this careful sterilization, I may mention that within 25 yards of the place from where our supply was pumped there was a wooden bridge, and during the course of its repair a human corpse was found in a high state of decomposition.

ENTERIC GROUP.

There have been many cases belonging to the enteric group, mostly paratyphoid A or B. However mild a disease paratyphoid may have been in the Mediterranean war area it was often very severe in the cases that came under our care. There did not appear to be any pathognomonic features and the variations in type were extreme. Cases with otherwise unexplained pyrexia lasting more than five days very commonly turned out to be of this nature. It was the milder ones that gave rise to the problems in diagnosis, and undoubtedly a large part of our difficulty was due to the fact that the patients were commonly not seen until the disease was either well established or the patient convalescent, but sent on to us for some complication. Some of the few cases which did develop under observation had rather severe abdominal pain, and in one instance I opened the abdomen under the impression that I was dealing with pelvic appendicitis. Fortunately the course of the disease was not influenced unfavourably.

Perforation is not common in paratyphoid, and in the numerous *post-mortem* examinations which I made it was quite unusual to find ulceration. I have seen specimens illustrating perforation, and know that one or two cases occurred, but during my stay in Mesopotamia, when we had a total of many hundreds of cases, I did not see a single case. I was several times asked to see patients in whom this complication was diagnosed, and on two occasions I opened the abdomen in the confident expectation that it would be found. In one of these there was infarction of the spleen, with haemorrhage into the peritoneal cavity, and in the other acute cholecystitis. Others of the patients died, and at the *post-mortem* examination I found perforation of the ascending colon, with liver abscess, the result of dysentery; acute paralytic distension of the stomach and intestinal tract; and cholera. In other cases the easy recovery of the patient showed the diagnosis to be wrong. So closely were the symptoms of perforation simulated in some of these cases that I should hesitate to accept any figures dealing with this complication unless supported by operative or *post-mortem* findings.

SCURVY.

Although scurvy among the British troops in Mesopotamia is only very rarely sufficiently obvious for the patient to be sent to hospital with a diagnosis, it nevertheless occurs, and has proved of much diagnostic interest and of importance in treatment. The cases can be arranged in three very definite groups:

1. Those in which scurvy is the explanation of some otherwise obscure haemorrhage.
2. Those in which it explains the sluggish healing of some wound or ulcer.

3. Those that occur in the course of some other illness for which the patient has been fed on sterilized foods for long periods.

The last class are etiologically akin to the scurvy rickets of infants (Barlow's disease), but the origin of the other cases is more difficult to explain. Whereas among the Indian troops whole regiments have been affected to the extent of from 30 to 50 per cent. of their effectives, only sporadic cases have occurred among the British, and it is perhaps only because of their exceptional interest that they have come before my notice. I myself believe that it is not entirely dietetic, and that lack in variety of food and monotony of surroundings have much to do with its causation. The actual symptoms of scurvy are often preceded by great bodily weakness and lethargy, conditions usually diagnosed as "debility," but which may be an earlier stage of the same nutritional condition that may later develop into scurvy.

The following case is a typical illustration of the first group:

A gunner, aged 26, was admitted to Amara with a diagnosis of haematoma of the thigh. He stated that he had usually been a perfectly healthy man, but that for the last four years he had had a delicate stomach, and had not touched anything sweet; for this reason he had always avoided sugar, fruit, and vegetables. He arrived in Mesopotamia in January, and had been up the line ever since. He kept in good health, and never had to report sick, though he said that for some time his gums had been tender, and sometimes bled when he cleaned them. About August 21st he started on a long march, and on the third day noticed some stiffness behind the left knee, but he went on and finished with the column, arriving at the destination on the tenth day. Two days later he had to report sick, and was sent into hospital on account of the swelling behind the right knee. At first it was only swollen, but after about four days the skin became discoloured.

On admission he looked quite a healthy man, though a little thin and sallow. The haemorrhage was very obvious as seen from behind; from the front the calf was noticed to be swollen, and there was discoloration up the inner side of the leg and thigh. Posteriorly the whole affected area was black and blue, the discoloration being darker at the extremities of the haemorrhage. The calf was indurated and slightly painful. He walked with a limp, and kept the knee a little flexed. There was no effusion into the joint. Scurvy suggested itself as the explanation, and on looking for other signs slight swelling and blood discoloration were found in the palm of the right hand and the lower part of the forearm. There were no petechial haemorrhages or other signs on the surface of the body, but the gums were quite typical. The teeth were very good, especially the incisors, but the gums around the latter were swollen and spongy, and on the apex of each pyramid between the individual teeth there was a bright red cap of submucous haemorrhage, like a bright red granulation, which bled easily. On the left side of the upper jaw there was a septic stump, and this was surrounded by especially well-marked swollen spongy gum. On September 14th the patient went to a concert and sat for a couple of hours. When he got up he felt a stiffness behind the right knee, and on September 16th he drew my attention to a patch of subcutaneous haemorrhage about the size of the palm of the hand on the inner side of the lower part of the right thigh and also a well-marked superficial haemorrhage in the popliteal space and upper part of the leg. He was put upon an ordinary diet with vegetables and a mixture containing citric and tartaric acids with syrup of orange and infusion of calumba. He improved rapidly, and by September 25th the haemorrhages were fading and the gums were nearly all right; by the end of the month he was sufficiently well to be transferred to a convalescent dépôt.

As examples of the second group I may quote the following case:

A man, aged 23, had been in Mesopotamia since the beginning of January and had been up the line all the time. He had kept quite well until the end of July when he developed what looked like trivial sores on the right foot, but as they made little progress he was sent down and admitted to a base general hospital on August 19th. Both these ulcers were typically indolent; the few granulations present were flattened and unhealthy looking, and there were no signs of healing at the edges; the discharge was thin and blood stained, and there was staining of the tissues around. The appearance suggested to me a scorbutic tendency, but the only confirmatory sign was the condition of the gums. The mouth was clean and sweet, and the teeth very good, but on the apex of the pyramids between each of the incisor teeth there was a tiny red haemorrhagic spot and a similar red line along the edges of the gum surrounding the molar teeth. Under appropriate antiscorbutic treatment the ulcers soon took on a healthier appearance, though their ultimate recovery was longer delayed than I had expected.

Examples of scurvy coming on in the later stages of some chronic disease like typhoid or dysentery were quite common, and several developed in hospital.

I was asked to see a man in the dysentery ward on account of an effusion into the knee-joint. I found the patient bright and cheerful but exceedingly emaciated. The right knee was flexed and contained a good deal of fluid. It was neither painful nor tender, there was no temperature and no haemorrhagic staining. I could not discover the cause, and thought that it might be an example of so-called dysenteric arthritis. The joint very soon improved and the man began to get about again, but two weeks later he suddenly developed a large subcutaneous haemorrhage down the inner side of the leg and extending into the instep and sole of the foot.

Another man recovering from a bad attack of enteric fever and who had been on milk diet for several weeks rapidly developed a large haematoma on the buttock, the tissues all round were also infiltrated with blood, and there were petechial spots on the legs. I drew off 30 c.cm. of broken-down blood clot, and a few days later a similar amount of haemorrhagic pus was evacuated by incision.

When well marked the characteristic appearances of the gums affect the whole mouth, but when only slight they may have to be looked for on the inner aspect and especially around some septic tooth or stump. The petechiae are nearly always confined to the lower limbs and the front of the chest, though they may be found elsewhere. The large haemorrhages occur either subcutaneously or into the muscles. The former are most common behind the knee or on the inner side of the leg and extending into the instep and sole of the foot, but they may be found in the palm of the hand and over the middle of the sternum. The deep haemorrhages are also commonest at the back of the knee, deep in the popliteal space, down the front of the leg, among the muscles on the dorsum of the foot, and on the back of the forearms.

In addition to these large intramuscular haemorrhages, there may be small haemorrhages among the muscles of the thigh or buttock. Quite often they are multiple and not infrequently suppuration takes place.

REFERENCE.

¹ Matthew D. O'Connell, *Lancet*, August 19th, 1916, p. 342. ² Turner, *Lancet*, May 26th, 1917.

ACUTE FEBRILE POLYNEURITIS.

BY

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Most cases of polyneuritis which are met with in practice can easily be traced to intoxication by an organic or inorganic poison, or are complications of an infective illness, but the etiology of others is less certain or is unknown. Many of these have been called "rheumatic" or "influenzal" neuritis, or have been attributed simply to exposure to cold.

The cases with which we are concerned here are characterized by such a uniform and constant combination of symptoms that it is advisable to describe them as a type, though nothing is known of their actual cause. As their onset is usually acute and almost always associated with a rise of temperature, they may be provisionally included under Sir W. Osler's title, "acute febrile polyneuritis." Similar conditions have been described in other textbooks under this same title, or as "infectious polyneuritis."

Such cases have often been observed in irregular epidemic form, generally during the winter, but they also occur sporadically. Several came under my observation in London during one winter some years ago, and the course and the symptoms of those I have seen in France have been identical, or at least very similar, in all particulars. I have examined or have obtained notes on about twelve cases during the last winter. They have occurred among men from all parts of our front as well as from the lines of communication, and consequently they cannot be with any probability attributed to local conditions. The relatively small number that have come under observation suggests that there is no reason to suppose that the disease has been more common than it is in civil life, or that it is directly due to the conditions of life of our forces in France.

EARLY SYMPTOMS.

The onset of the illness is usually rapid. Almost all patients have stated that it began with a general malaise or with fever, at first without any definite local manifesta-

tions; several cases were in fact diagnosed at this stage as "pyrexia of unknown origin." One case developed a short time after an attack of relapsing trench fever, and another had had within the previous few weeks an attack of vomiting and diarrhoea. It has rarely been possible to ascertain the degree or the type of fever at the onset; in some patients the temperature did not exceed 100° F., but in others it rose to 102° to 103° F.

The next symptom was generally pains in the legs and in the lower part of the back, which usually set in on the second or third day and persisted. A day or so later, though occasionally even from the commencement, the patient found his legs weak or experienced difficulty in walking any distance. This paresis increased rapidly, and the arms became similarly but less severely affected. About the same time, too, the patient generally noticed that his face was "drawn" or "stiff," and several complained that even in this early stage their speech had become unnatural, or that they had some difficulty in swallowing.

SYMPTOMS OF THE ESTABLISHED DISEASE.

Most of the cases came under my observation when the disease was fully developed, and its clinical symptoms are then extremely characteristic. The lower limbs, which are equally affected, are flabby, toneless, and extensively paralysed, but the paralysis is rarely complete in all groups of muscles, and often all are in fact more or less uniformly affected. Neither now nor later is muscular atrophy a pronounced feature, and contractures did not develop in any case under my observation. The feet are dropped, the toes pointed, and occasionally no movement of either toes or ankles is possible. The movements at the knee-joints, and especially extension of the legs, are usually less severely affected, though they, too, may be paralysed in the severer cases. Even in these, however, the patient can with effort flex, extend, adduct, abduct, and rotate his thighs, though the movements are of small range and feeble.

The affection of the arms is usually less severe, and it is rare to find any movement completely paralysed, though the distal segments are usually very weak; as a rule, the feebleness is remarkably uniform throughout the limbs. The muscles of the trunk are much less seriously involved, though the intercostal and abdominal muscles are weaker than normal. In the two cases which died from pulmonary complications the paresis of the respiratory movements was probably a contributory factor to the fatal termination. I have not observed palsy of the diaphragm.

Thus far the motor disturbances correspond closely to that of any type of generalized peripheral neuritis, the only striking feature being the relative uniformity of the paresis and the fact that the distal muscles of the limbs may not be much more severely involved than the proximal groups. But when we examine the muscles innervated by the cranial nerves we find that certain of them are particularly severely involved. The face is invariably much affected from the early days of the illness; the facial folds disappear, the cheeks are flat and smooth, the forehead devoid of wrinkles, the lips slightly everted, and when the patient is asleep or dozing the eyes are incompletely covered by the lids. The face has consequently an expressionless appearance, which, if once seen, cannot be again mistaken. On further examination it is found that all groups of muscles supplied by the facial nerves are severely paralysed; the patient is unable to wrinkle his forehead, frown, close his eyes firmly, blow out his cheeks, or whistle. Articulation is slurred and indistinct owing to the palsy of the lips, fluids often dribble from the corners of his mouth if he attempts to drink, and he complains that during mastication the food frequently collects between his teeth and cheeks.

The tongue has not been affected in any case I have seen, nor is the palate often involved, though a few men complained of occasional regurgitation of fluids through the nose on drinking. On the other hand, almost all experienced more or less difficulty in swallowing solid food, and in one case this attained a severe degree. Phonation was unaffected, and there were no symptoms to suggest laryngeal palsy, though the larynx was not examined directly in any of the cases. The muscles of mastication were occasionally weak.

The pupils are equal and circular and their reactions are normal, but diplopia, due to ocular palsies, was present in three cases at least, in two of which an external rectus was almost completely paralysed.

The deep reflexes, the arm-jerks, as well as the knee and ankle jerks, are usually absent from an early stage of the illness, though in one case I was able to elicit a feeble response on tapping the patellar tendons when the legs were already parietic. The superficial abdominal and cremasteric reflexes, on the other hand, can usually be obtained, but the plantar reflexes are absent when the lower limbs are severely affected.

Sensory symptoms are less prominent than the motor disturbances. Some men complained of dull aching pains in the feet and legs, but these were usually troublesome only when the limbs were moved or handled. I have not seen any man who suffered with pains comparable to those of a moderate case of alcoholic neuritis. The muscles of the legs, and less frequently those of the arms, are often slightly tender to compression, and in several the sciatic nerve was also painful when pressed upon or stretched.

When the various forms of sensation are tested surprisingly little disturbance is usually found, especially in superficial sensibility. Even the lightest contacts can, as a rule, be recognized everywhere and correctly localized, though this form of sensibility is occasionally dull on the feet. The appreciation of temperature and of pinprick is also unaffected, but heavy pressure on the muscles and tendons generally gives an unnatural amount of pain. On the other hand, the proprioceptive forms of sensation are frequently disturbed; the patients are unable to recognize passive movement within the normal range, especially in the distal segments of the limbs, and they have not an accurate knowledge of their positions in space. Further, the vibrations of a heavy tuning-fork are not properly felt, particularly in the feet and legs.

A certain amount of hyperaesthesia to moving contacts is occasionally present, more especially in the legs; rubbing with a wisp of cotton-wool or with the finger-tips, as well as gentle scraping with the finger-nails or any sharp object, gives pain or more discomfort than normal.

Another interesting feature was the almost constant disturbance of the functions of the sphincters; the majority of the patients complained that they had had for some days more or less difficulty and delay in starting and completing micturition, though the use of a catheter was never necessary, and a few had occasional vesical incontinence. Temporary incontinence of faeces occurred in one man.

Vasomotor, trophic, and secretory disturbances are absent, or are at least not prominent.

The mental state of these patients was never affected, and showed no peculiarity; their general intelligence, memory, and power of attention remained intact.

In none of the cases in which it was examined did the urine contain albumin or sugar, nor did any other complication or disease that could be connected with this illness develop in any patient.

COURSE OF THE ILLNESS.

Two patients died, one from bronchitis the other from bronchopneumonia. Most of the others remained under observation for only short periods, though in a few instances the course of the illness could be followed for some weeks.

Most of the patients were first seen within a few days of its onset, but others only later. All the symptoms, and especially the paresis, reach their maximal development quickly, generally within a week or so, and in those who survived the progress of the illness was characterized by steady and rapid improvement which usually set in within two to three weeks of the onset. The pains and hyperaesthesia diminish quickly after the first fortnight or so, and somewhat later the power of the parietic muscles begins to return gradually, that of the arms usually before the legs. Some weakness of the facial muscles generally persists for a considerable time.

I have seen no patient in whom recovery had become complete, though one man whose legs had been much affected was able to stand alone about three or four weeks after the onset of the neuritis. Probably all do not recover so quickly, but in those who could be observed for some time the rapidity of the return of power in the affected muscles was striking.

The difficulty in swallowing and the sphincter troubles are among the first symptoms to disappear.

PATHOLOGY.

From two of the fatal cases I obtained for microscopical examination portions of the spinal cord and cerebral cortex, and from one of them pieces of one sciatic nerve and some lumbar and sacral roots.

The peripheral nerves and the spinal roots were fixed in osmic acid and were later carefully teased out. The sciatic nerve contained some fibres in the early stage of degeneration, their myelin sheaths being broken up into chains of spherical or oval globules, while the calibre of other fibres was irregular and their staining unequal; or there was a tendency to segmentation. The proportion of affected fibres was, however, small, and it was chiefly in the finer fibres that the change was most obvious. In the spinal roots, on the other hand, I could find no evidence of degeneration or other change.

The spinal cord and the cerebral cortex were stained only by Nissl's method. No evidence of inflammation, congestion, or infiltration by any type of cells could be found in either, or in the meninges covering them, but in the ventral horn cells alterations similar to those seen in other forms of peripheral neuritis were visible. Some cells were slightly swollen: there was a partial disintegration of the tigroid masses especially around their nuclei, and in a few instances the latter were swollen and more rarely eccentric in the cells. The only recognizable alteration in the cortex was a similar slight chromatolysis in some of the larger cells and especially in the Betz cells of the motor area.

Unavoidable circumstances made a more complete examination of the nervous system impossible, but these changes are sufficient to confirm the diagnosis of peripheral neuritis, and to exclude any other widespread affection of the nervous system.

In three cases the blood and cerebro-spinal fluid were examined, but no culture could be obtained from either, and the latter did not contain an excess of cells or present any other abnormal feature.

Finally, there was no evidence of previous abuse of alcohol, or of poisoning by any of the organic or metallic substances that commonly produce peripheral neuritis; nor did the disease develop after diphtheria, scarlet fever, or any other common infectious illness.

DIAGNOSIS.

The differential diagnosis of this condition does not present any great difficulties if its special clinical features are recognized. These are a rapidly developing and widespread flaccid motor paralysis, which involves to an exceptional degree the facial muscles, those concerned in deglutition, occasionally the ocular muscles, and the sphincters. Sensory disturbances, on the other hand, are relatively insignificant, and the amount of pain and paraesthesia is slight in relation to the severity of the motor affection.

The early date at which improvement sets in is another striking feature; as a rule, no recovery can be expected in alcoholic, lead, or arsenical neuritis of similar severity till a much later period.

This condition can easily be distinguished from the various forms of rapidly developing paralysis of spinal origin, though its confusion with acute ascending myelitis is possible. This, however, produces a true paraplegia with a more or less definite though variable upper level, severe disturbances of all forms of sensation in the legs and trunk, sphincter paralysis with retention of urine, and extensor plantar responses, even though the knee-jerks may be absent. Further, the cranial nerves are not involved, though visual disturbances, due to the presence of foci in the optic nerves or in the chiasma, are not uncommon.

From acute poliomyelitis it may be distinguished by the more rapid evolution and the more irregular distribution of the palsy, the frequent paralysis of the trunk muscles, and the usual absence of objective sensory symptoms in this disease.

Certain of the cases I have seen had been diagnosed as Landry's paralysis, and the separation of polyneuritis from this is less easy, owing chiefly to the vague and indefinite conception of this disease that characterizes its description in many textbooks; almost all forms of both peripheral

and spinal paralysis which show a tendency to an ascending course have been in fact included in Landry's paralysis, but it is now generally accepted that this term should be restricted to a condition which begins with a progressive paralysis of the lower limbs that rapidly ascends and involves the trunk muscles, later those of the arms, and as a rule leads to a fatal termination from respiratory palsy before the cranial nerves are affected. Objective sensory disturbances are also very slight or absent, and the sphincters are rarely involved.

The clinical symptoms of acute febrile polyneuritis are also sufficiently distinct to permit its differential diagnosis from other forms of peripheral neuritis, though none of the individual symptoms are peculiar to any one of them. The more usual causes of neuritis, namely, alcohol, lead, arsenic, and various organic poisons, as well as the recent occurrence of diphtheria, scarlet fever and of other infectious illnesses, should be in the first place excluded. From alcoholic neuritis it is distinguished by the relative uniformity of the paresis in the limbs, the early and marked involvement of the facial and deglutition muscles, the slight degree of the sensory loss and of pain, the absence of mental symptoms, and finally by the relatively early date at which recovery sets in and its favourable progress.

In neuritis due to lead the palsy almost always picks out at first certain groups of muscles, such as the extensors of the wrists, and if it becomes general it is usually associated with that group of cerebral symptoms which have been described as lead encephalopathy. Arsenical neuritis is easily recognizable by the prominence of gastrointestinal symptoms, pigmentation and trophic disturbances, serious sensory loss, early muscular atrophy, and its very slow convalescence; while beri-beri may be excluded by the absence of oedema, and vasomotor and cardiac symptoms.

TREATMENT.

The treatment in the present state of our knowledge can be only symptomatic. The patients should be kept warm and comfortable, the danger of respiratory complications should be guarded against, and care should be taken even from the beginning of the illness that the paralysed muscles are not unduly stretched. Certain of the cases seemed to benefit from diaphoresis and the employment of diuretics.

The Chadwick Lecture

ON

MENTAL HYGIENE AND SHELL SHOCK DURING AND AFTER THE WAR.

BY

F. W. MOTT, M.D., LL.D., F.R.S.,

MAJOR R.A.M.C.(T.F.).

MR. PRESIDENT, LADIES AND GENTLEMEN,—A new epoch in military and medical science has arisen in consequence of the employment of high explosives, combined with prolonged trench warfare, in this terrible war.

The term "shell shock" is applied to a group of varying signs and symptoms, indicative of loss of functions and disorder of functions of the central nervous system, arising from sudden or prolonged exposure to forces generated by high explosives. In a large number of cases, although exhibiting no visible injury, shell shock is accompanied by burial. Again, cerebral or spinal concussion may be caused by sand-bags, hurled from the parapet or parados of the trench, striking the individual on the head or spine. The soldier may be concussed by the roof or wall of the dug-out being blown in, or he may be driven violently against the wall of the trench or dug-out, or blown a long distance simply by the strength of the explosion.

It has been shown that the force generated by 17-inch shells is equal to 10,000 kilograms per square metre, or 10 tons to the square yard. This supports the contention that even death may occur as the result of aerial concussion, generated by high explosives, without visible injury. I think probably the cause of death in such a case would be sudden arrest of the vital centres. The stem of the

from oscillating by the anterior and posterior roots and the ligamentum dentatum. The cerebro-spinal fluid therefore acts as a water jacket to the spinal cord and water cushion to the base of the brain. A sudden shock of great intensity would be transmitted through this incompressible fluid, and seeing that it not only surrounds the central nervous system, but fills up the hollow spaces, ventricles, and central canal, and all the interstices of the nervous tissues, it follows that a shock of sufficient intensity communicated to the fluid would occasion commotion of the delicate colloidal structures of the living tissues of the brain and spinal cord. Such commotion would certainly lead to disordered function, and, if severe, to loss of function. The higher centres are the most likely to be affected; therefore consciousness, memory, sensory perception, and speech suffer. If the commotion is sufficient to arrest the functions of the vital centres in the medulla instant death would ensue, but it is difficult to determine in many cases whether the force was delivered by the hurling of a sand-bag against the head or spine or simply by aerial concussion in a confined space.

This leads me to call your attention to another important factor which may complicate the condition termed "shell shock." The soldier, while lying partially buried and unconscious, or at any rate helpless, may be exposed to various noxious gases, generated by shells or mines, especially carbon monoxide, or oxides of nitrogen, both of which are poisonous by reason of the deoxygenating effects upon the blood. Other poisonous gases from shells may produce most injurious and even fatal results; for example, cyanogen compounds, phosgene, which is chloride of carbonyl, etc. Both these gases are very deadly in their effects.

Malingering as shell shock is, I am informed by Captain William Brown, quite common at the front, and the detection of conscious fraud is not easy in many of these cases, owing to the fact that a functional neurosis due to a fixed idea or obsession, inhibiting will power, may be mistaken for malingering. Again, the notion of never recovering tends to become a fixed idea, and this fact is of considerable importance in respect to discharge from the army "permanently unfit," and the subsequent payment of pension and compensation. It is essential to be sure of your diagnosis that the disease is altogether functional, and being satisfied thereof, to avoid all forms of suggestion of non-recovery.

Mental and Bodily Condition at the Time of Receiving the Shock.

In considering the effects of shell shock on the nervous system, it is necessary to call attention to a complex of factors of extrinsic and intrinsic origin, apart altogether from the effects produced by direct material injury to the central nervous system by commotion and concussion. I will now consider the extrinsic conditions in modern trench warfare which lead in a neuro-potentially sound individual to nervous exhaustion, predisposing to shell shock. It must be obvious that through all the sensory avenues exciting and terrifying impressions are continually streaming to the perceptual centres in the brain, arousing the primitive emotions and passions, and their instinctive reactions. The whole nervous system, excited and dominated by feelings of anger, disgust, and especially fear, is in a condition of continuous tension; sleep, the sweet unconscious quiet of the mind, is impossible or unrefreshing, because broken or disturbed by terrifying dreams.

Living in trenches or dug-outs, exposed to wet, cold, and often (owing to shelling of the communication trenches) to hunger and thirst, dazed or almost stunned by the unceasing din of the guns, disgusted by foul stenches, by the rats and by insect tortures of flies, fleas, bugs, and lice, the minor horrors of war, when combined with frequent grim and gruesome spectacles of comrades suddenly struck down, mangled, wounded, or dead, the memories of which are constantly recurring and exciting a dread of impending death or of being blown up by a mine and buried alive, together constitute experiences so depressing to the vital resistance of the nervous system, that a time must come when even the strongest man will succumb, and a shell bursting near may produce a sudden loss of consciousness, not by concussion or commotion, but by acting as the

worn out by this stress of trench warfare and want of sleep.

In considering the effects of shell shock it is necessary to take into account the state of the nervous system of the individual at the time of the shock caused by the explosion. As I have indicated, a neuro-potentially sound soldier may, from the stress of prolonged trench warfare, acquire a neurasthenic condition, and it stands to reason that a soldier who is already neurasthenic from a previous head injury, or from acquirement of a disease prior to his being sent to the front, will not stand the strain so well as a neuro-potentially sound man.

Of even greater importance than the extrinsic conditions in the causation of military unfitness from exposure to shell fire are the intrinsic conditions, for if there is an inborn timorous or neurotic disposition, or an inborn or acquired neuropathic or psychopathic taint, causing a *locus minoris resistentiae* in the central nervous system, it necessarily follows that such a one will be unable to stand the terrifying effects of shell fire and the stress of trench warfare. A large number of the cases of shock which I see in hospital, and which especially require treatment by mental hygiene, are neuro-potentially unfit.

They come back after a short experience at the front, suffering with neurasthenia or hysteria, which persists for months and even a year or more; these are temperamentally unfit.

To take two concrete examples of the importance of the personal factor in the consideration of the causation of shell shock. A commercial traveller, with one year's training, three weeks in France, and three days in the trenches, was sent home suffering with shell shock; after six months in hospital, he is still tremulous and hardly able to stand or walk. He has done his best, but has cost as much as a cartload of shells. Compare the personality of this man with another, who was also admitted under my care suffering with spinal concussion, paralysed in all four extremities, with loss of control over his bladder and bowels. The history he gave was that he was in a dug-out, when an 8-in. shell burst 2 ft. behind the dug-out; he was partially buried, but did not lose consciousness; when he was rescued, he was found to be paralysed. Now this man shows none of the signs of shell shock. He has no terrifying dreams, and, although the concussion caused a haemorrhage into his spinal cord, followed by degeneration of the pyramidal tracts—namely, the paths of volitional impulses—nevertheless he is making a splendid recovery, and in two months is much less helpless than most of the severe functional cases of paraplegia, in which the paralysis of the legs is due to a fixed idea that they are unable to walk or stand. He appeared to be insusceptible to emotional shock.

As we know, one of the peculiarities of the functional neuroses—for example, hysteria—is not only the sudden manner in which an emotional shock may cause a loss of function, but likewise the sudden manner in which it may be unexpectedly restored by a stimulus of the most varied kind, provided there is an element of surprise—that is, his attention is for the moment taken off its guard. I am referring especially to hysterical mutism and aphonia. If the patient was neuro-potentially sound, he will recover as a rule from shell shock by rest of the mind and body under healthy conditions, without any special treatment. But the neurotic, the neuropathic, and the psychopathic individual, with an inborn or acquired *locus minoris resistentiae* in the central nervous system, is more difficult to treat successfully, for when an inborn or acquired predisposition to a neurosis or psychosis exists, functional disorders or disabilities of the nervous system tend to become organized by habit, and eventually firmly installed.

Before we consider the mental hygiene of shell shock it is necessary to point out the more important signs and symptoms, for although the general principles of treatment are the same, special functional disorders and disabilities necessitate special methods.

Effect of Shell Shock on Consciousness.

Most of the severe cases have suffered with loss of consciousness, or they have no recollection of what happened after the shell burst, and till they were at the clearing station or hospital; it does not follow that they were in a

cases have been recorded where, under hypnotic suggestion, they have been able to revive in consciousness some of the forgotten events. Often instead of complete unconsciousness loss of power of recollection seems to be the effect produced on consciousness by the shock.

Many cases have been admitted under my care at the Neurological Section of the 4th London, who had not yet recovered normal consciousness, and for some days were in a dazed, somnolent, or even semi-conscious condition. Usually these cases came at a time when large convoys were sent from the front owing to a recent engagement. The histories of cases sometimes showed that men absented themselves following shell shock, and, wandering away from the trenches, were found in a dazed condition, unable to account for their actions or to recollect how they came there. This condition is not unlike a fugue or automatic wandering of an epileptic; and indeed, in some of these cases there was a history of epilepsy or a predisposition to it, but in others no other cause was ascertainable than the conditions which induced shell shock.

A good many patients say that they can picture in their mind's eye the shell coming; they visualize the death and destruction caused, and they can revive in memory the sound of the explosion, but a blank of variable duration in their recollection of events follows. Many of these patients have not really suffered with either cerebral commotion or concussion, and in strict acceptance of the term are not true shell shock cases. Cases of severe concussion or commotion have not only an anterograde but also a retrograde amnesia, and these cases may sometimes show such a complete loss of memory of any event in their past life that they do not know their own name or where they live; in fact, their recollection is a blank, as if the commotion had obliterated the storehouse of the mind and its contents. In these cases it is quite probable there has been either an additional factor of concussion or burial with gassing.

The drowsy stupor which many of these patients suffer from may disappear gradually, or it may be associated with auditory or visual hallucinations of a terrifying nature, day dreams of the terrible experiences they have gone through. As the mind becomes more conscious of the external world, these day dreams are screened off, and, as a rule, are not able to pass the threshold of consciousness; but I have had cases where terrifying visual hallucinations have quite suddenly and unexpectedly induced all the external manifestations of fear—for example, profuse sweating, a wild terrified look and attempt to escape by flight, and when prevented from doing so, fear gave place to maniacal excitement and desperate struggling to escape. Some of the cases are obsessed with a terrifying experience. Now although, as a rule, in most cases these experiences do not come up into consciousness during the daytime when the mind is occupied in reacting to the constant perceptual chain of events, yet, if the mind is not diverted from introspection, they are always ready to obtrude themselves on consciousness, and this is clearly shown by the fact that one of the most constant, most serious and disturbing symptoms of shell shock is the terrifying dreams which are seldom, if ever, absent.

The Effects of Contemplative Fear.

Fear, in its depressing effects upon the mind and body, plays a very important part in the production of a hysteric or neurasthenic condition. Terror is contemplative fear; it is fear made more or less permanent by the imagination fixing in the memory past terrifying experiences, repressed in great measure by conscious activity of the mind during the waking state, but evident in dreams.

In addition to the revival of experiences of trench warfare—of hearing the shells burst and seeing the flash, of parapets being blown down, of being buried, of charging the enemy—soldiers often complain of a falling or sinking feeling.

I have had four or five cases of soldiers who in their sleep have gone through the pantomime of fighting with the bomb, with the bayonet, and with rifle. In consequence of the danger of injuring themselves in their unconscious but violent purposive motor activities, it sometimes became necessary to place them on a mattress in a padded room.

They are indicative of terror, and the signs and symptoms these patients suffer from are largely due to the continued effect of fear on consciousness. It is obvious that this fact is all-important to bear in mind when considering the mental hygiene of shell shock. When we come to consider the principal objective signs and subjective symptoms of shell shock, we shall see that they very largely correspond with those of paralytic fear. We speak of being paralysed by fear—of giving way of the knees, of trembling or quaking with fear, of being dumb with fear.

All these popular expressions regarding the influence of the emotion of fear on the human body are based upon actual experience, for paralysis, tremors, giving way of the legs, mutism, and cold, blue hands are among the most constant signs of soldiers suffering with "shell shock."

Influence of Fear on Phonation and Speech.

A frequent condition met with is aphonia and mutism, or inability to speak even in a whisper. This in no way differs from hysterical aphonia and mutism.

It is the conscious mind operating on the centres in the brain controlling phonation which causes this affection of speech, for mutes often shout in their sleep, and this may be the prelude to the recovery of their speech; one man recovered his speech on being told that he had been talking in his sleep by a comrade who slept in the next bed; he was so surprised that he said, "I don't believe it." Another man recovered his speech when pitched out of a punt on New Year's Eve; he had been mute for more than six months. This lad could not whistle, could not phonate in coughing, could not blow out a candle, yet he was heard to shout in his sleep. An x-ray examination of his chest showed that the diaphragm hardly moved even when he made a great effort; the fear effect on his conscious mind had inhibited the respiratory movements necessary for phonation, and the idea had become firmly installed in his mind. Breathing exercises to relax the contracted respiratory muscles may be usefully employed in some of these cases.

Suggestion and Hypnotism in Mutism.

Mutism is often accompanied by deafness; sometimes the patient recovers his speech and remains deaf. I have had a great number of cases of mutism and mutism with deafness, and in only one instance have I been unable by suggestion or other means to restore the function. A particularly intractable case came to the hospital, who had been deaf and dumb for nearly a year; I tried strong electric shocks, tuning-forks to the head, and sudden noises and hypnotism, without any result, but Dr. Yelland of the National Hospital, Queen Square, cured this man. I think the imposing array of electrical machines, coloured lights, and other strong suggestive influences, were partly instrumental in accomplishing what I had failed to do, but also I think the knowledge of success in other difficult cases attending Dr. Yelland's efforts played a very important part in curing by strong suggestion this apparently hopeless case.

When I have thought a patient was consciously prolonging his disability I have said to the sister aside, but loud enough for the patient to hear, "This man must be kept in bed on No. 1 diet, and when he can ask loud enough for you to hear he can have a bottle of stout and a mutton chop." I have had several get well the next day by this treatment.

Hysterical Sensory Dissociation.

The deafness may be partly functional, partly due to injury of the drum of the ear, or wax may be damped against the drum. Only about 17 per cent. of the cases of deafness are really due to, or partly due to, ear disease; the majority of the cases are purely functional, and due to dissociation of the sensory perceptive centres of hearing of the brain. They do not hear the tuning-fork, although they feel the vibration. There may be dizziness, but there are signs which clearly serve to differentiate this functional cortical brain deafness from the deafness due to damage of the organ of hearing and equilibrium, or the nervous structures in it.

Sometimes a man is blind, and an examination of the eyes shows that there is no injury or cause in them to account for the loss of sight. Vision may be lost suddenly, and restored suddenly; suggestion plays an all-important part not only in dissociating the visual perceptive structures in the brain from the nervous tracts which convey the light stimuli from the eyes, but in restoring the sight by reassociating them. Here I may say how important it is to ascertain how long a man has been in the front line in estimating how much of the functional disorder or disability is due to a pre-war neurotic condition.

Diagnosis of Functional Disease.

Often a slight injury or contusion to a limb will cause a functional paralysis of that limb, or of the arm and leg on that side; or a blow on the back will cause by suggestion a paralysis of both the lower limbs, so that the patient can neither stand nor walk.

There are certain signs known to the expert which enable one to determine whether the disease is functional or organic. These I will not discuss.

From what I have said you will understand that a great number of cases that are called shell shock are really hysteria or neurasthenia occurring in individuals predisposed to neurosis, and unable therefore to undergo the strain of modern trench warfare for any lengthened period of time. A number of conditions might induce the symptoms or signs of hysteria or neurasthenia in such individuals, particularly an emotional shock or intense fear. These cases of neurosis are really more difficult to deal with than those of neuro-potentially sound individuals who have suffered with the real shell shock, and where there has been either concussion with loss of consciousness, or cerebral commotion with loss of consciousness, or inhalation of poisonous gas.

Treatment of Shell Shock in the Early Stage.

I am informed by medical officers at the clearing stations that there is an increase of pressure of the cerebro-spinal fluid in shell shock cases, and that sometimes even it is blood stained or contains albumin; also, that relief of symptoms occurs by withdrawing fluid by lumbar puncture.

The treatment of cases of shell shock varies to some extent in different individuals, according to symptoms and signs, but there are some symptoms which are seldom absent in all true cases—namely, insomnia and terrifying dreams. I have found the continuous warm bath of great value in the treatment of these cases when they come over from France. The water in the bath is kept continuously at the temperature of the blood by a special mechanism of heat regulation; the patients are kept in the bath for a quarter to three-quarters of an hour, or even longer. The effect is most soothing on the nervous symptoms. These baths are extremely useful in cases of maniacal excitement. Often the bath, with a drink of warm milk at bedtime, suffices without hypnotics to produce sleep. But if hypnotics have to be given, the quantity required is less when combined with the baths. The next thing is to attend to the general bodily condition by nourishing, digestible, and easily assimilated food; and, lastly, very important is attention to the *primae viae*, by which autointoxication and cerebral congestion can be relieved. The severe headache from which these patients suffer requires relief by an icebag to the head, aspirin, phenacetin, and drugs which relieve neuralgic pains. After the patient has recovered from the more serious condition of shock and the mind is becoming more alert and interested in its surroundings, we have to consider how best to allay the symptoms which nearly all suffer from—namely, headaches, dizziness, tremors, feeble circulation, and exhaustion, readily brought on by mental or bodily effort. If the patient is sufficiently well to sit up, it is better that he should do so, at first for a few hours a day, if possible in the open air. To severe cases, the noise of gramophones, pianos, the click of billiard balls, and even musical instruments, excite and aggravate symptoms; quiet repose in single rooms, such as we have at the Maudsley Hospital, is undoubtedly a most important and necessary mode of treatment in the early stages of severe cases.

At the same time these patients should not be left alone; quiet and unstimulating diversion of the mind should be encouraged, to avoid introspection and dwelling

upon the terrible experiences they have gone through. These men are often too tired or unable to read, for want of concentration of attention, and may be amused by simple games, knitting or wool work, bead work, basket work, and net making.

Mental Hygiene in Later Stages.

As soon as they are better, patients are encouraged to play billiards, cards, and other games, in the winter time especially; also there are frequent concerts and popular lectures, all of which serve to divert the mind and produce an atmosphere of cure, which is very essential. Soldiers will put up with a good deal provided they have good and abundant food, and it is essential for recovery that there should be no grumbling. Grumbling and grouching are contagious, and it is always well to get rid of a soldier from a ward if he is exciting discontent in the others. Discipline is very essential; laxity of discipline, over-sympathy and attention by kind well-meaning ladies giving social tea-parties, drives, joy-rides, with the frequent exclamation of "poor dear," has done much to perpetuate functional neuroses in our soldiers. The too liberal gifts of cigarettes have produced a cigarette habit in officers and men which is highly detrimental in these cases of war neurosis, especially in cases of irritable dilated heart.

Again, in many functional paralyses, the idea of a permanent disability requiring pension for the rest of a man's life, may become a fixed idea, owing to wrong diagnosis, over-sympathy, and misdirected treatment. In many of these cases, as I have found, what is required is merely strong suggestion to the patient that there is nothing the matter with him except the idea that he is paralysed, which has become installed and firmly fixed in his mind by prolonged bed, daily massage and electricity, which has kept suggesting to him that there is an organic disease causing his complaint.

Some patients, owing to an injury by a fall caused by an exploding shell, have developed a functional paralysis on the side of the injury, either arm or leg, or one of these limbs. Supposing it is the arm that is so affected, I perform a number of associated movements of the two arms together—the healthy one and the paralysed—myself assisting the immobile arm, telling the patient at the same time to help me by thinking of the same movement. After a little while he may be doing the main part of the movement himself. In all these functional paralytic conditions of an hysterical nature a great tonic is to tell the patient that it is not at all likely that he will ever be sent back to active service, for he would be no use, and that what we want to do is to discharge him from the service in such a state that he will be fit to resume his previous occupation, or we can put him to some work useful to the State, whereby he will not be a burden to himself or the community. I am quite sure that if this method were adopted early, in a large number of cases known by an expert to be temperamentally unfit for military service, a great economic saving would be effected. Of course precautions would have to be taken against malingerers. I am sure that machines employed by doctors as a means of making the functional paralytics move their limbs are wrong in principle and in practice, and I entirely approve of the methods adopted by Colonel Deane at the Croydon Hospital of restoring function by natural methods, in which the mind is exercised.

Colonel Deane lays especial stress upon the value of associated movements, such as we get with the parallel bars, the climbing rope, skipping, football, Indian clubs, and the nautical wheel, and the ordinary apparatus of the old-fashioned gymnasium. My contention is that this apparatus can be applied to any man who is capable of any movement. The inestimable advantage is that his mind is projected into his paralysed limb, and all his sound limbs are being exercised at the same time. Constant change and adaptation is another advantage, especially when associated with mental occupation in the work. Diversion of the mind by useful occupation, both in the workshop and in the garden, have been most successful in restoring health and strength to these disabled men. This treatment I have been enabled to carry out through the generosity and kindly interest of Lady Henry Bentinck, who at her own expense has built in the grounds at the Maudsley Hospital a large workshop fitted with every appliance for carpentering, cabinet making, and

metal work, and with a first-rate instructor. There are patients, however, who cannot stand the noise of the hammering and tapping.

Agricultural Employment During and After the War.

I am convinced that occupation in the open air is a very beneficial mode of treatment of nervous cases in the convalescent stage. It does not, however, always seem to be popular with a certain type of case. In commencing the treatment of convalescents by manual labour, it is essential to regulate carefully the character of the labour and the number of hours per day, and the work should be so arranged and graduated as not to induce more than that gentle sense of fatigue that promotes appetite, interest, sleep, and the general sense of well-being. Each case, therefore, has to be inquired into and the individual encouraged to take interest. When a shell-shock case is discharged from the service who by upbringing or inclination has a desire to work on the land, means should be provided whereby he can do so. The money he earns for his labour should be supplemental to the pension money or gratuity.

TREATMENT OF CRANIAL INJURIES IN WAR.*

BY

CAPTAIN J. ANDERSON, R.A.M.C.

THE main object of this short paper is to urge the plea for early and complete operative interference in gunshot wounds of the skull.

By *early*, I mean the earliest possible moment after injury that the patient can be brought to an area where environment and staff are suitable for cranial surgery. Exigencies of military situation or type of campaign may affect this, but, as a rule, these areas are to be found in the casualty clearing station of to-day.

By *complete*, I mean operation on the lines suggested by Colonel Gray in his paper.¹ As I have no doubt you are all familiar with this, I will only touch later on certain points that have particularly appealed to me. I consider, however, that it is almost essential to actually see the method practised by one who is thoroughly familiar with the routine, in order to appreciate the finer points of technique.

Here I wish to emphasize that the operation must always be considered as one where a most careful and exact surgical toilet is to be observed if results are to be attended with success.

The findings of our French colleagues, as reported in the *Presse médicale*, February, 1915, was: "All wounds of the skull should be trephined at once, and that this is the operation of urgency *par excellence* in military surgery." Since then early interference appears to have increased in favour.

In earlier days I adopted the more conservative procedure of excision of scalp wound in minor cases, and evacuation to base for further interference if necessary. This is not good, because on arrival at base, if trephining had to be done, my excised wound had to be again excised to get rid of a possibly septic area. For the more severe cases I performed a complete operation, but left the wound open.

Those cases which I was able to trace compare unfavourably with our more recent results. I think, therefore, that the axiom "All or nothing" is a sound one to adopt in the majority of cases.

Since August, 1916, I have adopted the method as demonstrated to me by Colonel Gray. I had previously attempted this, but I found that I obtained more uniformly good results on observing one or two finer points wherein my technique failed. No other class of wound has given the same even and gratifying results.

I think *all* scalp wounds, perhaps with the exception of minute abrasions, ought to be excised. Suspicion of bone injury demands investigation. It is very frequently found, particularly in the frontal region, that what appears to be a simple symptomless scalp wound is one involving much brain tissue.

During an action many factors govern the question of issue. I feel certain, however, that no case of head injury

* Paper read at a meeting of medical officers of an army in the field.

should be allowed to pass on to the base without very careful examination. In certain cases it is perfectly obvious from the first that evacuation is out of the question. These include all cranial wounds with escape of brain tissue, and all cases with definite signs of cerebral compression, either from fractures or haemorrhage.

All doubtful cases also ought to be retained for immediate operation. These cases should be kept for at least five or six days after operation, if the situation permits.

Anaesthesia.

In only 3 per cent. of my cases (apart from those in which multiple wounds rendered general anaesthesia necessary) was the help of a general anaesthetic required, and then only to cope with restlessness or pain of injection if the preliminary opiate had not acted well. When general anaesthesia is required for other wounds infiltration of the scalp is still advisable. It affords the necessary haemostasis and freedom from immediate post-operative discomfort.

With simple local anaesthesia the operator can gauge much more accurately the general condition of his patient and the limits of legitimate surgery, while the post-operative shock becomes almost negligible. Of course, local anaesthesia requires some practice, and in nervous cases it may be unfair to persist with it alone, but one can usually desist from general anaesthesia after he is put well asleep.

The method I use is a primary injection of morphine or omuopon half an hour previous to operation; complete blocking of wound area with

Novocain	...	...	...	1 per cent.
Mag. sulph.	...	...	...	1 per cent.
Aqua, sterile or saline, add to	...	...	...	100 per cent.

Boil, and when cold add adrenalin, 15 minims, to each 30 c.cm.
Usually about 30 c.cm. are required for each operation.

It does not appear necessary to pay great attention to the preparation of an isotonic solution. I have seen no bad results from the use of solutions of widely differing tonicity.

Operation.

Our chief enemy in wounds of the head, as in other parts, is sepsis, and in order to defeat it we must completely remove its main attacking force before it has gained a secure footing, and at the same time place the defences at their best for resisting any further attack. To obtain this complete excision of the wound must be performed. The head is shaved; this is greatly facilitated if a hot anti-septic soap compress is applied to the head on admission. I have found a good depilatory of value in civil practice, and I think this might be extended to military spheres with advantage.

After disinfection by picric acid or iodine, the injured scalp is removed by an elliptical incision down to bone well clear of damaged tissue. The ends of the incision must be well freed, when it is easy to remove damaged tissue and pericranium with the handle of the scalpel or periosteum elevator.

One source of contamination has appealed to me frequently at this point of the operation—namely, weeping from soiled wound on to a clean area. I think this can be combated by the application of the actual cautery to the wound itself, sterilization and desiccation being thus procured.

Sufficient access to the wound of the bone can in almost every case be got through the elliptical incision. The turning down of flaps is practically never required for this purpose. They may, however, be employed with advantage: (a) in removing a foreign body from the brain through an unwounded area; (b) in dealing with an extensive meningeal haemorrhage; (c) in decompression operations.

One now proceeds to excise the septic bone area. This can be done either by making a very small trephine opening outside the soiled area and completing the excision with a skull-cutting forceps just wide of the soiled bone, or by the "nibbling" method, in which case it is advisable to frequently change the nibbling forceps for clean ones. The former is better technique but I have

bone. It is better not to trim the edges of the opening accurately.

If portions of the dura are destroyed and soiled, these are cut away.

One can now proceed as with a clean case.

I do not consider a head operation complete which does not deal with non-pulsating dura or brain tissue. Unless free pulsation is present one cannot hope for the best results. Remember that the dura is opened at operation only after the field is rendered aseptic by excision—usually easy in cases of non-opened dura.

It is desirable that a skiagram should be taken in all cases. One cannot tell whether foreign material has penetrated or not beyond easy reach of the *index* finger, which is practically the range of legitimate interference in the majority of cases. It is found that the brain does not suffer from careful exploration by the finger, if the hole in the dura and the deeper track permit of its introduction fairly easily. The exploration must be done without force and with extreme caution. It will be found that usually the intracerebral pressure is sufficient to evacuate the foreign elements and pulped brain by *vis a tergo*. The finger really coaxes them out. When the skiagram shows that the foreign body is lying just beyond reach of the finger, or if it is too firmly fixed for the brain to "vomit" it out, a forceps or scoop may be used to extract or loosen it. These instruments should be used only in extreme cases, as they are apt to cause more damage than the finger. If the track is too small to admit the finger, any attempt at exploration is contraindicated without previously locating the foreign body by the *x* rays.

In glancing bullet wounds and in fractures, where it is evident that a foreign body has not penetrated, the fragments of bone are practically never beyond easy reach of the finger. Such cases need not be *x*-rayed in a "push," as the skiagram will only be of academic interest.

It is well to drain all cases except the very simplest. In the majority of cases the drain should not extend beyond the dural opening. The smallest possible drain ought to be used. I prefer a perforated rubber glove finger with salt therein. If the wound in the brain shows a tendency to ooze blood, use a tube. If the brain is infected, drain direct to surface—if not, drain to one end of wound. If the track is grossly infected, a piece of folded rubber with salt therein, and possibly also a small rubber tube, should drain the brain to a "direct" opening. Immediately before introducing the drain, the length of the track should be ascertained by the finger. It is always shorter than the depth to which fragments have been driven.

I have found aeroplane dope varnish, with 1 per cent. picric acid, to be an excellent transparent dressing, used with gauze in the same way as mastisol.

Where many small wounds bespatter the head in the neighbourhood of a large one, and all are obviously septic, I think it wiser to salt-pack for twenty-four to thirty-six hours previous to operation.

In wounds of the large venous sinuses, the value of the "postage stamp" graft is marked. It is easy to apply and efficient. I favour a graft from some distant part, rather than from the neighbourhood of the wound.

Operative Findings.

Wounds of the head show a remarkable tendency to heal by first intention if gross sepsis is removed and pressure relieved.

Wounds of the head left open show a similar tendency to become secondarily infected. Healthy brain tissue with good blood supply can apparently deal with all minor sepsis. Such, no doubt, is present in many cases at the end of the operation; therefore, when in doubt, drain. An open wound often develops fungus cerebri, which is usually an omen of disaster and an associate of infection. I have yet to see marked hernia cerebri in a first intention wound.

In the great majority of cases the elliptical wounds resulting from excision can be closed, owing to the mobility of the scalp, if all layer sutures are used with superficial sutures between. It is well to work from each end in tying the sutures.

In cases where complete closure cannot be obtained by

The method I favour most is the extension of the original incision to form a large U or S flap.

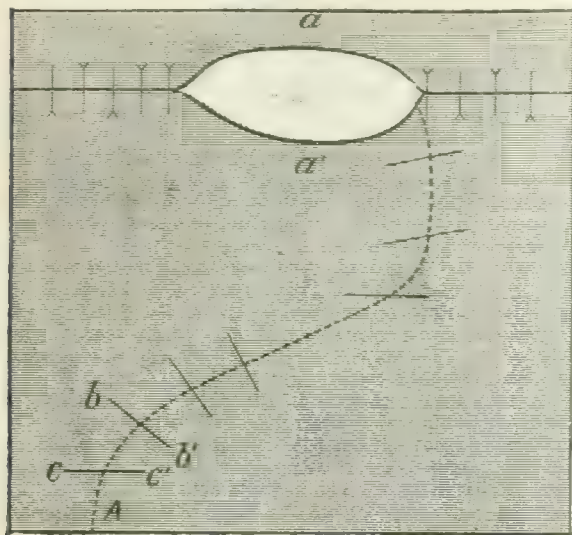


FIG. 1.

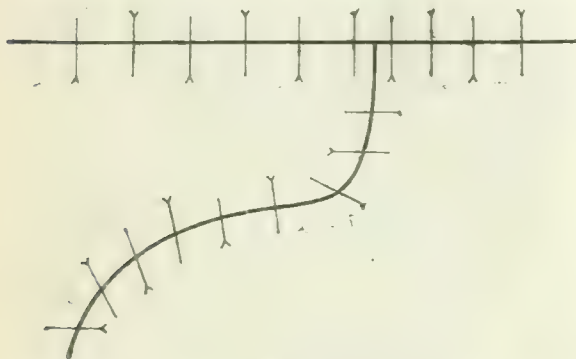


FIG. 2.

FIGS. 1 AND 2.—To illustrate plastic operation for closure of an elliptical loss of tissue in the scalp. Fig. 1: First stage, showing line of incision for detachment of flap. Fig. 2: Operation concluded.

To close an elliptical loss of tissue in scalp by plastic method, the ends of the wounds may be sutured to reduce the amount of plastic necessary (Fig. 1).

An S incision is made as indicated by the dotted line (Fig. 1). The end A should extend well beyond a line drawn at right angles to the main axis of, and through the end of, the raw area. The scalp is undermined completely to any desired extent, as indicated by the shaded area. This is easily done by thrusting a curved blunt-pointed scissors, concavity towards the skull, between the aponeurosis and pericranium, opening the blades and withdrawing. Here and there it may be necessary to cut away resistant strands of tissue. Suture at *a-a'* to see how the flap comes. Sutures at the base of the flap should be inserted obliquely, as at *b-b'*, *c-c'*; when tied they help to remove tension. When fully sutured there should be little tension—if there is much, the scalp should be scarified repeatedly between the sutures, sufficiently to draw blood.



FIG. 3.—Diagram of plastic operation for triangular defect in the scalp.

the dura. Thus this method has an advantage over that of turning down a flap, and is no more elaborate. For a triangular defect, proceed as shown in Fig. 3.

After Treatment

think it helps to prevent hernia. Constipation is a feature of these cases. Early action of the bowels is always important. All head cases are given as a routine after operation, calomel gr. vj, followed by salines next morning. Urotropin gr. xx every four hours for thirty-six hours, then intermitted for twenty-four and later repeated, undoubtedly helps to render the cerebro-spinal fluid more capable of dealing with bacteria.

The drain is usually removed in twenty-four to forty-eight hours after operation.

Lumbar puncture ought to be resorted to *before* any marked signs of excessive cerebro-spinal pressure occur—for example, for persistent headache, focal spasms, or a tendency to hernia cerebri. These symptoms are frequently due to local interference with circulation. Removal of cerebro-spinal fluid seems to allow in most cases a rapid readjustment. This may be of importance in preventing "spreading oedema."

The amount removed varies from 10 to 30 c.cm. at a time, according to the amount of pressure. The wound, especially if open hernia cerebri is present, ought always to be observed during removal of fluid, which must be done slowly, in order to prevent breaking down of protective adhesions in the neighbourhood of the lesion.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, February 19th, 1916, p. 261.

EARLY TREATMENT OF GUNSHOT INJURIES OF THE SPINAL CORD.*

BY

TEMPORARY COLONEL H. M. W. GRAY, C.B., A.M.S.

To judge from the greater vulnerability of the spinal cord, its lesser capacity for recovery, and from the anatomical arrangement of the spinal canal, it might have been thought that the general desire to interfere in spinal injuries, and to prevent secondary complications, would have been as great as that shown with regard to cranial injuries, but this has not been the case. The technical difficulties of the classical operation of laminectomy, the loss of blood entailed by it occasionally under general anaesthesia, and the doubtful results of deferred operations, seem to be the chief factors in preventing patients, suitable for early operations, being treated on principles similar to those which govern our treatment of wounds in other parts of the body.

In these late cases the patients are usually in poor condition, suffering from pulmonary or urinary complications, and the parts are obscured by masses of fibrous tissue. But in early cases the presence of fractured laminae usually makes the operation a comparatively simple one; it is easy to perform under local anaesthesia, and the use of good adrenalin makes it practically bloodless. Pulmonary complications are not predisposed to, or influenced by, the anaesthetic. Operation in the early stages can, in fact, be done with extraordinarily little upset to the patient. Out of a large number I have never seen a death which could be said to have been hastened by it.

The fact that so many cases improve without operation, in spite of the abnormal conditions by which the cord is surrounded, would lead one to hope that they would improve more rapidly as well as to a greater extent, and that some cases otherwise permanently paraplegic might experience relief if they were submitted to early operation. The cord, to a greater extent than most parts of the brain, is deleteriously affected and retarded in recovery by pressure of fragments of bone, foreign bodies, and other debris. There seems reason to believe that it responds well to prompt removal of these unnatural conditions.

In a casualty clearing station, however, during an action, a hurried selection of cases for evacuation must be made. Under present conditions only those which are most favourable must be retained. In all cases which are sent off by ambulance train the urine should first be drawn off if retention be present.

Some general considerations in making the decision are here mentioned.

There are three types which arrive at a casualty clearing

station showing paraplegia—one in which the symptoms are due to local concussion, another in which the cord is organically severed, and a third in which paraplegia has developed since the injury. The paralyzing effects of local concussion are often very marked. This may be caused even by the flight of a missile close to but outside the spinal canal; for example, temporary paraplegia may follow the passage of a rifle bullet from side to side between the spinous processes. In such cases the paralysis usually begins to clear up within a few days.

If no sign of return of function occurs within nine or ten days, the question of operation for removal of blood clot or possible depressed bone occurs, but must be decided at the base. If, on the other hand, a rifle bullet causing a through and through wound of the trunk traverses the spinal canal, the cord is usually hopelessly pulped. An estimate should therefore be made of the probable track of the bullet, bearing in mind that the position of the patient during examination may not correspond to that in which he was hit.

It is obvious that cases of complete sudden paraplegia should not be kept in the casualty clearing station if they are otherwise fit to travel. If, however, the paralysis has developed since the man was wounded, it is probably due to pressure from blood clot (when it is not likely to be absolute), or to displacement of fragments of bone during movement. In both these cases early operation may be indicated, but in the latter only if *x* rays show a minor degree of displacement. If displacement is great the cord is probably pulped.

If conduction, either motor or sensory, is present in the affected part of the cord when the patient is admitted to the casualty clearing station, it is usually found that fragments of bone are pressing on the cord, or that the missile causing the injury is in close relationship to it, and will probably have carried in sepsis. There may or may not be partial division of the cord. A missile with momentum sufficient to carry it far past the cord usually produces complete early paraplegia, even although it may not cause complete section. If, then, *x* rays reveal fracture or the presence of a foreign body partly or wholly in the spinal canal, operation should be done at once, with the quadruple purpose of relieving pressure, cleansing the wound, restoring normal circulation as soon as possible, and, thus, of combating sepsis.

In some cases pain is so excessive and uncontrollable by other means, that, whatever the amount of paralysis, operation is imperative in order to relieve the pain.

Selection of Cases for Operation.

Roughly speaking, it may be said that operation is indicated or advisable at a casualty clearing station:

- (1) In the presence of incomplete paralysis of motion or sensation below the lesion, especially
- (2) if *x* rays show displaced fragments of bone or the presence of a piece of metal in or near the cord.
- (3) When the symptoms of paralysis have developed after the infliction of the injury, unless due to inflammation in cases which have been "lying out," when operation is practically hopeless.
- (4) When pain, due to pressure on nerve roots, is excessive and uncontrollable.
- (5) In very exceptional cases, when the character of the wound is such that sepsis, although not already evident, is likely to develop and cause rapid death.

In all other cases it is better, when feasible, that the patient should be evacuated without delay.

In cases which are retained for more than a few hours in a casualty clearing station, urotropine should be given as a "routine" in an attempt to prevent cystitis. Too great care cannot be exercised in performing catheterization.

Certain Operative Details.

1. Local anaesthesia, by infiltration down to and including the periosteum of the laminae and articular processes, is as effective as in a trephining operation, and even more easily carried out. The patient should receive such a preparatory dose of morphine or omnopon-scopolamine that he becomes drowsy. It is rarely necessary to use a small amount of chloroform at any stage of the operation, unless the track of the missile is followed into non-anaesthetized tissues. A few whiffs may be given if

the patient complains much of the pain of the injection, but the latter should be gone on with during the administration. Adrenalin renders the field practically bloodless.

2. If the wound is in or near the mid-line it should be carefully excised down to the bone, as in a trephining operation. Suture is usually not advisable. If the wound is well to one side, a fresh, free incision should be made in the mid-line. This is sutured at the end of the operation, while the track of the missile is cleaned up and used for drainage purposes. Carrel's method should be applied.

3. Set operations should be avoided. A typical laminectomy is rarely indicated. The laminae can usually be nibbled away, as is done in most cases of trephining for depressed gunshot fracture, until healthy dura is exposed all round the injured area. All obstruction to the easy removal of fragments should be removed before any attempt is made to lift them out. The greatest delicacy should be exercised, especially if movement of these fragments causes pain or twitching. One of the great advantages of local anaesthesia is that the patient is capable of feeling such pain. This fact may prevent further gross injury to the cord.

4. If the wound is not sutured, if the dura has been opened, Carrel's method of after-treatment, with the patient lying on one or other side, should be carried out. If the dura is unopened a gauze pack may be used.

It will be seen that the operation, in cases suitable for it, is on all fours with trephining the skull in gunshot injuries, both as regards technique and indications for dealing with dura, etc., except that in the one case we are in contact with inert and in the other with vital portions of the nervous mechanism.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DERMATITIS FROM EXPLOSIVES USED IN AIR RAIDS.

DR. SEQUEIRA's record of cases in the JOURNAL of June 30th, p. 894, induces me to supplement his notes from similar cases that have passed through my hands during a recent air raid.

The men, all soldiers, were engaged in digging out bombs, and when so doing did not wear any protective coverings. The orange staining of the skin, of hands, feet, and face, came on the next day; the hands were principally affected, and these were very deeply stained; the vesicles appeared five or six days later.

The main symptom complained of was the intense itching and irritation; the hands, as in the case of the staining, were most affected in this way. In one case the man suffered considerable irritation of the testicles. The staining on the feet and face has now, five weeks after its first appearance, disappeared, but the hands, which were so deeply coloured, are now peeling; the flakes that are coming off are stained and thickened; the new skin underneath the flakes is tender and red. There have been no outstanding constitutional symptoms. All the men complained of nausea for a few days, and were until now unable to enjoy their food. The taste was altered; they compared this to the sensation which is noticed when chewing tobacco.

No local treatment has been of any avail.

Folkestone.

W. J. TYSON, M.D., F.R.C.P.

In the BRITISH MEDICAL JOURNAL of June 30th Dr. J. H. Sequeira refers to some cases of severe dermatitis due to contact with powder from bombs dropped in the air raid on London on Wednesday, June 13th. On the day on which these cases first appeared at the London Hospital—namely, on Tuesday, June 26th—there came also to the skin department at St. Bartholomew's Hospital twelve persons suffering from this complaint. All these patients had what might be described as severe pompholyx, and the only difference from the more ordinary cases of pompholyx was in the deep yellow staining of the skin of the palms and fingers and soles and toes. As in Dr. Sequeira's cases, the eruption first appeared on Friday evening or early on Saturday morning, nine days after the air raid. Among the patients were the mother and four

children in one family, two boys in another family, one of the hospital porters, and several isolated cases. All these patients had come into contact with the yellow powder which filled the houses and streets after the raid—the mother in scrubbing down the stairs, the children and others in walking or playing or searching for relics in the dust. The clearest evidence of the nine days' incubation period was in the case of the hospital porter, who came into contact with the powder only on one occasion—namely, when carrying in wounded victims on June 13th—and in that of another patient who on June 14th dipped his hands into a pail containing water into which part of an exploded bomb had been placed, and in whom the rash appeared during the night of Saturday, June 23rd.

The eruption reached its acme in from four to five days. There was no inflammatory redness, but only the clear "sago-grain" vesicles, characteristic of cheiropompholyx, which appeared deeply under the thick epidermis, rapidly enlarged, and ran together to form large blebs, in some instances as large as a hen's egg. These vesicles, large and small, covered the palmar surface and sides of the hands and fingers and the interdigital spaces in all cases, and in two-thirds of the cases similarly affected the soles and the toes. In some the backs of the hands and feet were swollen, but in no case was any other part of the skin involved.

In the course of a week most of the vesicles had dried, and the horny layer of the epidermis was beginning to separate and to leave a new, pink, healthy epidermis. All the patients suffered severe pain—so severe that they were kept awake at night by it. In none of the cases was there suppuration, and this perhaps may be attributed to the fact that they were instructed to soak the hands and feet for half an hour several times a day in hot water, a proceeding which also eased the pain. After the soaking, calamine lotion was mopped on.

These cases are interesting particularly on account of the incubation period, and also in that they perhaps throw some light upon the causation of what we have been accustomed to call "dysidrosis" or "cheiropompholyx," and to regard as due to irritation from toxic sweat, and in some way associated with debility from nervous or other influences. These cases suggest that the eruption known as pompholyx, dysidrosis, or cheiropompholyx, may in reality be due to some external poison which gets into the sweat pores and there produces irritation. They recall a remark made by Dr. J. J. Pringle in an article on cheiropompholyx in Allbutt and Rolleston's *System of Medicine*, that "the handling of irritating substances (for example, dyes) seems sometimes concerned in its production."

H. G. ADAMSON,

Physician for Diseases of the Skin,
St. Bartholomew's Hospital.

LAND SCURVY IN ENGLAND.

In the Poor Law Infirmary, Newcastle-upon-Tyne, during the last five years up to 1917, two cases of scurvy were treated, but during the last three months sixteen cases have been admitted.

Certain features have been noted which correspond with those observed in Glasgow (BRITISH MEDICAL JOURNAL, July 7th, p. 28). Thus all the cases have been men in the habit of frequenting lodging-houses. In my opinion the disease has been produced by the entire absence of potatoes from the diet. In ordinary times other vegetables are eaten to a very much smaller extent by the type of patient admitted to Poor Law infirmaries. With potatoes unobtainable, substitutes are found, usually in the form of bread, which does not possess antiscorbutic properties. In all the cases which have come under my view the usual story has been a diet of bread and tea, with perhaps some variety of tinned meat.

The public should be warned that foods containing antiscorbutic properties are necessary, and that such starchy substitutes as bread and rice are not sufficient.

The cases I have had under my care have been quite definite and easy of recognition, when the existence of such a disease as scurvy is remembered. The outstanding feature in all has been the presence of purpuric spots, chiefly confined to the extensor surfaces of the legs. Another constant feature has been haemorrhages round the knee and ankle and in some cases accumulation of fluid in these joints. When the ankle is involved all the

appearances of a sprain are presented. In addition haemorrhages have occurred in other situations and chiefly over subcutaneous bones (radius and tibia). The appearance is of an elongated, discoloured swelling. Several of the patients had ulcers on the legs; these were characteristic, with raised, thickened dark edges. They were also particularly indolent as far as healing was concerned. The condition of the gums varied, some of the cases having no involvement, others the soft, spongy gum, bleeding very readily. Lastly, there was constantly extreme anaemia, producing an earthy, dirty pallor of the face. The reason, in all the cases, for the patient seeking advice was the implication of the joints producing pain and stiffness.

The condition, fortunately, is very amenable to treatment, improvement following rapidly on a suitable diet with lemon juice and a mixture containing citrate of iron and quinine.

GEO. P. HARLAN, M.D., B.Hy.,

Poor Law Infirmary,
Newcastle-upon-Tyne.

Medical Superintendent.

Rebelsus.

SPIRITUALISM AND SANITY.

SIR OLIVER LODGE has become the chief exponent of what is commonly called spiritualism, and his advocacy has the more weight with the public because of his eminence as a scientific investigator and teacher. He published recently a book entitled *Raymond*, relating various experiences he and members of his family have had leading them to believe that they had held communication with the spirit of Sir Oliver's son killed in Flanders in 1915. Not many years ago Sir Oliver Lodge published a book entitled *The Survival of Man*, and Dr. CHARLES MERCIER has devoted a small volume to an examination of the doctrines and practices therein described.¹ Dr. Mercier addresses himself not to convinced spiritualists nor to those who have investigated the phenomena and found no reason to accept the interpretations put upon them, but to the "immense body of persons who have the subject more or less forced upon their attention by the strenuous propaganda of Sir Oliver Lodge," and "really desire to arrive at the truth." "I do not," Dr. Mercier says, "ask them to adopt my conclusions: I ask them to adopt my methods, which are the methods that Sir Oliver Lodge also recommends but does not follow."

The subject is one which must engage the attention of members of the medical profession because of its reaction on the mental stability of the very large number of persons who have lost near and dear relatives in the war. Dr. Mercier quotes at length the observations made by Dr. G. M. Robertson, Superintendent of the Royal Asylum, Morningside, in his annual report, to which attention was called in these columns some months ago (March 3rd, p. 302). Dr. Robertson strongly advises "those who may possibly inherit a latent tendency to nervous disorders to have nothing to do with practical inquiries of a spiritualistic nature" lest they should awaken a "dormant proclivity to hallucinations within their brains."

Dr. Mercier states that the subject of spiritualism never engaged his attention before, but he has evidently studied these two books very carefully, and his previous want of interest in the subject does not diminish his competence to form an opinion on spiritualism, for, having had occasion to read a great many books on the subject and many volumes of the *Proceedings of the Society for Psychical Research*, we are prepared to accept *Raymond* as a fair, if unusually voluminous, sample of the kind of story, the kind of evidence, and the kind of conclusions usually to be found in such publications.

After an opening chapter in which the subject to be considered is stated, Dr. Mercier seems to begin its consideration a long way off, but the reader will soon see that this is necessary in order to get a true perspective, and we do not counsel him to accept the author's licence to skip the second chapter, on the "grounds of belief." We do not propose to attempt to set out the contention of the book. To do so would not be fair either to reader or author; the argument is closely knit, and should be followed out as

¹ *Spiritualism and Sir Oliver Lodge*. By Charles A. Mercier, M.D., F.R.C.P., F.R.C.S. London: The Mental Culture Enterprise. 1917. (Cr. 8vo, pp. xx, 132. 4s. 6d. net.)

presented. Only this we will say, that a comparison of the evidence for spiritualism with the evidence for witchcraft is brilliantly worked out, and cannot be met by shoulder-shrugging silence—the parallel is too close, and where it ceases the weight of evidence is all for the truth of witchcraft. We wish Dr. Mercier's book a tithe of the circulation of Sir Oliver Lodge's, but hardly hope for it. Dispassionate analysis seldom commands the public attention easily won by passionate pleadings which jump with the desire of the many to believe; and here we would submit, with all the respect inspired by Dr. Mercier's sword play, that he has not taken the full force of Tertullian's famous *credo quia impossibile*, or at any rate has not fully brought it out, though it would have served the purpose. Tertullian was concerned to define the meaning of faith as distinguished from knowledge. His pagan antagonists reproached him with accepting things which were impossible—that is to say, contrary to the order of Nature. Tertullian replied: "Quite so: things it is possible to prove I know, but there are things not possible of proof which I believe by an act of faith." The point is surely fundamental to the discussion. If Sir Oliver Lodge were as frank as Tertullian, his attitude might be as incomprehensible to some of us as Tertullian's to the pagan, but it would command the respect due to ancient precedent.

SHELL SHOCK AND ITS LESSONS.

THE purpose of the small volume on shell shock,² by Professor ELLIOT SMITH, Dean of the Faculty of Medicine and Professor of Anatomy at Manchester, and Mr. T. H. PEAR, Lecturer in Experimental Psychology in the same university, is to present to the reader a simple non-technical exposition of the ascertained facts relating to the "shell shock" complex. At the same time it is a plea for the more rational treatment of what may be termed minor mental maladies.

There is hardly any department of medicine which has been so neglected in this country, not only from the clinical and therapeutic but also from the research standpoint, as that of psychopathy as apart from definite insanity. The writers do well, therefore, to direct attention at this time to our sins of omission in this regard. We provide hospitals which are second to none in the world for the treatment of lunacy, but we are lamentably lacking in our methods of studying the early deviations from mental health, and in our means, medical as well as legal, for handling them so that the disorder shall not become confirmed. The war has served to focus attention on a complex of symptoms due to the exhaustion of nervous energy, consequent on excessive psychic excitation acting in combination with various toxic and nutritional disturbances—factors which exercise a profound influence upon the endocrine system and through this system on the nervous tissues. The war has forced upon this country, as the authors point out, a rational and humane method of caring for and treating mental disorders amongst its soldiers. Believing, as they do, that the problems of shell shock are the every-day problems of "nervous breakdown," they have made their book a plea for the establishment of psychiatry clinics, a plea for research in connexion with mental derangements, a plea for the education of the mass of the profession in the means of dealing with such derangements in their earliest stages, and a plea for the removal of the stigma which attaches in this country to mental disorder however transitory. It is an object with which we are in the fullest sympathy.

The authors advocate a therapy in these nerve-shattered cases which is at once sympathetic and humane, based on ascertained facts and on sound common sense. They have from time to time in the course of their argument had occasion to refer to the backward place amongst the nations which Britain occupies in regard to these cases. It is painful reading to find that a nation so humane as the British should be so surpassed in any regard by a nation which has proved itself so inhuman as Germany. The authors have used a sharp spur, but if it serves "to prick the sides of our intent," as we hope it

may, we will forgive its sharpness. The book is one which will be read with interest and profit by all those who are interested in the progress of scientific medicine.

NOTES ON BOOKS.

DR. ALEX HILL contributes a little volume on *Food*³ to a series of popular Manuals of Health, of which Professor Barclay-Smith is the general editor. The author shows that he has not lost his knack of imparting and expounding the broad facts of physiology in straightforward, entertaining language. His aim is to set forth the fundamental principles of dietetics in simple terms; to show why food is needed, how much, and of what kinds. At the present time, when the general public can scarcely keep from thinking of food, Dr. Hill's little treatise on the chemistry of foodstuffs and the physiology of digestion should be of much value.

Professor H. GOUGEROT of Paris has written an excellent practical manual of diseases of the skin⁴ that should be of great service to practitioners of medicine and specialists in cutaneous disease alike. In the first part of the book a general account is given of the whole subject. The dermatologist's general objects and method of attack are detailed, and the data on which he must form a diagnosis and a prognosis, and the outlines and details of treatment are set out. The second part occupies four-fifths of the text, and is divided into twenty-three chapters, each devoted to one clinical or pathological morbid entity; thus the first five chapters are given to dermatoses that are irritative, non-irritative, bulbous, pruriginous, or associated with generalized erythema and desquamation. The last chapter of all deals with "unaesthetic dermatoses"—alopecia, hypertrichosis, and canities. Professor Gougerot's descriptions of the various dermatoses or skin diseases are excellently written, brief and to the point. Most of his attention, however, is given to treatment, and here he provides an abundance of detail based on his own practice in his clinics at the Saint-Louis Hospital in Paris. The illustrations are numerous, and for the most part both photographs and three colour autochromes are first-rate, a real help to the searcher after knowledge. There is a fairly good general index and also an index to the illustrations. The book is well printed, and gives good value for its cost.

DR. WILSON'S *Students' Textbook of Hygiene*⁵ is based on a course of lectures given by the author at Queen's University, Belfast, and is designed to meet the requirements of medical students, sanitary inspectors, health visitors, and others who are interested in public health. It gives a clear account of the principles of the science and of their practical applications so far as the moderate scope of the book allows. There are twenty chapters in the text, and these cover the ground in a highly adequate manner. Dr. Wilson gives a very lucid exposition of the many subjects with which the expert in public health is expected to be familiar, and shows no little skill in the selection of the matter he inserts.

In the fourth edition of his useful *Handbook of Midwifery for Midwives, Maternity Nurses, and Obstetric Dressers*,⁶ Dr. COMYNS BERKELEY has taken into consideration the raising of the standard of training by the Midwives Board. Whilst revising the work, and rearranging certain parts, he has widened its scope, and treated some subjects more fully than before. At the request of trained midwives in remote districts he has also included an outline of the treatment that a medical practitioner might be expected to give if his help were available. In its present form this handbook will, no doubt, continue to prove of much value to those for whom it is intended.

³ *Food*. By A. Hill, M.A., M.D., F.R.C.S. London: Society for Promoting Christian Knowledge. 1917. (Fcap. 8vo, pp. 64; 1 figure. 9d.)

⁴ *La Dermatologie en Clinique*. "L'Indispensable en Dermatologie." By H. Gougerot, Prof. agrégé à la Faculté de Médecine de Paris. Paris: A. Maloine et Fils. 1917. (Cr. 8vo, pp. 776; 114 figures in black in 32 plates, 40 figures in colour in 16 plates. Fr. 15.)

⁵ *Students' Textbook of Hygiene*. By W. J. Wilson, M.D., D.Sc., D.P.H. London: W. Heinemann. (Demy 8vo, pp. 280; 13 plates, 25 figures. 8s. 6d. net.)

⁶ *A Handbook of Midwifery for Midwives, Maternity Nurses, and Obstetric Dressers*. By Comyns Berkeley, M.A., M.D., M.C. Cantab., F.R.C.P. Lond., M.R.C.S. Eng. Fourth edition, enlarged. London, New York, Toronto, and Melbourne: Cassell and Co., Limited. 1917. (Pott 8vo, pp. 541; 1 plate, 72 figures. 6s. net.)

² *Shell Shock and its Lessons*. By G. Elliot Smith, M.A., M.D., F.R.C.P., F.R.S., and T. H. Pear, B.Sc. Manchester: At the University Press. London: Longmans, Green and Co. 1917. (Cr. 8vo, pp. xi + 135. 2s. 6d. net.)

THE MESOPOTAMIA COMMISSION.

[Third Notice.]

THE GOOD WORK OF THE EXECUTIVE MEDICAL
OFFICERS.

IN Part XI of its report, entitled "Causes contributing to the errors of judgement and shortcomings of responsible authorities," the Parliamentary Mesopotamia Commission says that "in the story of the military successes and reverses of this campaign there constantly crops up, almost from the day of the landing of the force, evidence of shortage of transport of all kinds, of the antiquated equipment of the troops, of grave deficiencies in medical personnel and material, occasional shortage of rations at the front, and a great, if not total, lack of comforts."

The Force "Ill Found."

The force from the first was "ill found" to meet the privations and hardships inseparable from campaigning in Mesopotamia, and as its numbers increased bad went to worse. The Indian authorized scale of medical personnel was calculated for the needs of frontier warfare, where casualties were not likely to be large and the resources of India were close behind. When the force was increased to two divisions, plus a cavalry brigade, the medical establishment was, save for the addition of seven sections of a field ambulance, that which had been thought necessary for one division only. The Parliamentary Commission states further that the organization orders of the Mesopotamian force contemplated a lower establishment than is laid down for a frontier campaign, and that the actual amount of medical personnel in Mesopotamia was during long periods far below even this meagre scale.

*Advance with Inadequate Organization and Medical
Complements.*

Under peremptory orders to advance, General Aylmer commenced the operations for the relief of Kut when "his columns were inadequately organized as regards transport, staff, and, above all, when the medical complements were quite insufficient." (X, 29.) It appears that the original organization of the force did not include any wheeled transport for the sick and wounded; a few motors were used in the Ahwaz operations in April and May, 1915, and again at Ctesiphon, and, later on, ambulance wagons of the English pattern. Throughout the campaign, however, the usual form of ambulance transport was the army transport cart, a small springless cart of wood and iron, drawn by mules or ponies, and ordinarily employed for the carriage of supplies. The original orders of the force allotted an additional number of riding mules, but these seem to have proved unsatisfactory.

The Vincent-Bingley Commission considered the supply of surgical and medical stores and appliances to have been unsatisfactory up to March, 1916, and pointed out, first, that the system of supply laid down in the *Medical Manual (War) India* was ill adapted to meet the demands of a large force operating overseas 1,600 miles from India; and, secondly, that, owing to lack of river transport, there was such delay and uncertainty in the delivery of these supplies that medical officers were frequently hampered in their work. The Parliamentary Commission had evidence that there was a shortage of drugs, including emetine and quinine, but adds that it is convinced that there was never any general shortage of drugs, dressings, etc., at Basra, though these and similar medical necessities were on many occasions either in insufficient quantities or altogether lacking at the front. As a matter of fact, we believe that neither sodium sulphate nor emetine is on the list of drugs to be supplied to British and Indian hospitals fitted out in India. There was also a shortage or absence of ice above Basra, and the arrangements for obtaining potable water were defective or absent. There was a lack of sweepers for sanitary work, and at one time an absence of any suitable machinery for disinfecting clothing and other articles. (X, 14-19.)

Work of Executive Medical Officers.

These extracts and abstracts may serve to give some idea of the disheartening conditions under which the

executive officers, those actually dealing with the wounded on the battlefield, on their way down to Amara and in the hospitals there, had to work. The Parliamentary Commission speaks in several places of the excellent work done by the executive officers on the spot. (X, 105.)

"We believe," the Commissioners say, "that with the means at their disposal, and within the limits of their powers, the executive medical officers have unfailingly spent themselves in alleviation of the suffering of their patients, and there have been but few isolated exceptions to this praiseworthy rule. When the disaster of Ctesiphon was upon him Surgeon-General Hathaway, whose administrative capacity has been so seriously called in question by ourselves and the Vincent-Bingley Commission, took off his coat and worked strenuously at embarking the wounded. The trouble has been throughout failure to foresee rather than failure to mitigate disaster." Again, the Vincent-Bingley Commission, speaking of the fighting in January, 1916, say, "evidence before us abundantly proves that, generally speaking, the energy, kindness, and industry of the executive medical officers . . . was beyond all praise." The Parliamentary Commission endorses this encomium, and extends it to the whole campaign.

Major Carter's Reports.

It must be remembered that it was an executive officer of the Indian Medical Service, Major Carter, then in medical charge of the hospital ship *Varela*, working between Basra and Bombay, who, taking his courage in both hands, forced attention to the condition under which the wounded were coming down. In a report made on the arrival of the ship at Bombay (December 14th) to Surgeon-General MacNeece, then D.M.S. India, Major Carter gave an account of the deplorable condition of the wounded brought down by the *Medjidieh* and other boats, and went on to speak of the extraordinarily difficult position in which the medical personnel of the force had been placed. On the *Medjidieh*, a small river steamer, it had been necessary to crowd over 600 sick and wounded from November 24th—that is, immediately after the battle of Ctesiphon—to the evening of December 6th; the equipment of the field hospitals had to be abandoned to the enemy, and there was practically nothing left with which to dress wounds or treat medical cases. The Parliamentary Commission admits that the "successful evacuation of the wounded in the face of a superior and pursuing enemy was a fine military performance" (X, 59), and Major Carter states that "the men were loud in their praise of the devotion to duty shown by many of the medical officers under heavy fire, both in the field and at the point of attack on the Tigris. There is but little chance of recovery for men with severe gunshot fractures, who lie on the bare decks of boats and barges for thirteen days amid septic discharges, diarrhoea, and dysentery, swept at night by a wind that dropped nearly to zero, without any protection against the cold save their clothes and country blankets, which in the cases of total cripples were sodden with their own discharges and dejecta. I write this to protect from hostile criticism by the laity the members of the medical services, who in these primitive boats and cattle barges have struggled for thirteen days against the difficulties of a task that is happily exceptional in the war history of our Imperial forces. There is no shadow of doubt that the medical staff who accompanied these sick and wounded from Ctesiphon did all that lay in their power to help and tend their patients, but it was attempting to make bricks without straw." (X, 89.)

This report brought Surgeon-General MacNeece to Bombay on December 15th, who immediately wrote to the chief of the general staff, India, stating that "many of the sick, British and Indian, particularly the latter, were brought on board in a deplorable condition. . . . Between Kut and Amara the steamers and barges were stopped by Arabs, and had to go back three times. Barges and steamers were crowded, sanitary measures were deficient or wanting, and the men, particularly Indians, lay on the deck suffering from dysentery, passing their motions under them, and getting large bedsores. The whole business is bad. The medical authorities were only given sufficient steamers and barges to turn into hospital ships for 500 casualties (so I am informed); then, when the crash came, over 4,000 had to be got down any way." (X, 90.)

Colonel Hehir's Work.

The position of Colonel Hehir, who was the principal medical officer of the original force, is somewhat peculiar. The Commission recognizes that he showed watchfulness and foresight, that he called attention to the crying need for a proper water supply at Basra, that he took measures to cope with a possible outbreak of malaria, and warned the Indian Government against the danger of scurvy arising from the deficient ration of the Indian troops, and that he asked for and obtained antityphoid and small-pox vaccine and antitetanus serum. Of his medical dispositions at Ctesiphon it is said that, having regard to the inadequate means at his disposal, they were not open to serious criticism. The reproach against him is that his very success in "making do" with the inadequate means at his disposal in personnel and material was really a fault, because it blinded himself and others to the fact that the margin of safety had been reached, if not actually overstepped, and that a reverse in the field or a great increase in sickness must lead to a breakdown.

HEALTH OF MUNITION WORKERS.

(Continued from p. 16.)

THE first part of this article, which was published on July 7th, p. 13, gave some account of the foundation and activities of the Ministry of Munitions, and of the inquiries of the Health of Munition Workers Committee into hours of work, industrial fatigue, and the work of women and young persons. The present section deals mainly with incentives to work, diet, and canteens.

INCENTIVES TO WORK.

The inclination to work rather than to idle, though it varies in different individuals, is a physiological phenomenon as important as the desire for rest which at periodic intervals follows work. The ordered routine of a modern factory is a direct stimulus to the daily rhythm of activity and rest—the better the organization and hygienic environment the greater the activity, the worse the organization and environment the greater the need for rest.

Time and Piece Rates.

Certain kinds of work, generally either the most highly skilled or the least, can only be paid for by time. With the present shortage of labour the worker has little reason to fear dismissal; there is no inducement to special endeavour except that supplied by patriotism and pleasure and pride in work for its own sake. Good time-keeping can be encouraged by bonus or fines, but does not always mean good work. The good results that have been attained with payment by time indicate that, given suitable environment, the inclination to work is a deep-seated physiological phenomenon, and it is questionable whether in the end the best results may not be obtainable by trusting to the good faith of both employers and workers. The desire to bring direct stimulus to bear on the natural inclination to work has led to the introduction of payment for work done and at piece rates. The manufacture of munitions, so largely a repetition of minutely-subdivided processes, lends itself particularly to this form of payment. That well-arranged piece rates may act to increase the rate of performance of monotonous repetitive processes is shown by statistics as to seventeen girls engaged in drilling fuses. Two consecutive weeks, the first on time and the second on piece work, were compared, and it was found that the output in the second week was 24 per cent. higher.

The system of piece rates adopted by the employer must be carefully explained to the operatives. In one department of a great munition works the foreman, who had failed to make the system of payment intelligible to the girls, set a standard, and it was found that the output remained at this dead level, and this fact, combined with the record of the use of electric power, showed that the workers were going easy. At the same time other girls, working on processes for which no standard had been set, were increasing the output. The Factory Act, 1901 (Section 116), directs that an explanation of the system of payment shall be given in writing, and it is important that this regulation should be carried out, so that the

employed may be able to estimate their exact earnings correctly.

In some circumstances the lack of desire to earn more than the minimum may lead to bad time-keeping or slack work. This may happen with men of an inferior type, who, in normal times, would not be employed in such work at all. It may happen also with boys, who, however slack they may be in work or attendance, are confident that they will, on pay day, receive more than they want to meet their requirements. These classes do not know how to spend the money they earn, but a comparable effect may be produced by lack of opportunity to spend; for example, so much overtime may be worked that there is no Saturday afternoon holiday, or the neighbourhood may provide no opportunity either for recreation or for increasing the comfort of the home. That the environment of a factory has a great effect is shown by the fact that where hygienic conditions are good, transit easy, welfare work properly carried out, and open-air recreation obtainable, the work and output are better.

Piece rates may cause wastage of workers through fatigue due to over-speeding of production. Dr. Vernon found in the case of lathe operators that though the strongest women available were picked out for the work, many of them could not stand it for more than a few weeks. Adequate records were obtained. Of 95 operatives, 22 gave up after four weeks or less and 11 more after ten weeks or less; but the cause of their retirement was not ascertained.

In a munition factory employing 7,000 to 8,000 males under 21, 25 per cent. of the total disappeared every three months, a loss which must partly be attributed to over-fatigue. Out of 287 girls at work in another factory, 30 had disappeared after eleven weeks; they were all strict piece-workers who had had enough experience to attain the normal level of productive power.

Such figures indicate a serious and undue wastage of skilled work, and the matter is now under investigation.

Rest Pauses.

The natural inclination to work is followed by a desire for rest, and physiological needs impel the workers to regulate their method of working. For example, a group working from 6 a.m. to 6 p.m. were engaged in filling presses, work entailing a fair amount of physical labour. During the thirty-five minutes for which pressure was being applied other presses were filled. It was found that instead of taking the full thirty-five minutes to do this the workers preferred to fill the presses in twenty-five minutes and then rest ten.

It has been ascertained that short rest pauses do not decrease the rapidity of work in munition factories. Proper rest pauses will prevent monotony, and the prospect of a rest and change to follow acts as an incentive to the completion of each stage of the work. The more arduous the processes the longer should be the rest pauses.

The value of well-planned rests in long-sustained athletic efforts is well recognized, and another lesson can be learnt from the trainers of athletes. They coach their pupils in the way to use their muscles with the greatest economy and efficiency. A worker should be induced to seek information as to his faults from a trained teacher so as to get out of bad habits unconsciously developed; such teachers would be able to give useful advice to the management as to the most suitable speed for running machinery, and as to the best moment to choose for rest pauses.

Other Incentives.

One of the greatest causes of dissatisfaction among average factory workers is the terrible monotony of the work. Employers and managers act wisely when they explain the character of the work and the part it plays in the world's economy. In one large munition factory where lectures with cinematograph illustrations, showing the evolution of the work and its use at the front and how the workers are helping to win the war, are given two or three times a week, not only has an increased output resulted, but only one overseer is required in place of the dozen or more that would be required for the same number of workers in a factory where such incentive is absent. Competitions between factories, with a trophy or money prize, act as incentives to increase output. Day by day the scores are marked up until the month's total in

each factory completes the competition. Further, just as the soldier is rewarded for good work so should honours be bestowed on munition workers who distinguish themselves in quality and output of work.

CANTEENS.

Many benefits are resulting, both to employers and workers, from the establishment of well-managed canteens. Among the former are improvement in the health and physical condition of the workers, diminished sickness, absence and broken time, less tendency to alcoholism, and increased efficiency and output; among the latter are the saving of time of the workmen, salutary though brief changes from the workshop, better midday ventilation, and, generally, greater contentment. The need for canteens arises especially in factories where, as so often happens at munition works, the workers cannot take their meals at home. In such circumstances the custom has been for the worker to bring his or her food, but this should be avoided, for, even when the factory supplies hot plates and warming cupboards, the choice of food is usually limited, and warmed up food is never so appetizing as freshly cooked food. Especially at night, when work is particularly exhausting, the food should be light and digestible, well cooked and attractive, for, lacking a full supply of nervous energy, the organs of digestion cannot deal with heavy, indigestible, and unappetizing meals. A canteen should have a well equipped kitchen and a dining-room, where cheap dinners of good quality can be obtained. Linked with the dining-room should be a club, providing rest, reading, and recreation rooms, gymnasium, baths, and if possible a roof garden, and rooms for educational classes and entertainments. Such a club should be part of the equipment of all modern factories and workshops. The service of meals in the dining-room should be quick. The worker buys a check, or a book of checks, and in the room finds a long serving counter at which he receives his chosen dish in return for a check. The meals are served hot and warm from hot plates beneath and behind the serving counters. The canteen should be open at all hours, and the hot meals served at times most convenient to the working arrangements of the factory. The management must be disinterested, and the workers should have a share in an advisory committee. In many factories it has been found that it actually paid to incur a loss on the meals served in the canteen, owing to the greater efficiency and health of the workers.

The canteen must be well ventilated and well lighted, and thoroughly aired between meals; it should be kept scrupulously clean, made to look as comfortable as possible, and the seats at the tables should have backs. The separate staff required for cooking, service and cleaning, in a canteen seating a thousand, is one head cook, and two under cooks, twenty assistant servers, four cashiers and ticket sellers, one storkeeper, and one assistant-store-keeper. At 150 canteens out of the 500 established, some 10,000 part-time voluntary workers have been employed; but this involves waste of energy, since it has been ascertained that fifty part-time voluntary workers are only equal to five regular paid assistants.

DIET.

An investigation into workers' food, made for the Committee by Professor Leonard Hill, has yielded some very interesting results. The loss of energy due to cooling of the surface of the body is greater than that due to mechanical work; an ordinary labourer may expend one-sixth of the amount of his total output as work and the remainder as body heat, whereas a sedentary worker may expend little energy as work, and almost all as body heat. As activity increases, the loss due to the latter cause grows out of proportion to the actual energy expended as work. Food should be taken regularly and not hurriedly, and the meals should be distributed evenly over the day. One of the earliest symptoms of fatigue due to overwork is digestive derangement; a tired man benefits by a brief rest before a meal. Professor Hill examined the diets popular with workers, male and female, young and old, estimated their content of protein, fat, carbohydrate, and tested them primarily by their yield in energy as expressed in calories. He examined the value of certain meals, taken at random as specimens of those served in canteens, students' clubs, and restaurants. The difference in price

is very striking. In a popular restaurant a meal of steak pudding, potatoes, and cabbage, and syrup pudding, yielding 1,344 calories, cost 1s. 5d. (79 calories for 1d.). In a factory canteen under amateur management a dinner of steak pudding, peas, and potatoes, jam roll, and rice pudding, cost 5d., and yielded 1,433 calories, or 288 calories for 1d. The cheap 5d. meal actually contained over 10 per cent. more protein than the meal that cost 1s. 5d., the same amount of fat, and rather more carbohydrate. The canteen dinners were generally good, yielding an energy value of about 1,000 calories, well distributed among the amounts of protein, fat, and carbohydrate. Inspection showed that meat, vegetables, and pudding were made of good materials and well cooked. The meals brought in by workers were found to vary a good deal more than the canteen meals. One man who brought rabbit and vegetables in a basin got only 683 calories; another man who brought sausage roll, bread-and-butter and ham, and cheese, got 1,448 calories; and a boy aged about 15 got 1,719 calories out of a dish of potatoes, tomatoes, and bacon, a jam puff, a cake, bread-and-butter and jam; but while this meal illustrates the effect of growth and work in producing appetite, the boy was probably over-eating if his other meals were on the same scale. The food of women workers was, on the whole, less satisfactory than that of men and boys, and the yield in calories was probably, in most cases, insufficient. A restaurant meal of roast mutton, potatoes, cabbage, and syrup roll yielded 687 calories, and cost 6d.; another in a teashop, consisting of a roll, butter, milk, sugar, stewed prunes, and syrup yielded 397 calories, and cost 7d. A meal brought from home yielded 590 calories, but another only 295. Whether deficiencies in the meal taken during the working period are made up by more liberal meals at home could not be ascertained, but, says Dr. Hill, "even if the home meals are more liberal, the distribution of the day's eating is on the wrong lines." He considers that in a long day's work there should be a good meal in the longest break if the efficiency of the worker is to be maintained for months and years. He accepts the estimate of numerous investigators that the energy required by a man engaged in fairly light munition work is about 3,500 calories of food as purchased; but where calculations are based, as in his report, on food as eaten, the minimum canteen diet should be taken to be about 3,000 calories, although for a man engaged in a sedentary occupation as little as 2,200 may suffice. An investigation was made of the diet supplied at a well-managed hostel, where each worker might eat as much as he or she desired. Four meals were supplied—breakfast, dinner, tea, and supper. Bacon or sausage, or both, were served at breakfast, either meat or fish at dinner, and either meat or ham, and cheese at supper. The calorie values varied between 3,847 and 3,913. This should satisfy the requirements of factory workers unless very heavy work is being done, and could be reduced somewhat if facilities for getting extra food were afforded to any one who wanted more. Five daily dietaries eaten by a well-paid worker, doing light work, yielded from 2,956 to 3,252 calories. In three of the five diets the largest number of calories was provided for midday dinner, the yield being 1,346, 1,102, and 1,003 respectively. In the two others the yield provided from breakfast was a little higher than that from dinner. In all diets the yield from supper was lower than that for dinner, and in all but two lower than that for breakfast.

(To be continued.)

WE learn from the *New York Medical Record* that Professor Savvin has recently published in the *Russkiy Trach* an analysis of the first 100,000 cases of wounds and disease admitted to the Moscow hospitals from October 3rd, 1914, to July 20th, 1915. The wounded numbered 68,321; the sick 31,571. It may be gathered that nearly 80 per cent. of the wounded were hit in the extremities, and it may be assumed from the experience in other fighting zones that a fair proportion of the injuries of the head and trunk were not severe; the conclusion seems warranted that the mortality among the wounded in the Moscow hospitals was not high. Of the 31,571 cases of disease 5,047 were infectious, typhoid fever heading the list with 1,701; there were 561 cases of dysentery, 68 of cholera, and 31 of typhus. In the majority of cases the patients were convalescent or in the post-infectious stage. Including bronchitis and tuberculosis there were nearly 5,000 cases of respiratory affections, and there were 586 cases of influenza.

British Medical Journal.

SATURDAY, JULY 14TH, 1917.

THE EPIDEMIC OF POLIOMYELITIS IN NEW YORK, 1916.

THE rise and fall of epidemics has long been an attractive subject, and is especially interesting at the present time when the conditions created by the unparalleled war have led to extensive epidemics and to the appearance of diseases which, if not entirely new, had previously escaped recognition. Though unconnected with the war, the incidence of epidemic poliomyelitis is very definitely on the upgrade, and it is rather remarkable that in America, where the researches of Flexner and his colleagues at the Rockefeller Institute have so greatly advanced our knowledge, it is only within comparatively recent years that the disease has attracted much attention. Thus, in 1874, the disease was so rare that the leading consultants had seen very few examples. It is true that in 1907 New York was visited by a considerable epidemic, estimated by the investigating committee at 2,500 cases, with a mortality of 5 per cent., though positive information was obtained about 800 cases only. But otherwise, up to 1912, the deaths from this disease were so few in New York that they were not classified separately from "other diseases of the nervous system"; in the years 1912-15, and in 1916 up to June 1st, there were respectively 70, 54, 34, 13, and 6 deaths. Then a most extensive and virulent epidemic (June 1st to November 1st) of 8,928 cases with 2,407 deaths, or a mortality of 26.9 per cent., burst on Greater New York, a full account of which, based on the official reports of the Bureaux of the Department of Health, has just been issued.¹

This monograph is of value on account of the etiological investigations carried out during the epidemic, and especially for the full details of the vigorous campaign promptly organized against the disease; the discussion it contains would be of the greatest assistance to the sanitary authorities in the event of a similar disaster falling on other large cities. The recognition of the epidemic in June was at once followed by the institution of educational clinics for medical men, additional ambulances, medical personnel and hospital accommodation, inspections and house visiting, the circulation of leaflets, regulations, and bulletins, restrictions as to admission of children under 16 years of age to theatres, picture palaces, and meetings, and the control of children's playgrounds and travelling. Advisory and other committees were appointed and conferences held. The objects aimed at were "early diagnosis, prompt notification, hospitalization or equivalent home isolation, a well-informed public, and an alert medical profession." Isolation of the infected on the one hand, and of the healthy on the other, gave excellent results, and the period of quarantine for the former was raised from six to eight weeks. The case-rate per 1,000 of the population was 1.59, and, as judged

by the analysis of 1,325 fatal cases, 83 per cent. of the cases were under 5 years of age and 2.5 per cent. over 16 years of age; the mortality was higher among males and young children than among older children and adults. The day of the disease on which death occurred was noted in 1,848 cases, and showed that 1,510, or 81.7 per cent., died within the first week, 11.4 per cent. in the second week, and 3.2 per cent. in the third week.

The general belief that epidemic poliomyelitis has a greater incidence in rural than in urban communities was confirmed by the observations made in New York, which contains within its limits extreme examples of urban and rural conditions, the highest incidence in proportion to the population occurring in the least densely populated districts. From other etiological investigations it appears that dogs and cats were not affected by the disease and did not act as carriers of the infection; that food and drink, including milk, did not convey the disease; that there was no real relation between overcrowding and the spread of the disease; that the disease was communicated by personal contact, especially by slight and abortive cases, and that the incubation period is from three to ten days. An inquiry into the question of insect carriers by Professor C. T. Brues, covering twenty-seven pages, does not reach any positive conclusion. Repeated attempts to demonstrate the virus of poliomyelitis in the cerebro-spinal fluid of patients failed, and neither Flexner and Noguchi's globoid bodies nor Rosenow's streptococcus are accepted as the proved causal organism.

The diagnostic value of lumbar puncture and bedside examination of the cerebro-spinal fluid is insisted on; out of 1,500 cytological examinations of cerebro-spinal fluid, many taken on the second, third, or fourth day of the disease, there were 39 instances only in which the polymorphonuclears outnumbered the lymphocytes, thus controverting the view that in the early stage there is a predominance of polymorphonuclears. In rare instances red blood corpuscles were found evenly distributed throughout the cerebro-spinal fluid.

The following clinical classification is advised: (1) Non-paralytic or abortive, including the meningitic cases; (2) ataxic, very rare; (3) cortical, rare; (4) the ordinary spinal. The progressive cases, in which the arms are first affected and extension occurs to the legs and medulla, are regarded as instances of the condition commonly called Landry's paralysis, a rather novel view.

Lastly, from the full and interesting account of the treatment, the results of intrathecal injection of immune human serum from donors who had recovered from the disease may be quoted: out of 54 cases injected before the onset of paralysis, 44 recovered without paralysis; of the remaining 10 who manifested some paralysis, 5 recovered completely and 5 partially; out of 119 cases injected after the onset of paralysis, 8 recovered completely, 66 recovered partially, and 45, many of whom were in a desperate condition when injected, proved fatal. These figures are much larger than those (26) recently published by Amoss and Chesney,² who advocate both the intrathecal and intravenous injection of the serum. Clinically, the injection of serum is followed in the early preparalytic cases by intensification of the meningeal symptoms, while the cerebro-spinal fluid may become turbid and show a cell count of 10,000 per cubic centimetre, 95 per cent. being polymorphonuclears, although it is sterile.

¹ A Monograph on The Epidemic of Poliomyelitis (Infantile Paralysis) in New York City in 1916. Published under the direction of the Department of Health of New York City, 1917. Pages 391; numerous maps. Price 1.50 dol.

² Amoss and Chesney, *Journ. Exper. Med.*, Baltimore, 1917, xxv, pp. 581-603.

ARMY MEDICAL ECONOMIES.

IN order to judge how far economies in medical personnel are still possible, a rough classification may be useful. According to their employment, medical men can be grouped into five categories, in each of which are to be found in varying numbers men of military age and men over military age. First, there are those exclusively serving the needs of the civilian population, and of them it scarcely need be said that most are working at full pressure, while not a few are continuously overworked. In the next group are those who combine with civilian practice part-time work of a military nature, such as the medical care of soldiers in voluntary aid and auxiliary hospitals, the examination of recruits, or service in Territorial general hospitals. Such part-time work enables many medical men who are well over military age to have the satisfaction of feeling that they are serving their country by assisting in the care of the wounded, or undertaking other duties which release younger men for active service. The increasing burden of safeguarding the health and relieving the sufferings of the civilian population rests on these two groups of practitioners, and from their ranks are recruited the medical men serving in whole-time military appointments, who, for convenience, may be divided into three groups.

It should perhaps be pointed out—if only in parenthesis—that a complete classification must take count of the naval medical service; but as this has remained since the war a fairly fixed quantity the considerable number of medical men employed therein may be set on one side. But in so doing it is only fair to remind critics of the Army Medical Service that the navy, although employing a large number of doctors, is practically immune from any question as to where or how it uses them.

Confining ourselves to the R.A.M.C. (Special Reserve, Territorial, and Temporary), there is first of all to be mentioned the group of officers who are doing a full day's work every day. It is common knowledge that there are in the corps a very large number of medical men who are fully occupied in posts for which they are well suited—clinical, administrative, or pathological, as the case may be. In a further group may be placed medical officers who, although occasionally hard pressed during rushes—which may be long or short, and may come often or seldom—are for the most part, week in, week out, working half time, or even less. Among these officers may be counted many of those employed in units on the lines of communication abroad, though we are aware that for some time past the medical work in some at least of the bases in France has tended to become heavier and more continuous. In this group also may fairly be placed the great body of battalion and battery medical officers serving with the armies in the field. Of their gallantry and devotion, and of the perils and hardships of their life at the front, we need only say here that these are never out of mind; our concern at the moment, however, is to indicate the groups into which medical officers fall in respect of professional employment.

Lastly, there are the medical officers in "whole-time" military service at home and abroad, for whom the military machine cannot, or does not, find anything like a full day's work; men who are condemned to long periods of inactivity whilst their services are badly needed in civilian practice. To the existence of this group is due most of the criticism which the Army Medical Department received from the medical profession and the public. We know from evidence

which cannot be gainsaid that there is such a group, but how large it is we do not profess to say. The military authorities justify its existence on military grounds. The exigencies of warfare, they say, demand a substantial reserve of medical officers ready for instant service at times and places which cannot be foretold. For these potential reinforcements, we are assured, employment cannot be guaranteed, and, if they were released for civilian work during the time of waiting, they would not be at hand at the moment when the army needed them. This, we believe, is a fair statement of the official view. The question at the present time is how far it can be maintained in face of the increasing urgency of the civilian situation.

Of the five groups enumerated above the first three scarcely call for discussion, for the members of each are, *ex hypothesi*, fully and usefully employed. It is only with regard to the fourth and fifth groups that there is room for disagreement or conflict of evidence. So much do these two groups shade off into each other that some critics would run both together, on the ground that it is idle to discriminate between degrees of incomplete employment. This may be logically sound, but for practical purposes at the present time the distinction can be usefully drawn. If economies in medical personnel are in any way to be brought about without detriment to the preservation of the health of the soldier, and his medical care when sick or wounded, efforts should first be directed towards reducing the numbers of the fifth group—that is to say, of medical officers "standing by" in idleness for long periods against emergencies which may arise, or holding appointments which manifestly never provide a full day's work.

It is easy to see that relative unemployment cannot altogether be avoided in time of war, and that a margin must always be allowed between ordinary and extraordinary demands. Hence we do not, for example, question the need for maintaining the full complement of regimental medical officers at the front, in spite of the fact that for considerable stretches of time the daily professional work of the battalion medical officer can often be got through in an hour or two. So, too, with the field ambulances at the front: their medical officers are periodically underworked, but equally they are subject to periods of overwork, while they serve at all times as reservoirs for filling gaps among the regimental medical officers. Suggestions have been made that considerable economies might be effected in respect of the field ambulances and of the medical officers of batteries by organization based on the corps instead of the division. With this purely military question we are not in a position to deal.

In the case of oversea base hospitals, which in their turn feed the medical units of the field armies with reinforcements, some surplus in officer personnel is clearly needed. But to secure due economy the amount of margin in this case should correspond not to any academic formula, but to the probable demands of the immediate military situation. Things may have changed already, but in the past there have been instances of overstocking at base hospitals and in medical units mobilized in advance of the needs of the moment. We trust that the somewhat disquieting statements which continue to reach us as to a superabundance of medical officers at certain centres abroad are based on inaccurate knowledge of all the circumstances; otherwise it is clear that economies are still needed in that direction. Further economies might also be effected among the medical officers of home units, either by a more general system

of part civilian and part military medical employment, or by grouping together larger bodies of soldiers for medical purposes, so that one fully employed medical officer might do the work of two or more who are now insufficiently occupied. We are well aware that there are administrative difficulties in the way of adopting these suggestions; these, however, should not prove insuperable if the co-operation which we have advocated can be brought about between the military and civilian medical authorities.

THE CENSUS OF 1911: DISTRIBUTION OF POPULATION.

I.

To many people the General Report on the Census of England and Wales in 1911¹ will seem belated. The crude figures of the enumeration have long been in use, while the age and sex distributions and occupational classifications have also been available for some time. The significance of the figures set out in the detailed tables can, however, only be grasped when the comparative method, which is of even more importance in statistics than in other branches of science, has been properly employed; it is the function of the General Report to institute such comparisons, and this duty has been most efficiently performed.

The first part is concerned with the rates of growth of different types of area. In rural districts the rate has increased from 2.9 to 10.2 per cent., while that in urban districts has declined from 15.2 to 11.1 per cent., as compared with the last intercensal period. Analysis suggests that this is due rather to residential and industrial developments—as strikingly illustrated in the growth of the outer suburbs of large cities—than to any change in agricultural conditions. At the same time it is noted that the proportion of the population engaged in agriculture in the rural districts of the seven counties which are most completely agricultural in character did in every case show an increase.

In the next section the sex and age constitution of the population is studied. The effect of the declining birth-rate has been temporarily advantageous in increasing the proportions living at the working ages. Thus, in consequence of the decline which began to be manifest in or about 1877, the 1901 curve showed a considerably greater proportion of persons in the age group 20–25 than did the previous census, but this advantage has now been lost, the proportion having become a trifle less than in 1881. Similarly, the first effect upon the next age group, 25–30 was to raise its proportion in 1891 and still more in 1901, but decline has now set in. It is remarked that “these fluctuations are not without importance in their bearing upon the probable future proportion in our population of workers at the most economically efficient ages, and especially upon the supply of recruits to the military services in future years.”

Six main types of localities have been recognized, namely: (1) Mostly ports and manufacturing towns; areas with an excess of both males and females during childhood and deficiency at nearly all adult ages. (2) Areas, chiefly mining districts, showing a similar distribution, save that the proportion of males remains above the average for the whole country to about age 45. (3) Industrial populations of a different kind showing an excess of males and females throughout the working period of life and deficiency in childhood and old age; the great textile towns fall

into this class. (4) A small group of suburban districts in and around London which show an excess in the first three quinquennia of life, succeeded by deficiencies during the fourth and fifth. Next follows a second period of excess at ages 25 to 45, and thereafter a deficiency. (5) In this group, comprising certain wealthy London districts and favourite seaside residential towns, the age distribution is most distinctive among females, their proportion being below the average during the first three quinquennia of life and above it afterwards. (6) The largest group, shows deficiency of young children and of young adults, a tendency to excess in later childhood, and great excess in old age of both males and females. Long-continued emigration and low rates of mortality would appear to be the determining factors in these areas, which include only four towns—Canterbury, Gloucester, Great Yarmouth, and Ipswich.

The section dealing with birthplace throws light upon the course not only of foreign immigration but also of internal migrations. The proportion of the native to the total population was greater than at any previous census—96.46 per cent., as compared with 96.13 per cent. in 1901, 96.14 per cent. in 1891, and 95.69 per cent. in 1881. Internal migrations are studied in various ways with the aid of shaded maps. The administrative counties with the highest proportions of native-born inhabitants are, as might have been anticipated, mainly agricultural, Cornwall, Cumberland, Lincolnshire, Norfolk and Suffolk being the highest, while the lowest places are occupied by mining and industrial districts or counties within the outer ring of great cities—Glamorganshire, Worcestershire, Warwickshire, Sussex, Surrey. The five metropolitan counties, Essex, Hertfordshire, Kent, Middlesex and Surrey, together with the county boroughs of West Ham and Croydon, contained upwards of a million natives of London. Of the four European countries sending the largest quota to this country—Russia, Germany, France, and Italy—Russia furnished the same proportion as in 1901, France rather more, Germany and Italy rather less than in that year.

The report contains statistics of infirmities and of languages spoken in Wales and Monmouthshire. The latter topic is not of medical interest and the former cannot, we think, be adequately studied by means of census returns. We concur with the view expressed in the report, that “while fully realizing the great importance of attempting to ascertain the numbers of persons afflicted with certain infirmities, we must submit that statistics of this nature obtained through a general population census are most unsatisfactory; first, on account of the difficulty of framing a suitable form of inquiry defining the degree of disability which it is desired to include in the tabulation, and, secondly, because the definition has to be applied by householders with no technical knowledge, who will interpret it in different ways, and many of whom have a natural reluctance to admit that they or their relatives suffer from any defect—at least to the degree referred to in the inquiry.”

We have, perhaps, said enough to make plain the great value of this report, but we hope to refer to some other subjects with which it deals in a later issue. The manner in which the national vital statistics of England and Wales are collected and analysed has always been able to stand comparison with those of any other country; it has been improved at each succeeding census, and that of 1911 worthily upholds a great tradition. Especial praise is due to the success achieved by Sir Bernard Mallet, Dr. Stevenson, and their staff under peculiarly trying conditions.

¹ Cd. 8491.

WAR BREAD.

IN last week's JOURNAL we printed a note on the report on "G. R." flour and war bread drawn up by Dr. J. Campbell for the Metropolitan Committee for War Savings. This indicated that the main reason for the variable taste and texture of war bread is the variability of composition of the regulation flour, and the difficulty in adapting methods of baking to the new conditions. At the invitation of the Food Controller a committee of the Royal Society is investigating the relation of war bread to the health of the community. At all times, but more particularly in hot weather, the making of bread by yeast fermentation has been attended by risks of souring, moulding, and the development of "rope," the causes of which are fairly well known. These risks are apparently increased at the present time owing to the changes in the material which has to be milled for use in bread-making. Thus both the miller and the baker have considerable difficulties to contend with in the production of palatable bread which will keep under present conditions. To the miller is set the problem of producing from maize and other cereals, with in many cases imperfect machinery, grades of flour which will blend satisfactorily with wheat and flour containing more of the outer part of the grain than formerly. To the baker is set the problem of baking bread from this composite flour, which differs in properties from that which he has been accustomed to handle. On the whole, both the miller and the baker have met these difficulties remarkably well, and there can be little doubt but that with further experience the troubles will be completely overcome. On July 9th a press conference took place at Grosvenor House, with Mr. Alan G. Anderson, vice-chairman of the Wheat Commission, Dr. A. W. J. MacFadden, chief inspector of foods to the Local Government Board, Mr. W. B. Hardy, secretary of the Royal Society, and Mr. Burton, chief of the bread section of the Ministry of Food. The main point insisted on by Mr. Anderson was that during the war, and perhaps for some time afterwards, the public must make up its mind to eating bread of a quality lower than in former days. The seriousness of the position with regard to the supply of breadstuffs cannot be over emphasized. The sheet-anchor of safety is the power of the Food Controller to compel the admixture of other cereals with the limited stocks of wheat now in sight. The suggestion that the mixture of flours should be standardized cannot unfortunately be adopted, since the wheats now being imported vary widely in milling quality, while the shortage of transport prevents a regular and uniform distribution of the grains used for admixture. Moreover, the principal supply obtainable from abroad, and near at hand, for the dilution of wheat is maize, for dealing with which few English flour mills were fitted with suitable machinery. By next year it is hoped that the difficulties in grinding maize for bread-making will have been overcome. There is no evidence that the energy value of war bread for the labourer is below that of pure wheaten bread. The change in bread known as "rope," of which there has been a good deal of complaint lately, is being investigated by the Scientific Committee. The micro-organism producing it (*Bacillus mesentericus*), is as common as dirt, and resists all practicable attempts at sterilization, since the spores survive five hours' boiling. It is not directly harmful to man and there is no foundation at all for the grotesque idea that "rope" is a disease of man. The development of "rope" is favoured, not by the added cereals, but by hot weather, by underbaking, and by the practice of covering the loaf with a damp cloth in order to maintain its weight. The gist of the matter is that with enough goodwill and trouble war bread can be made wholesome and palatable, and the public must be thankful that the position is no worse than it is. The complaints received very largely reflect the fact that this is the third year of an unprecedented war. The country is in a state of siege, and the supply of wheat is not enough to provide all the bread

needed. Admixture of other cereals less adapted than wheat to bread-making is an actual necessity of the country. These are the facts, and one of the most serious responsibilities of the medical profession is to assist the administration by showing that requests to the Ministry of Food for permission to use pure wheat flour cannot be acceded to, and that the refusal need not entail suffering. Up to the present the number of applications has not been large, but they may grow. The medical profession will render the country an undoubted service in co-operating with the Ministry of Food to prevent an abuse of the privilege. It may be pointed out that the applications come in much larger proportions from certain districts than from the country as a whole. Thus Hampshire, Yorkshire, Lancashire, Lincolnshire, and Cornwall furnish 64 per cent. of the number of applications from England—that is, nearly double as many as from the rest of the country.

THE MUSEUM OF THE ROYAL COLLEGE OF
SURGEONS OF ENGLAND.

THE annual report of the Conservator of the Museum of the Royal College of Surgeons of England contains, in addition to the information as to the war series described in the JOURNAL of June 30th and July 7th, a review of work of other kinds done in the museum. Professor Keith states that besides routine investigations carried on by the staff, Dr. Colin Mackenzie had not only continued his inquiries into the anatomy and physiology of Australian mammals, but acting also as a member of the honorary staff at the Military Orthopaedic Hospital, Shepherd's Bush, had found it advantageous to combine his work at the hospital with a research, bearing on his cases, in the workrooms of the College. The comparative anatomy of the muscles of the forearm appears to throw much light on their exact significance in man which may prove of value in surgery. The specimens of bone grafts which accompanied Major E. W. Hey Groves's Jacksonian Prize Essay are distinguished in the report as of particular merit. Many preparations of value have been added to the pathological, teratological, and particularly to the anthropological series; the latter include prehistoric human bones unearthed during trenching operations, not only in home drill but also at the front. The four complete skeletons of gorillas, each representing a different stage of growth, collected in the German Cameroons, and generously purchased and presented to the museum by Sir John Bland-Sutton, will provide an opportunity of illustrating various stages in the growth of that anthropoid which, in a structural sense, is man's nearest relation. Among drawings acquired by the museum is a sketch made for John Hunter representing a duck which had partially assumed the plumage of a drake, a subject in which he was greatly interested. Lastly, we may add that the executors of Dr. Robert Roxburgh have presented the original mechanical spray apparatus which Lord Lister employed in the Royal Infirmary, Edinburgh, and exhibited at the Plymouth meeting of the British Medical Association in 1871 during the course of his address in surgery. It had two nozzles attached to independent caoutchouc tubes, furnishing large clouds of spray, that could be directed, if necessary, to opposite sides of the part operated on. Dr. Roxburgh was Lister's last house-surgeon at the Royal Infirmary. Lister went to King's College, London, to fill the chair of clinical surgery in succession to Sir William Ferguson in 1877.

DIRTY MILK IN CLEAN DAIRIES.

RESEARCH institutes are busily engaged in the effort to attain to some satisfactory means of detecting the presence of the tubercle bacillus in the person and surroundings of the apparently healthy cow, and to devise schemes for minimizing the risks of contamination of milk. An interesting series of experiments by Dr. Stenhouse Williams, Mr. W. M. Scott, F.R.C.V.S., of Bridgwater, and

Dr. Roberts, M.O.H. Denbighshire, is recorded in a recent number of the *Veterinary News*. An attempt was made to prove the presence or absence of the tubercle bacillus in the faeces of cattle in dairy herds. While the microscope may show the presence of an acid-fast bacillus, indistinguishable from that of tubercle, the injection experiments, the various steps of which are described in details, do not seem to have given positive results except in a very small proportion of cases. Preparations made from the faeces of cows which had reacted to tuberculin failed to produce evidence of the disease in the guinea-pig. Incidentally, the report throws much light upon the common defects of farm accommodation for cattle. While dairies have been reformed, and often appear models of cleanliness, the cow-house and the cow herself are often as insanitary and as uncleanly as ever. Control by the tuberculin test is not carried to its practical conclusion, except by the largest herd-owners, and the advantages of maintaining a strictly non-tuberculous herd are only admitted in theory. The "purity" of milk is still judged by naked-eye standards only, and passage through a strainer is commonly regarded as sufficient proof. Although contamination by actual faecal or other coarse matter would seem to be of minor importance, the liability of milk to harbour all kinds of organisms in addition to the tubercle bacillus cannot be overlooked. A suggestion¹ for counteracting their influence by means of low temperatures has been put forward by Dr. Stenhouse-Williams and Miss E. C. V. Cornish, of the Dairy Research Institute, University College, Reading. The plan that they propose involves the provision of refrigerating plant at the railway collecting centre to which the contributing farms bring their milk, and refrigerator vans for its conveyance to the wholesale dealers in the large towns. By thus checking the activity of the microbes in the milk, it should reach the consumer in a fresher and more food-valuable condition than is the case under present methods. But such a reform in method must be expensive. The interests of the farmer, the contractor, and the dairyman will continue to prevail over those of the consumer, and nothing short of drastic legislation will suffice to bring about real reform, and so to save the health and lives of the thousands of infants who are being daily infected with tubercle throughout the country by the agency of dirty milk.

A STATE MEDICAL SERVICE.

An article advocating a State medical service was published in the *Westminster Gazette* of June 26th by "A Physician," who, having satisfied himself that we can never go back to the "haphazard go-as-you-please methods of pre-war days," that concerted action skilfully guided is essential against disease, and that a State medical service of doctors brings only a hazy conception before the public mind, boldly outlined his own particular scheme. The article was jauntily written, and far from accurate in many of its statements; no indication whatever was given as to how, with a "disciplined, organized, and well-led army of doctors," it could be arranged that "the same doctor would treat you as before." We doubt if the young physician's words produced any great effect on the public mind, but some answer seemed called for lest judgement should go by default. Accordingly, Dr. H. B. Brackenbury furnished a reply in the issue of the *Westminster Gazette* of July 9th, in which he dealt with some of the cruder and more objectionable conclusions in the previous article. He points out that it is not for selfish reasons that the medical profession is so nearly unanimous in its objection to a whole-time, salaried medical service. It is because they are convinced that medical practice reaches its best level when the family doctor relationship, as opposed to the State official relation-

ship, exists between practitioner and patient. Dealing with the alleged wish of some service doctors to escape the struggles of private practice, and their assumed willingness to become State officials, Dr. Brackenbury points out that against this must be set the vast numbers of men returning from the army who will insist on personal relationship with their own chosen doctor, and will not submit to the compulsory provision by public authorities of this or that practitioner. He says very truly that the medical profession in clinical practice is not attacking disease as an abstract entity, but is dealing with men, women, and children as human personalities. "Physician" seems to suffer from the antiquated form of muddle-headedness which confounds prevention with treatment. The present methods by which the State helps to look after the public health and to provide medical advice and treatment may be imperfect, confused, and wasteful; but the remedy lies not in a regimented State medical service, but in unification in central and local administration, together with expansion of the present scope of medical treatment. All this has been said before, but it has to be said again from time to time, because people will not sit down and think things out before they begin spilling ink.

THE RESEARCH DEFENCE SOCIETY.

THE Research Defence Society, owing to the continuance of the war, has again decided to postpone its annual general meeting. The committee's report of the work of the society during the past two years states that the inaction of the opponents of research had necessarily made the society less active. There had hardly been any controversy in the newspapers, and all through the country the great advances made in protective medicine due to research were being appreciated and better understood. The lectures given had been concerned more with the general influence of scientific medicine on the health and efficiency of the army than with experiments on animals. The Association for the Advancement of Medicine by Research decided last year in favour of amalgamation with the Research Defence Society, and the president and honorary treasurer of the association, Sir Thomas Barlow and Dr. Hale White, have joined the committee of the society. It is hoped that in the coming years there will hardly be any need for disputes with antivivisection societies, and that the society's best opportunities for usefulness will be found in wide, non-aggressive educational work.

EPHEMERAL LITERATURE OF THE WAR.

THE Report of the Library Syndicate of the University of Cambridge for the year 1916 makes a second appeal, the first having failed to meet with a satisfactory response, for the supply of the ephemeral literature of the war, which is so difficult to collect even now, and which it will be virtually impossible to obtain afterwards. Out of the list of thirty-seven magazines, some represented by sets, others by specimens only, there are three from hospital organizations—*The Craigleith Hospital Chronicle*, the *Gazette of the 3rd London General Hospital*, and *The Canadian Red Cross Special* (No. 7); and some speculation may attach as to the exact nature of *The Splint Record*. Among the attractive titles, *The Futile Fusilier*, *Spit and Polish*, *The Lead Swinger*, *The Dead Horse Corner Gazette*, may be mentioned. So far as medical publications are concerned an attempt is being made to form a complete collection in the library of the British Medical Association. It is interesting to note that the stream of German propaganda, which at the beginning of the war was directed to the Cambridge University library as though it were as an institution situated in Cambridge, Mass., has ceased to flow; but it had the effect of directing attention to this class of literature, of which, though a large quantity has been obtained from various sources, more would be welcomed.

¹ *The Milk Supply: A Suggestion*. By R. Stenhouse Williams, M.B., and Elfrida C. V. Cornish, M.Sc., Dairy Research Institute, University College, Reading. Pp. 10. Cambridge, 1917.

Medical Notes in Parliament.

Mesopotamia.

Court of Inquiry to be Appointed.

MR. BONAR LAW made a statement, on July 11th, as to the Government's intentions with regard to officers whose conduct has been impugned by the Mesopotamia Commission. That Commission was not a judicial body, its proceedings were not conducted under any recognized code, and the rules of evidence were not in all cases observed. There were two objections to procedure by court-martial: the one was that civilians could not be brought before it, while the Government felt that the conduct of civilians should be dealt with as well as that of military officers; the second was that every one of the witnesses who appeared before the Commission was indemnified, and therefore all the evidence would have to be taken afresh, which would mean a very long time. Moreover, action could not be taken on the evidence given before the Commission because the persons accused were not present all the time, and had no opportunity of calling witnesses for the defence. The Government had decided that a judicial court of inquiry into the conduct of all persons concerned was necessary in the interests of justice and of the individuals themselves, and would set up such a court under the Army Courts Inquiry Act, 1916. The Court of Inquiry would be composed of three officers and of two persons who hold judicial positions, one of whom would be the president. The case would be presented by the law officers of the Crown, or by counsel nominated by the Attorney-General. The proceedings would be open to the public except when the court otherwise decided, and all the parties interested would be entitled to be represented and to have their expenses defrayed out of public funds.

Medical Arrangements at Salonica.—In the House of Lords on July 10th, after a question by the Earl of Dunraven, the Earl of Granard said that he had returned from Salonica only a short time ago. At the back of that town there were hills where the climate was quite different from that in the Struma Valley, and six or seven camps had been established amply supplied with water. There was every reason to hope that the soldiers who had contracted malaria in the low-lying districts would benefit by a stay there. There was also every reason to hope that the condition of the sick and wounded at Salonica compared favourably with that obtaining in any other expeditionary force. He had visited every hospital in Salonica on many occasions, and every precaution had been taken. The Secretary of State for War said that, owing to the brutal policy of the Germans in sinking hospital ships, it had been necessary to change the whole hospital system, and, instead of sending the sick and wounded to Malta and Egypt and shipping as many as possible home, it had been considered advisable to shift the majority of the hospitals from Malta to Salonica. In addition seven general hospitals had been sent out from this country; there was also a convalescent camp at Corfu. He was assured by the medical officers that everything possible was being done for the sick and wounded at Salonica, and when the history of the campaign came to be written it would be found that the Medical Department of the War Office had done, or, at all events, had endeavoured to do, everything it could for the sick and wounded.

[The War Office issued a statement on July 11th to the effect that the health of the forces at Salonica this year compares very favourably with last. The fact is the more satisfactory as a large proportion of men now in the ranks suffered from malaria last year, whereas at the beginning of last summer the army was clear of the disease. The rates of sickness per 1,000 men during the four weeks ending June 23rd, 1916 and 1917, were as follows:

	1916.	1917.
Malaria and other fevers (primary cases) ...	7.79 ...	5.65
Dysentery and diarrhoea ...	20.55 ...	6.87
Enteric... ..	0.37 ...	0.02]

Manipulative Surgeons and Army Work.—Mr. Joynson-Hicks asked the Under Secretary of State for War whether he has yet obtained the promised opinion of the law officers as to the employment of manipulative surgeons and osteopaths; and, if so, what was such opinion.

Mr. Macpherson replied that the law officers found themselves generally in agreement with the opinion of Sir John Simon, Mr. Butcher, and Mr. Pollock, and were of opinion that, subject to conditions, the War Office might lawfully take certain action. They had advised, however, that the opinion of the General Medical Council should be taken before orders were given with a view to that action. Mr. Peto asked whether, if the vote for the Army Medical Service was put down for an early date, Mr. Macpherson would inform the House as to the final decision arrived at, and whether the Medical Council was going to place an embargo upon the employment of these manipulative surgeons for the relief of wounded soldiers. Mr. Macpherson replied that he would consider the question.

Retired Naval Surgeons in the Service.—Mr. Hohler asked whether the position of a naval surgeon, retiring before the war with a gratuity, was that the Admiralty had no further claim on his services, that, as a voluntary act on his part, he could place his name on an emergency list which, in case of his being called upon to serve, would entitle him to the rate of pay he was receiving when he retired, plus a bonus of 25 per cent., and that for this voluntary act he received no extra gratuity or reward of any kind; whether some ten or more naval surgeons who had retired before the war with a gratuity, and who had placed their names on the emergency list, had been called upon to serve, but were not receiving the pay promised, the Admiralty deducting from their pay a sum equal to the interest on their gratuity, and for a reference to any statute, regulation, or Order in Council made before the war that justified this; or, if not, for an undertaking that repayment of the sums illegally deducted, with interest at 5 per cent., would be directed to be made to these naval surgeons. Dr. Macnamara replied as follows: The position is as indicated in the first part of the question. On being called out he receives: (1) The rate of pay earned prior to withdrawal; (2) a bonus of 25 per cent. in lieu of any further retiring allowance. The gratuity paid on withdrawal is in effect a commuted allowance, and is comparable with the annual allowance paid to officers retiring under other conditions. The bonus is paid to both the emergency officer and the retired officer when re-employed, and as the latter has his retiring allowance suspended, it is consistent to deduct the annual value of the gratuity received by the former officer. The authorizing regulation is an Order in Council under which the Treasury has approved both the payment of the bonus and the deduction referred to. Any doubt as to the legality of the decision regarding the latter would, therefore, be equally applicable to the former. The annual value of the gratuity is calculated on the basis of the cost of an immediate life annuity at the date of withdrawal under the Post Office annuity table in force at the time. Mr. Hohler asked whether it was right to give a man a bonus, and subsequently charge interest on it when he rejoined on his own initiative. Dr. Macnamara said the heart of the matter is this: The gratuity is considered to be a commuted allowance. The officer retired on allowance, and re-employed got his allowance suspended. So it is deemed equitable to deduct the annual value of the gratuity from the officer retired on the same. Mr. Hohler then asked, has not the gratuity been used to get a practice, and Dr. Macnamara replied by inviting Mr. Hohler to argue that view before the Medical Director-General, the Accountant-General, and himself.

The Employment of Disabled Soldiers: Temporary Higher Pensions.—Colonel Sir Arthur Griffith-Boscawen stated, in reply to Mr. Byrne, that the great majority of disabled soldiers discharged found employment very readily, either directly or through local employment exchanges if they were capable of ordinary industrial work. If they required trade education, this was provided for them on application to local War Pensions Committee. If at the time of discharge the man's physical condition justified a higher award than that to which he was entitled under the terms of the warrant by reason of his permanent disablement, a temporary pension at such higher rate was allowed.

The Training of Discharged Deaf Soldiers.—In reply to Mr. Holmes, Sir A. Griffith-Boscawen, Secretary to the Pensions Department, said that the Statutory Committee had made thorough inquiries into the best methods of treating and training the deaf, and, with the assistance of the Board of Education in England and of the education officer in Scotland and Ireland, was arranging for the establishment of centres of instruction in lip reading. Very few deaf disabled men, however, had applied for instruction, or had accepted it when offered, and it was now proposed to establish a special aural board to get into touch with the men at the time of discharge or on renewal of pension, with a view of getting them to take the treatment or training most suitable for them.

Venerable Disease amongst Oversea Troops.—Asked by Mr. G. Greenwood whether the Home Office and the War Office had now come to an agreement as to administrative action to be taken to protect overseas troops from venerable disease, Mr. Bonar Law said the military and police authorities were already using such power as they possessed to deal with the evil; it appeared doubtful whether more could be done without legislation; but the matter was receiving constant consideration.

Nurses in Military Hospitals Abroad.—Replying to Colonel Yate, Mr. Macpherson said that the question of freeing nurses

in military hospitals abroad from non-nursing duties by the substitution of voluntary helpers for such unskilled work as nurses had to do, had been referred to the authorities in France. The only nurses not employed on strictly nursing duties were the home sisters, and they frequently had to nurse sick sisters.

Sanatorium Benefits in Ireland.—In reply to Mr. P. Meehan the Chief Secretary for Ireland said that the returns of expenditure made by county councils in connexion with tuberculosis schemes in Ireland indicate that there was a falling off in the estimated receipts from the Insurance Committees in respect of the treatment of insured and exempted patients in the current year as compared with last year. The consequent deficit would fall equally on the Exchequer maintenance grant and on the local rates. The question of grants for sanatorium benefit could only be dealt with by the Insurance Commission.

The Superannuation of Asylum Officers.—Mr. Brace informed Mr. Yeo that an order would be issued in due course, applying the provisions of the Asylum Officers' Superannuation Act to the officers of certified institutions, provided by local authorities under the Mental Deficiency Act. Some difficulties had, however, arisen which could only be removed by fresh legislation; in particular there was no power as the Acts stood at present to aggregate service in such institutions with service in asylums. The matter was not being lost sight of, but he was afraid it could not be taken up this session.

Army Medical Re-examination.

EVIDENCE BEFORE THE PARLIAMENTARY COMMITTEE.

The Select Committee of the House of Commons inquiring into the conduct of medical examinations under the Military Service Acts sat again on July 5th, Mr. E. Shortt, K.C., presiding.

Sir John Bland-Sutton.

Colonel Sir John Bland-Sutton, Senior Surgeon, Middlesex Hospital, gave evidence. He stated that last November, at the request of the War Office, he joined the Special Medical Board which dealt with cases in which a difference of opinion had arisen as to the fitness of recruits. Of this Appeal Board Colonel Lyndon-Bell was president, and at each meeting the president had the assistance of a physician and of a surgeon of long hospital standing. A meeting usually occupied two and a-half hours, during which eighteen or twenty men were examined thoroughly and carefully by a physician and a surgeon. The medical certificates and any papers which the men produced were laid before the Board. Each man was also examined by the president; the latter never pressed his opinion against that of the physician and the surgeon, but he was of great value to the Board in classifying recruits. The Board was a safeguard to the public in preventing invalids and unfit men from being passed into military service. At the same time it was very careful that unfair or unjust certificates should not be allowed to secure exemption from service for fit men. The Board was appointed in October, 1916, and down to July 4th had dealt with 3,449 cases. Of that number 289 had been raised in classification, 1,202 confirmed in classification, and 1,958 lowered. Of these 1,958 men 336 were rejected. This Special Medical Board had been duplicated in order to be able to cope with the work, and it sat twice daily.

The Chairman, recalling the remark of the witness as to certificates that were either "unfair or unjust," asked what proportion would he describe as hardly bona fide? Sir John replied, "About three per cent." The Chairman then referred to the number of cases—336—which (as already stated) the special board rejected, and inquired whether Sir John regarded that as showing a serious percentage of error on the part of local boards, and he said he did. Asked if he could form an opinion how that large percentage of error came about, Sir John said, "We think it is because these local boards have to examine a large body of men in a short space of time, whereas the men come to us with their certificates and the other facts available." The witness added that the principal condition which caused the special board to grant exemptions from service were epilepsy (48 cases), mental deficiency (29), tuberculosis (62), heart disease (97), and kidney disease (18). As to the raising of the classification, he said the recruits might have improved in the interval. He thought it advisable that the civilian element should predominate on boards. On the question of the relative value of certificates placed before the special board, the witness said that those of family doctors generally contained a dogmatic statement that a patient had some specific ailment and was unfit for military service, and the certificates given by specialists were, as a rule, all verbiage, and meant nothing, but the men paid double the ordinary fee for them. These generalizations by the witness, which were made humorously, brought laughter.

Mr. Pringle called the attention of Sir John to the statement made by Mr. Macpherson in the House of Commons,

that a man fit to do work in civil life was fit to do some work in the army. The witness replied that he could not accept that principle without qualification. A man with a weak heart might be a good stockbroker, and might make his fortune, but if he were put into the army he would drop down dead. Cases of that sort had occurred. There had been no striking increase in the percentage of rejections since the Committee was appointed. If the President of the Special Board found that a very glaring error had been committed by a local medical board, he wrote on the back of the paper relating to the case a note drawing attention to the fact. That had been done in a number of cases. In some instances the certificate was endorsed to the effect that the man should be employed at the work of his trade. The president had consulted the military authorities, and had satisfied himself that such recommendations were carried out as far as practicable.

Colonel J. T. Lewtas.

Colonel J. T. Lewtas (I.M.S.ret.), the President of No. 2 Travelling Medical Board, stated that between August, 1914, and April, 1916, he examined 7,500 recruits, acting alone; and since the latter date, as president of a board, he had examined about 35,000. He still saw each recruit after the man had been examined by each of the four members of his board. In the event of a difference of opinion arising the case was discussed, and, in the few cases in which the members failed to come to a unanimous decision, the opinion of the majority was accepted, or the recruit was sent for examination at a special hospital. That this practice appeared to have given satisfaction was shown by the letters written spontaneously by a number of recruits and by the acceptance of the decisions. Re-examinations were of value because in the early days of the war there were no medical boards, and the classification of recruits was made by one examiner, who was often inexperienced in that work, and because the condition of the men might have improved since they were first examined.

The sitting was adjourned until July 9th.

Surgeon-General Bedford.

At the sitting on July 9th the first witness was Surgeon-General W. G. Bedford, D.D.M.S. of the Northern Command. He said he had held the post for one year, and mentioned in the course of his evidence that in the twelve months ended June 30th thirty-three boards in the Northern Command had examined five hundred thousand recruits. A feature of their arrangements was the setting up of temporary boards, which visited munition works and other establishments. Local doctors, resident in the places visited, sometimes assisted. Speaking of the method of examination by the boards generally, the witness said a recruit had to run the gauntlet of a board, all the members examining for different kinds of disability; they expressed their opinion as to category and then the president decided what the category should be. The witness produced an Army Instruction that the president himself should classify all recruits. This was dated February 23rd last. The special medical board at Leeds was chosen by the War Office in London.

As to the constitution of the local medical boards, the witness, in reply to the Chairman, said that he endeavoured to get doctors who had been in the regular service to be presidents; they had had much wider experience of the conditions of military service and what was called for from the soldier. Temporary officers who had been in the army three years and had gained considerable knowledge of the army could now be obtained. The civilian doctor had been trained all his life not to look beyond the individual and had not raised his eyes to the horizon of his country's needs.

The witness disagreed with the opinion of Sir John Bland-Sutton that a stockbroker with a weak heart, though he could go on with his own business, would, if put into the army, drop down dead. If he was put into C 3 he would be as safe as a church. That was exactly the sort of man the army wanted to get—men of good education were most valuable. The witness, in reply to another question, said that he had been in the Regulars thirty-six years—all his time.

The attention of the witness having been called to a statement by Sir Alfred Keogh that it was difficult to get boards to understand that any one who could do anything in civil life could do that thing in the army, General Bedford said there was considerable difficulty. In this connexion he handed on to the Chairman a copy of a memorandum he sent last September to the presidents of the boards in the Northern Command. In this document he said: "I wish to call your attention to the very large

proportion of men found permanently unfit by some of the boards. The point I wish to emphasize is that every man found permanently unfit by a board is lost to military service, and cannot be called up for military examination for service of any kind." The document went on to say that every man who was of any potential use whatever for the army must be placed in one category or another. Some boards, it said, were allowing an enormous number of men to slip through their hands and be lost to the service. "This must now cease, and all boards must approximate their percentage to the lowest figures of the category appearing in the returns under review." The letter concluded: "This matter is one of cardinal national importance, and I appeal to the patriotism of all medical boards in this command to see that immediate effect is given to the spirit of this memorandum."

The witness was questioned at some length as to the reason for this instruction being issued. He put it that the local boards had not realized that there were so many trades in the army. The idea, he thought, was that because a man was in khaki he was going to fight. The Chairman said the witness could hardly suggest that boards did not know that all men in the army did not fight. He put it to the witness that the difficulty was that boards did not agree that men were fit to go.

On further questions, the witness said the memorandum was not issued on a War Office order, but it was issued after a meeting at the War Office, which was called because it was felt that through permanent rejections there was a preventable leakage of men who might be of use for the army.

The Chairman: Did General Keogh know you were going to send this out?—He must have known that we should do something to interpret the policy of the War Office with regard to rejections.

The witness afterwards read a document which he issued to the boards on June 26th last saying that his memorandum of September 16th had been unjustifiably misconstrued by some boards. Men were being passed into the army of no potential use whatever. The document continued:

I have been inspecting certain labour battalions, and I am shocked to see the specimens of humanity which have been accepted as of potential value to the army—men almost totally blind, deformed, of the poorest physique, men of doubtful intellect, men almost unable to stand, cases of severe and marked rheumatism, cases of paresis which rendered locomotion almost grotesque, several cases of insanity which told their tale at a glance. This scandal must be stopped at once. I shall hold officers personally responsible for passing any recruit who is manifestly unfit for any useful work in the army, and whose presence in it is an encumbrance. Moreover, it must be borne in mind that recruits below categories B 1 and C 1 are liable, if under a certain age, to be posted to reserve battalions for physical training, squad drill, etc., and this must modify the interpretation of the standards laid down. This question, like so many others, must be governed by common sense, and unless it be considered that a recruit is of some potential value to the army, and capable of performing some useful work, he should be rejected.

The witness was asked whether the issue of that letter was the result of any speech in Parliament, and he replied in the negative. It followed upon an inspection of labour battalions made by the Commander-in-Chief and himself. He did not receive communications as to what happened in Parliament. All he received were instructions from the Army Council. The witness added that the men he had inspected, and to whom his remarks applied, were the dregs of the whole command. In proportion to the hundreds of thousands of men passed by the boards the percentage worked out at a very minute one. In answer to Mr. Caradoc Rees, the witness said he was unable to recall the number of men to whom he had referred as shocking him because of their unfitness. He thought there were ten or twelve men wanting in mental balance.

Surgeon-General Jenkins.

Surgeon-General Jenkins, D.D.M.S. Eastern Command, said that after the War Office meeting in September, to which reference had been made, he issued an instruction to local medical boards, pointing out that there were many duties in the army which involved no greater fatigue than fell to the same men in civil life. He hoped that if the local boards realized this there would be a considerable reduction in the proportion of rejected men. The witness was asked by the Chairman whether his attention had been called to any of the pledges or promises given by Ministers in Parliament. He said it had not. His duty was to carry out the instructions of the Army Council. He had nothing to do with the pledges of Ministers.

Mr. Pringle asked the witness whether he suggested that the average clerk who was in C 3 category was better attended to in the army than he was at home.—I should think very much better in most cases. Mr. Pringle: So you regard the army as a sanatorium for these men?—In many cases I do.

The witness was asked whether he had received complaints as to Mill Hill Board, and said he had. There had been a lot of correspondence. Inspectors were sent down. Mr. Pringle: Were the complaints justified?—Utterly unjustified. Mill Hill has always been one of my best boards. The witness added that changes in the personnel of the board had been made, but not on account of the complaints. He was asked by the Chairman to supply the correspondence on these complaints, and undertook to do so.

The sitting was adjourned.

Surgeon-General W. G. Birrell.

At the sitting on July 10th Surgeon-General W. G. Birrell, D.D.M.S. of the Southern Command, was called. Since October, 1915, his experience in this area was that the percentage of rejections of recruits as unfit for the army was higher in the towns than in the country districts. This he attributed to the better physique of men in the rural districts generally.

The Chairman drew attention to the instruction issued by the War Office on September 24th, 1915, saying that "all doubtful cases of fitness for any form of service should be referred to the president for decision," and to the instruction of February last that the president himself should classify recruits. The witness thought this second circular was issued to ensure that the presidents of medical boards should see all recruits, and be responsible for their classification or rejection. He did not think that the presidents overruled the opinions of members.

The Chairman afterwards read the following letter from Sir A. Keogh, which it was said had been sent to Deputy Directors of Medical Service. It was dated July, 1915, and was as follows:

I wish you to regard what I say as confidential. It is imperative for you to get as many men as possible not fit for war service put into category as fit for garrison service abroad. We have so many civilian medical men working with us that you will have to be very strong in your action as regards the acceptance of their opinion when they reject men as unfit for garrison service abroad. This is a time when only very severe disability—heart disease and so on—should be regarded as rendering men unfit. All those disabilities which in peace time we have been accustomed to consider should now go to the wall—varicose veins, hammer toes, and a hundred and one other things which do not incapacitate men for ordinary garrison work.

I would not write to you on this subject if the matter were not one of primary importance concerning which Lord Kitchener was very anxious. Take it upon yourself to overrule decisions which place men in categories as unfit for garrison service abroad for disabilities only which do not incapacitate very completely.

The witness replied he had never heard of that letter before.

The Chairman next read a letter written by Sir A. Keogh after the meeting at the War Office in September, 1916:

Please issue orders to medical boards in your command that they are not to totally reject any man who can perform any kind of work without danger to himself or to others. Sedentary work does not mean clerical work only, it means any class of work which a man can do not involving the class of duty appropriate for other categories. Every man who can earn a livelihood in civil life can do something in the army, and it is perfectly ridiculous the continuance of these enormous numbers of rejections in each command. Will you please stop it at once, and give very definite orders to your boards.

The witness said that on receipt of this communication he sent a telegram that no man must be totally rejected who was fit to perform work in the army. He said in it nothing about comparative capacity for work in the army and in civil life. Replying to Mr. Sutton, however, the witness agreed with the statement that if a man was able to earn a living in civil life he was able to do something for the army.

Mr. Pringle read an Army Instruction sent out in February, 1917, that men were to be placed in categories for which they would probably be fit after four months' training. Asked if he agreed with that view, the witness said he should put a man in the category for which he was fit at the time, and if he improved put him up. Asked if the standard of fitness had been lowered since October, 1915, the witness said, "Not the standard of fitness; but some. Disabilities which used to cause the rejection of men were not now a disqualification." Mr. Pringle drew

attention to an official letter of May 13th, advising presidents of boards to inquire into the medical history of all recruits, and that in a case in which a history of feeble-mindedness was established, the man should not be passed. Asked whether he had been notified that in his command lunatics as well as blind and lame had been called up, General Birrell replied in the affirmative. There was always a risk, in calling up enormous numbers of men, that some who were not fit would be passed. To another question he replied that he had received an instruction that recruits suffering from venereal disease should be classified for the units for which they would be fitted after treatment.

Surgeon-General Culling.

Surgeon-General J. C. Culling, D.D.M.S. of the Scottish Command, was asked about a memorandum sent out to medical boards in his command in November last. In it he had referred to a memorandum issued by the War Office to guide boards in examining recruits on the point as to the amount of importance to be attached to heart murmurs. He emphasized the application of the principles laid down by the Army Council, holding that too much importance was attached to heart murmurs. The chairman read the document, as follows:

It may safely be said that a large number of medical men, as soon as they hear a heart murmur at once suspend further consideration of the question of general service or active work of any kind in the army, a procedure which would not be adopted by any practitioner in civil life as regards civil occupations. The argument is put forward of the personal danger involved to men with heart murmurs. It should only require to be pointed out that a soldier physically fit in every respect is in greater danger of sudden death in the fighting line than a man with heart murmur is at any time. Most careful consideration is therefore to be given to the possibility of men with well-compensated though structurally defective hearts rendering good service in the fighting line, and to the large question whether the danger to life is one to be met only by the physically perfect.

The Chairman put it to witness that his argument was that because a man was to be shot down in the trenches it would not much matter if he fell down dead from heart disease.—The Witness: He would not fall down dead from heart murmur.

The sitting was adjourned.

Surgeon-General Hathaway.

On July 11th, when Mr. Mooney was in the chair, Surgeon-General H. G. Hathaway, lately D.D.M.S. of the Western Command, gave evidence. Going over much the same ground as that covered by the previous witnesses, he said that directly he received any complaints he had them investigated. In the first instance he inspected all the boards, and he afterwards made inspection according to requirements. Following upon the conference at the War Office in September, he issued a notice to the presidents of the boards in the command as to the number of rejections, and undertook to forward a copy to the chairman. Witness afterwards referred to a War Office Order issued near the end of June, and mentioned by various witnesses, under which any men whom the officer commanding found unfit for military service were to be examined with a view to their discharge. The witness spoke of this in allusion to the camp at Oswestry, where such men were gathered together for the purpose of examination and discharge. The Chairman of the Committee put it to General Hathaway that the category in which a man served in the army was not really settled by the medical boards, inasmuch as after a medical board had classified the category could be raised by a medical officer and a commanding officer acting together. The witness gave assent. The witness was afterwards asked a number of questions in regard to the medical boards in Manchester. He had previously stated that it was the general rule of medical boards to come to their decision on the opinions of the members collectively, the president announcing the classification. The Hulme Town Hall board was the only one in Manchester in which the classification was made by the president alone. This had been stopped. The witness referred to the case of one board in Manchester where the president had been changed. He was a man exceptionally able and very highly qualified, but the fact that so many men were being passed into Class A attracted criticism. The witness was understood to say that in referring to the change of president he was not speaking of the Hulme board. He spoke in terms of satisfaction of the working of the Manchester boards generally. Mr. Pringle read a letter from a Liverpool doctor who said he was a member of one of the medical boards of that city.

We four civilian doctors examine the men, and then they pass into the president's room, where he sat alone. He accepts

or classifies them, and not one of us had the slightest idea what had happened to them, with the only exception of those two cripples who were absolutely rejected, and some dozen doubtful cases of phthisis. We examined in all just over 750 cases, and the other three doctors did not get to know the result of any case. I made it my business to find out by asking certain men to show their cards before they left the premises.

I collected 100 results, and analysed them. One man who served in the Boer war, and since had suffered delusions and depression, and has been twice in an asylum, was, after bringing a certificate from the asylum, put into class B 1.

Witness: That would be a case in which I should make a thorough investigation. I suggest that it should be sent to the general officer commanding.

Mr. Pringle said that the writer of the letter would be asked to give evidence before the Committee. The letter continued:

Two cases of epilepsy, in one of which I insisted on the production of the history sheet showing he had been previously rejected for epilepsy, were both accepted.

The witness said it was very difficult to give an answer as to these cases without local references.

Mr. Pringle referred to another case which, he said, was verified by an alderman at Colwyn Bay. Two civilian doctors put a man into Class C, and then a military doctor put him into Class A. His heart was so weak that after the smallest exercise he was of no use. Another case which Mr. Pringle mentioned was that of a man in Oswestry camp who had double rupture, and died within three weeks of being recruited. The witness said all these cases required thorough investigation.

The witness accepted the principle that a man who could earn his living in civil life could do some work in the army. He did not make a qualification. If special attention was required to dieting that could take place in the army. Mr. Pringle: Do you seriously suggest that the army allows these conditions for any man? Witness: That, of course, would have to be considered.

Mr. Sutton, referring to the case of a man rejected in September and since passed in Class A, asked the witness whether the standard had been lowered. Witness: The standard for eyesight has been slightly lowered, but otherwise I think it is rather higher than it was. Mr. Sutton then mentioned the case of a shoemaker who, previously rejected, was passed C 3. A few days later he was ordered into khaki. He could not put his putties on as the army could not find him any boots on account of his having to wear irons on his legs, and the result was that he was told to put on his civilian clothes again and that he could follow his own trade in the army. The witness said he had never heard of the case.

The witness stated that he took up his office as D.D.M.S. of the Western Command on July 6th, 1916, and ceased to hold the position in the last week in June, Surgeon-General Julian being then appointed.

Colonel Tyrrell, A.D.M.S., London.

Colonel C. R. Tyrrell, Assistant Director of Medical Service, London, gave particulars of the working of the medical boards in London, mentioning that where there was uncertainty as to the existence of diseases such as tuberculosis use was made of the hospitals for examination. The witness went on to refer to the allegations made against medical boards, remarking that the members were abused, and there was no one to say a good word for them. The military doctors could not write to the papers to correct what was said at the tribunals. Civilian doctors could, but at his request they refrained from doing so. In many cases it was only by talking it over with members of these boards that he had persuaded them to keep at their work. They kept on by reason of their patriotism and good feeling. If they refused *en masse*, as they would be justified in doing, recruiting in London would be stopped. In reply to the Chairman, the witness said his last observation referred to the civilian doctors. He and others in the army did not care.

Mr. Sutton during Colonel Tyrrell's protest said that the doctors on the boards disgusted members of their own profession; but later, in modification of the remark, he said his reference was not to the London district, with which, in fact, he was unacquainted. Colonel Tyrrell read a letter which was sent to the medical boards to the effect that the number of rejections for epilepsy was larger than was considered necessary.

"Certificates of civilian doctors," it added, "should not be accepted without the president of the board seeing the record. They should not be rejected unless the presence of scarred or bitten tongues and their general appearance lead the board to think that they are confirmed epileptics. A man who has an occasional fit and is capable of earning his living is also fit for work in the army, and should be classified C 3, if not considered suitable for higher categories."

THE WAR.

MESOPOTAMIA DISPATCH.

A DISPATCH from Lieutenant-General Sir Stanley Maude, K.C.B., Commander-in-Chief, Mesopotamia Expeditionary Force, dated April 10th, 1917, and dealing with the operations from August 28th, 1916, to March 31st, 1917, three weeks after the fall of Baghdad, was published in a special supplement to the *London Gazette* of July 10th. The first three and a half months was a period of preparation, the last three and a half one of action. During the first period the health and training of the troops, who had suffered severely from the intense heat during the summer months, was improved and supplies amassed. By the end of November the troops had shaken off the ill effects of the hot weather. During the second period the fighting was strenuous and continuous, and the strain imposed upon all ranks, both at the front and on the lines of communication, severe. They responded whole-heartedly to every call made upon them, and their reward has been the measure of their success.

THE MEDICAL ARRANGEMENTS AND HEALTH OF TROOPS.

General Maude observes that one of the features peculiar to this campaign is the length of the lines of communication putting exceptional difficulties in the way of the administrative service and departments. With regard to the health of the troops and the medical arrangements, he makes the following observations:

Since the termination of the hot weather the health of the troops has been uniformly good, and our well-equipped hospitals have been more than adequate to meet the calls made upon them by sick patients. Throughout the operations the evacuation of the wounded was carried out on model lines, and the arrangements made for the comfort and rapid transfer of patients from the field units to the hospitals on the lines of communication reflect much credit on those concerned. Whilst those on the lines of communication have done their share efficiently, the work of the medical services at the front has maintained its high reputation. During the operations the strain thrown upon all has been heavy, and the courage and devotion to duty displayed by the personnel on the battlefield has only been equalled by the zeal and energy of those in the field units. In this connexion the valuable services rendered by the consulting surgeons and physicians demand special mention, whilst the thanks of the army are due to the nursing sisters for their indefatigable services in tending the sick and wounded. These ladies have by their devoted work under difficult conditions of climate and surroundings set an example of which they may well be proud.

General Maude expresses his thanks to the individuals and organizations which, though not strictly military, have rendered valuable services to the army, placing foremost amongst them the British Red Cross Society, which worthily maintained its splendid record.

The sterling work performed by its personnel, and its bountiful provision of motor launches, motor ambulances and gifts, have been the means of alleviating much suffering.

The dispatch concludes with a statement that a list containing the names of officers, warrant officers, and non-commissioned officers and men whose services are deemed worthy of special mention will follow.

GLUE FOR APPLYING EXTENSION IN FRACTURES.

LAST August we published a note on a method of fixing extension to fractured limbs by the use of a glue adhesive, introduced by Major M. Sinclair, R.A.M.C., for use especially in the application of the extension to compound fractures of the lower limb. As we have received inquiries with regard to this, we have obtained information as to the formula at present used and the method of application. The formula in general use is as follows:

Ordinary glue	...	...	...	50 parts
Water	...	...	...	50 "
Glycerin	...	...	...	2 "
Calcium chloride	...	...	...	2 "
Thymol	...	...	...	1 part

The glycerin and calcium chloride are both deliquescent and take up the perspiration, which keeps the glue from getting brittle, and, more important still, allows perspira-

tion to take place. This prevents the skin from getting sodden, in which condition bacteria may flourish and give rise to skin troubles. The thymol is added to prevent putrefaction and diminish smell. Every time the adhesive is heated the odour gets less and less. Experiments have proved that bacteria do not grow on this preparation. Air-tight tins which hold about a pound are filled and sterilized at 100° and placed in store. When required the contents are melted in a water-bath, and set aside a few minutes to cool.

The adhesive is applied with the palm of the hand or a brush. The skin is washed with soap and sodium carbonate solution (four drachms to the pint) in order to remove fat, and when dry the adhesive is applied *without* shaving the part. The area is covered evenly, and the ordinary four-ply gauze as it comes out of the packet applied, having roughly measured the requirements and gathered it in at the level of the wrist or ankle. An alternative method is to put on a length of "Elastic cotton net bandage" (S. Maw) from knee to ankle, to glue it on the *outside*, and then to apply the gauze as above and bandage carefully with a thin bandage.

The gauze, being spread out fan-shaped, adapts itself to the conformity of the limb, and is kept in apposition with the skin by a loose woven bandage. The extension can be made almost immediately.

The above method of extension is a very great saving of time, and, when compared with the cost of good strapping, is as sixpence to three shillings a limb. The following slight modification in the formula gives an excellent adhesive which is a little more elastic:

Isinglass	...	...	...	50 parts
Glue	...	...	...	50 "
Water	...	...	...	50 "
Calcium chloride	...	...	...	2 "
Tannic acid	...	...	...	12 "
Thymol	...	...	...	1 part
Glycerin	...	...	...	2 parts

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Accidentally Drowned.

LIEUTENANT F. WHINCUP, R.A.M.C.

Lieutenant Frank Whincup, R.A.M.C., was accidentally drowned in France on July 2nd, aged 43. He was educated at St. Bartholomew's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1897, and that of F.R.C.S.Edin. in 1902. After filling the posts of assistant house-surgeon and house-physician of the South Devon and East Cornwall Hospital at Plymouth, of house-surgeon of Stroud Hospital, and of anaesthetist to the Shropshire and Mid-Wales Eye, Ear, and Throat Hospital at Shrewsbury, he went into practice in that town. He was physician to the Royal Salop Infirmary and medical officer to the Post Office and to the Board of Education. He had only recently taken a temporary commission in the R.A.M.C.

Wounded.

Major H. d'A. Blumberg, R.A.M.C. (T.F.).

Major L. W. Bond, Australian A.M.C.

Captain F. A. Hampton, R.A.M.C. (temporary).

Captain R. Johnson, R.A.M.C. (T.F.).

Captain R. L. Kenihan, Australian A.M.C.

Captain L. R. Meech, M.C., R.A.M.C. (temporary).

Captain E. A. Walker, R.A.M.C. (temporary).

Captain H. Young, R.A.M.C. (temporary).

Lieutenant J. Berry, New Zealand Medical Corps.

DEATHS AMONG SONS OF MEDICAL MEN.

Bowman, Leslie Spencer, Lieutenant King's Own Royal Lancaster Regiment and Royal Flying Corps, only son of Dr. Bowman, of Ulverston, killed June 25th, aged 20. He became lieutenant in September, 1916, and joined the R.F.C. the same month.

Crombie, James MacHattie, Second Lieutenant Royal West Kent Regiment, youngest son of Dr. Crombie, of Sidcup, Kent, died on July 2nd of wounds received on June 25th while wiring in front of the line, aged 20. He was educated at Epsom College, where he was for five years in the O.T.C., and was cadet officer and head prefect during his last year. In June, 1916, he gained a history exhibition at Christ Church College, Oxford. He went to the front last January, soon after getting his commission. His elder brother, Captain Ian Osborne Crombie, Middlesex Regiment, was killed on the Somme in July, 1916.

Lucas, Charles Leslie Clement, Second Lieutenant Northampton Regiment, youngest son of the late Mr. R. Clement Lucas, F.R.C.S., died of shell wounds on June 30th, aged 19. He was educated at Epsom College and at King's School, Rochester, and joined the army through Sandhurst.

Poole, Bernard Routh, Captain Canadian Army Veterinary Corps, whose death was reported in the BRITISH MEDICAL JOURNAL of June 2nd, was the youngest son of Surgeon-Major Poole, Bengal Medical Service (retired). He was born at Peshawar, educated at St. John's College School, Hurstpierpoint, emigrated to Canada in 1895, served for a while with the Canadian Dragoons, and had got an appointment in the Agricultural Department. When the war began he joined as a veterinary officer. He was killed by a shell while on duty with the Railway Corps.

Power, James Edward Clutterbuck, Second Lieutenant Royal Field Artillery, attached Royal Flying Corps, only son of the late Surgeon-Major E. R. Power, R.A.M.C., killed June 26th, aged 23.

Shears, Edward Hornby, Lieutenant Irish Guards, eldest son of Mr. Charles H. B. Shears, ophthalmic surgeon, of Liverpool, killed in action on July 4th, 1917, aged 26. He began his education at "The Leas," Hoylake, Cheshire, from whence he obtained a foundation scholarship at Bradford College, Berks. In 1909 he obtained an open exhibition at Trinity College, Oxford, and in July, 1913, gained a First Class in Greats (Litt. Hum.). In August of the same year he passed into the higher division of the Home Civil Service, and a year later became Principal Private Secretary to the then Postmaster-General. In May, 1915, he was allowed to join the army, and was given a temporary commission in the Queen's (Royal West Surrey) Regiment. In October, 1916, he transferred to the Irish Guards, going to the front in January of this year.

Young, Cyril R. M., Major Royal Garrison Artillery, son of Dr. Moffat Young, of West Hartlepool, died of wounds received on June 7th, aged 31. He was educated at Repton and at Loretto Schools, got a diploma at the Armstrong College, Newcastle-on-Tyne, and before the war was a consulting electrical engineer at Darlington. He joined the 3rd (West Hartlepool) Company of the Durham Unit of R.G.A. (T.F.) before the war, became lieutenant on February 12th, 1914, and had gradually risen to major during the war. He went to France with a siege battery, was sent home to train another, and returned to France last January.

MEDICAL STUDENT.

Hoey, Frederick Cyril, Second Lieutenant R.F.C., reported as accidentally killed on June 7th, was the son of Mr. Charles Hoey, of Shrewsbury Road, Dublin. Lieutenant Hoey was a second year medical student at the School of Physic, Trinity College.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

MENTIONED IN DISPATCHES.

A special supplement to the *London Gazette*, issued on July 6th, contains a dispatch from General Sir Archibald Murray, G.C.M.G., K.C.B., describing the operations of the Egyptian Expeditionary Force from October 1st, 1916, to February 28th last. Appended to the dispatch is a list of officers and others mentioned for gallant and distinguished conduct in the field and for other services. The following medical officers are included in the list:

Staff.

Colonel (temporary Surgeon-General) J. Maher, C.B., A.M.S. Colonels: C. J. MacDonald, M.D., A.M.S.; M. J. Sexton, C.B., M.D., A.M.S.

Lieut.-Colonel (temporary Colonel) O. L. Robinson, C.M.G., R.A.M.C.; Lieut.-Colonel E. J. R. Evatt, M.B., R.A.M.C. Majors: H. V. Bagshawe, D.S.O., R.A.M.C.; R. H. Bridges, R.A.M.C.; G. C. Taylor, M.D., R.A.M.C.

Captain (temporary Major) C. E. Hercus, N.Z.M.C. Captains: G. Dalziel, M.B., R.A.M.C. (S.R.); A. S. M. Macgregor, M.D., R.A.M.C. (T.F.).

Royal Army Medical Corps.

Lieut.-Colonels: A. Hosie, M.D. (ret.), G. Scott, M.B. (ret.), W. R. Matthews, M.B., H. W. Thomson, M.D.

Majors (temporary Lieut.-Colonels): M. Dunning, M.B., J. Evans, M.D., R. B. Hole, M.B., H. T. Samuel, G. A. Troup, M.D.

Major C. Kerr, M.B.; temporary Major A. R. Ferguson, M.D. Captains (temporary Majors): J. Aitken, M.B., O. C. P. Cooke, W. W. Greer, M.D., F.R.C.S.

Captains: J. A. H. Aitken, M.B., C. H. Allen, M.B., F.R.C.S., L. B. Baird, F. S. Bedale, M.B., M. Brennan, M.B., A. E. Bullock, M.B., J. Davidson, H. R. Dive, A. A. Gunn, M.B., W. T. Gardiner, M.B., F.R.C.S., J. Inglis, W. F. Mackenzie, M.B., A. A. McWhan, M.B., W. H. Milligan, A. F. B. Shaw, M.D., C. F. Searle, M.B., O. Teichmann, W. T. Torrance, W. D. Treves, M.B., F.R.C.S., P. S. Vickerman, M.B., R. G. Walker, M.B., A. P. Watson, M.B., F.R.C.S., T. Young, M.B.

Temporary Captains: P. H. Bahr, M.D., H. V. Leigh, M.B., R. B. F. McKail, M.B., F. J. McGlade, M.B., H. P. Sheppard, M.B., H. E. S. Stiven, M.D.

Temporary Lieutenants: F. J. H. Begg, M.B., F. W. Davidson, M.B., A. E. Harrison.

Quartermasters and honorary Lieutenants: R. S. Mason, H. W. Rose.

Temporary Quartermaster and honorary Lieutenant W. Deans.

Indian Medical Service.

Lieut.-Colonel A. J. Willcocks, M.D. (ret.).

Majors: R. W. Knox, D.S.O., M.B., T. C. Rutherford.

Captain R. B. S. Sewell.

Australian Army Medical Corps.

Lieut.-Colonels W. A. Fraser, R. Macdonald.

Captain W. Evans.

New Zealand Medical Corps.

Lieut.-Colonel C. T. H. Newton, M.D., F.R.C.S.

Captain R. L. Withers.

The list also includes the names of 51 non-commissioned officers and men of the R.A.M.C., 13 non-commissioned officers and men of the A.A.M.C., 1 temporary sergeant of the N.Z.M.C., 4 members of the Indian Subordinate Medical Department, 13 of the Queen Alexandra's Imperial Military Nursing Service Reserve, 3 of the Territorial Force Nursing Service, 4 of the New Zealand Nursing Service, and 29 of the Order of St. John and British Red Cross Societies.

England and Wales.

NOTIFICATION OF TUBERCULOSIS AND ITS RESULTS.

In many previous annotations dealing with the incidence and death-rate of tuberculosis we have called attention to the frequent failure to notify advanced disease until the actual end is approaching. This may be traced through numberless reports by medical officers of health in large and small communities, many of them proving that tuberculosis may remain unrecognized until the very last. In an interesting report for the year 1916 the tuberculosis officer for the borough of Middlesbrough is able to show a very marked improvement in this respect in his own district, and the figures that he presents are worthy of careful consideration. By the aid of the loyal co-operation of the panel doctors the notification of early cases has been very greatly increased and the number of those reported for the first time in their later stages has been proportionately diminished. There are still many such cases of concealed disease in which notification has been avoided, but, for the most part, early recognition has led to satisfactory treatment and, incidentally, to considerable financial saving. The tuberculosis authorities at Middlesbrough, having wisely decided to employ the limited funds at their disposal for the treatment of remediable cases only, have not relied entirely upon residential sanatorium methods, but have made use of home visitation and supervision to a considerable extent, and with very satisfactory results. The saving thereby effected has been notable, and at the same time the patients have been able to follow their regular employment without the interruption that residence in a sanatorium must entail. Incidentally, it is said to be inadvisable to transfer patients from indoor to outdoor occupations to which they have not been accustomed. The tendency to relapse would seem to be much greater in such cases than among those in which the normal occupation is resumed.

NATIONAL BABY WEEK IN BRIGHTON.

The national campaign against infant mortality was carried out with great vigour during baby week in Brighton and Hove. On Wednesday a baby show for the united boroughs was held at the Aquarium. The 700 infants present were divided into twenty-five classes, one for each month for girls and boys respectively and an extra one for twins; five prizes were given in each class. In addition awards were given to mothers for sewing, domestic work, etc. The average standard of the infants as regards cleanliness, nutrition, and clothing was excellent. After the judging, in which twenty-five doctors, assisted by nurses, took part, the prizes were presented at the Pavilion Military Hospital by the Mayoresses of Brighton and Hove. The limless patients much enjoyed the visit of the large concourse of infants. A visit was paid by the Mayor of Hove to the Hove Infant Welfare Centre, recently opened, when the Medical Officer of Health, Dr. Rawdon Wood, was able to show a most successful record of his few months' work, the attendances at the clinic reaching seventy in one afternoon. The Hove Crèche was also visited. It is hoped that the good work carried out here for so many years may be greatly extended as the result of forthcoming

legislation. Lectures on the importance of healthy babies to the State were delivered at all the schools, both elementary and private, in Hove by the teachers. Several thousand children entered for the twenty prizes offered by the Mayor of Hove for the best essays. Some of these were remarkable, showing a really intelligent grasp of the subject. In both towns exhibitions relating to child welfare were arranged.

MENTAL DEFECTIVES IN WORKHOUSES, ETC.

Regulations have recently been issued by the Local Government Board with reference to mental defectives received into Poor Law institutions under the provisions of Section 37 of the Mental Deficiency Act, 1913. The provisions of Articles 16 to 23 inclusive of the Order of 1913 with reference to the inmates of a sick ward, lunatic ward, or nursery are made applicable to the above cases, and the various notices of admission, discharge, death, escape, or recapture required by the Provisional Regulations under the Mental Deficiency Act, and copies of entries in the register of mechanical restraint are to be furnished to the Board of Control, together with periodical lists of all the defectives in the institution. It is the duty of the master to bring to the notice of the official visitors every defective who has since their last visit attained the age of 21 years, and leave of absence may only be granted to a defective by the guardians or the House Committee, except when the leave is for not more than forty-eight hours, which may be granted by the master with the concurrence of the medical officer. Owing to war exigencies preventing for the present the establishment of new Poor Law institutions for defectives, it seems unavoidable that vacant ward space in workhouses should be utilized for defectives, but it is to be hoped that this will be regarded merely as a temporary expedient and that special homes for this class may be provided as soon as circumstances permit.

MEDICAL INSPECTION OF SCHOOL CHILDREN IN LIVERPOOL.

The medical officer to the education authority, Dr. E. W. Hope, has published the report of the medical inspection of school children for 1916. The examination was confined to entrants and leavers; owing to the war the examination of the intermediate group at the age of 8 had to be relinquished. The number of children attending school in 1916 was 136,575; the average attendance was 118,788. The ratio was in 1916, 87.0 per cent., as compared with 87.4 per cent. in 1915. The total number of children inspected was 32,372, and, in addition, 9,762 special cases presenting defects were medically examined at the request of head teachers. School nurses are employed to attend at the clinics, and to visit certain of the schools with the object of promoting cleanliness and tidiness, and women sanitary inspectors visit the homes of neglected children, and of children suffering from medical defects that are being treated at home.

The figures as to cleanliness of head and body show continuous improvement as compared with previous years, but constant supervision is necessary in maintaining this desirable condition. Defective vision was present in 5.8 per cent. of the boys and 8.5 per cent. of the girls. Special defective vision classes have been instituted for the more serious cases, of which about two-thirds are due to myopia. A marked diminution in all forms of tuberculosis was noted at the routine examinations; only seven definite and eight doubtful cases of pulmonary tuberculosis were detected among 32,000 children, after careful examination by the school medical officers as well as by the tuberculosis officers. Of skin diseases, ringworm of the scalp was found in 426 children and ringworm of the body in 703 children. These figures show a decrease on the numbers recorded in previous years. At the end of 1916 the number of children away from school was 294, compared with 327 at the end of 1915. The number of cases treated by x rays was 129, including 17 carried over from the year 1915. There were a large number of cases of scabies—namely, 667 in 1916, as compared with 339, 512, and 555 in the three preceding years. Measles accounted for 7,686 cases, whooping-cough 1,524, and scarlet fever 1,195. The cases of whooping-cough and scarlet fever were fewer than in 1915, but the number of cases of measles was considerably more in 1916 than in 1915, owing to an outbreak in the spring and early summer of last year.

Fortunately the deaths from measles were below the average. During the past year the Education Committee at last grappled with the treatment of children suffering from enlarged tonsils and adenoid growths, and established a clinic with this object. It was opened in September, and twelve beds are provided to allow of children operated upon to stay the night. A charge is made to the parents, which is omitted in cases of penury; 224 cases were treated at the clinic during the four months since opening.

At the dental clinics 2,834 temporary teeth and 80 permanent teeth were extracted, and 562 temporary teeth and 113 permanent teeth were filled. Dr. Hope believes that during the summer, owing to the introduction of summer time, a number of school children suffered from insufficient sleep, especially in the poorer neighbourhoods where the children are not so well controlled. This may well be the case, as so many of the fathers are away on active service in the navy and army.

Ireland.

BABY WEEK CONFERENCE.

DURING the celebration of baby week in Dublin a conference was held in the Mansion House on July 4th, when Dr. E. Coey Bigger, Medical Commissioner, Local Government Board, gave an address on child welfare in Ireland. Arrangements in the past had been chiefly directed, he said, to the treatment of sickness by means of hospitals, the Medical Charities Act, the Poor Law, and National Insurance. In future the aim must be to place the public health system on a wider and wiser basis by directing energies to the prevention of sickness, not only by lessening infection but by increasing the natural resisting power of every child. At present infection spread from the slums where it was cultivated, and the abolition of slums would help to eradicate the diseases propagated there. One child out of every four born in Dublin died before the fifth birthday was reached; under proper conditions of sanitation, housing, careful supervision, together with sufficient and suitable food, the deaths should be reduced by 75 per cent., or, in other words, out of every four children who died three could be saved. When the deaths during the first year of life were analysed it was found that those in the families of the middle and upper classes were about one out of every forty to fifty children born, whereas in the families of the poor the deaths were about one out of every four children born, or, in other words, the deaths of the infants of the poor were about ten times as great as the infants of the upper classes. The children that went to make up this heavy death-rate would, if they lived, become in the ordinary course wage-earners, and consequently producers. This showed the extent to which industries suffered by this dreadful loss of what should be their greatest asset.

Dr. W. Maguire, Medical Commissioner, National Health Insurance, said that it was remarkable that in recent years, despite public recognition everywhere of the urgency of the subject, no legislation of importance affecting the health of the masses of the people had become law, with the single exception of the series of enactments known as the National Insurance Acts. How valuable was the weapon which the maternity benefit provisions of the Insurance Act placed in the hands of those interested in the welfare of motherhood was to be gathered from the fact that since January, 1913, when these benefits first became payable, a sum of at least £300,000 had been expended in Ireland on maternity benefit alone; while in addition it was estimated that a large sum had been expended in sickness benefit directly arising from the condition of pregnancy. The average number of insured women in Ireland was about 216,000. Of that number 35,000 were married, and 10,000 of them would have children—that was to say, about £15,000 was paid for maternity benefit. It therefore followed that £60,000 was paid in respect of the wives of married men to the number of 40,000; so that 50,000 women would benefit by the Act. Thus it would be seen that for the past four years an average sum of £75,000 per annum had been paid in maternity benefit to insured women and the wives of insured men.

Professor E. J. McWeeney, M.D., in discussing the

bacteriological control of milk, said that sanitarians were agreed that the high infant death-rate was due to the food of the child—the swarms of deleterious germs present in cow's milk, produced, conveyed, and stored under uncleanly conditions. He strongly advocated the compulsory chilling of milk down to 50° F. at the farm or cowshed, as at that temperature little multiplication of undesirable germs occurred. He supported municipal or charitable milk dépôts, and a bacteriological control of the milk supply. He held that the Public Health Department of a city like Dublin could not be considered up to date until it had established a special milk laboratory, worked by trained assistants, under the supervision of the city bacteriologist.

DUBLIN MATERNITY HOSPITALS.

The annual report of the Holles Street Maternity Hospital states that during the year 999 women were admitted to the wards, showing an increase of 75 as compared with the previous year; 645 women were admitted to the lying-in wards, the total number of births being 539; and 355 cases to the gynaecological department, where 246 operations were performed. In the extern maternity 928 patients were attended at their own homes, and the nurses paid over ten thousand visits to these women. At the out-patient department 2,500 cases were attended and treated. A special dispensary day is set apart for infants and expectant mothers, with the object of lessening the appalling infant mortality of the city.

The Coombe Hospital has received a donation of £25 from the Queen, who visited the hospital in 1911. The Board is making a very earnest appeal to the benevolent public to meet the pressing needs of the charity, which has a debt of over £6,000. The work of the hospital is carried on amongst the very poor, and through its instrumentality much suffering is relieved to women and infants in its wards and dispensary.

Scotland.

NATIONAL INSURANCE IN SCOTLAND.

At the annual meeting of the Scottish National Conference of Friendly Societies, held in Edinburgh, motions were adopted calling for the establishment of a separate department of the Ministry of Health in Scotland, and reformation in the administration of the problem of housing. Sir James Leishman, chairman of the Scottish National Commission, in the course of an address on insurance administration, said that many persons had joined, and there had been a large number of changes in occupation. Married women had re-entered insurance and retired men had taken up some kind of work. About half of the medical profession and 60 per cent. of chemists were doing war work, and 80 per cent. of the staff of the administration were on military service, as were also a large proportion of insurance members. The total amount of money collected from all sources was twelve and a half millions, and seven and a quarter millions had been expended in benefits or in administration; four and three-quarter millions had been invested. Complaints in connexion with the administration had been reduced by 40 per cent. He concluded by expressing the opinion that everyone should realize that a broad national policy should be adopted in the matter of insurance.

EPIDEMIC DIARRHOEA.

The Local Government Board for Scotland has issued a circular to local authorities and medical officers of health on the excessive mortality among children arising from epidemic diarrhoea during the summer and autumn months. The Board urges upon local authorities the great importance of taking all practicable measures for the prevention of this disease, and for the promotion of hygienic conditions in the feeding of infants. It attaches much importance to special visits paid to mothers by health visitors during the season in which epidemic diarrhoea is likely to prevail, especially in the homes in which there are hand-fed infants. It is urged that during the summer and autumn months temporary health visitors should be appointed to devote their whole time to the organized visitation of cases of epidemic diarrhoea, and to

the instruction of the mother or guardian in precautionary measures to prevent its spread. Half the salaries of health visitors appointed for this purpose would be repaid to the local authorities under an approved scheme.

Correspondence.

DR. ADAMI'S CROONIAN LECTURES.

SIR,—It would take an undue amount of your space and of my time were I to state fully the grounds which I have for regretting the tone and the matter of Dr. Adami's two Croonian lectures published by you in your issue of June 23rd. Nevertheless I ask your permission to lay them briefly before your readers. Those grounds may be classed as matters of taste and matters of fact. With regard to the first, Dr. Adami offends (a) by citing without my permission (and in a garbled form) a private communication made by me to him; (b) by professing that "the time is ripe" for him to instruct the biological world in elementary facts as to the experimental modification of the activities and forms of pathogenic bacteria which (as I had pointed out to him) are really familiar to biologists, and are not and never have been—as he persists in asserting, in spite of plain information to the contrary—treated with "superb indifference" and neglect in this country; (c) further, by comparing Professor Bateson, for the purpose of vulgar ridicule, with a bumble-bee in a greenhouse; and also (d) by making use of the unworthy method of *suggestio falsi* in recklessly stating that the evolution of a new property by direct acquirement is "contrary to the hypotheses and dogmas of Professor Bateson and Sir Ray Lankester." My objection to this is that Dr. Adami must know, if he knows anything about the matter, that Professor Bateson's views and mine on this subject have little in common. It is unfair to both of us to suggest that they are identical, whilst it is merely rhetorical abuse to speak of those views as "dogmas." Further, it is the fact that Dr. Adami was categorically informed by me eighteen months ago that the frequent evolution of a new property in a race of bacteria by "direct acquirement" was maintained by me forty years ago, and supported by facts published by me and at that time novel, concerning the peach-coloured bacterium (*B. rubescens* or *rosco persicinum*) and the frequent pleomorphism of the bacteria, and that I, in common with many other biologists—including my regretted friend, Elie Metchnikoff—have continued to hold and advocate that view in spite of the adhesion of "medical bacteriologists" to Koch's doctrine of the fixity of bacterial "species."

Dr. Adami now endeavours to give his Croonian lectures a flavour of novelty by claiming for some medical bacteriologists who have recently accepted the long-known views of myself, Warming, Zopf, and Metchnikoff, the merit of a new discovery. He actually, at this late hour of the controversy, sets out, whilst announcing himself as a "militant" reformer and missionary, to teach *us* what we have done our best to teach *him* from his student days onwards.

So much for matters of taste. Now as to some of the matters of fact misrepresented by Dr. Adami.

(a) Under the heading, "Nature of variation" (p. 838) Dr. Adami confuses the terms "variation" and "variability," and thereby renders all his argument "suspect." No one disputes (as Dr. Adami asserts that some do) that *variability* is a primary quality of living matter inherent and not acquired. On the other hand, no one denies that actual *variations* are brought about by the influence of forces acting from without upon this labile variable living matter.

(b) Further on (at the top of p. 840) Dr. Adami states that I deny that there can be external influences of such a nature that specific variation may be induced by them. I have never at any time denied, but on the contrary always maintained, the truth of this elementary proposition. Biologists do not require Dr. Adami to pose, as he says, "under the shade of Harvey," and to cite well-known facts in order to be persuaded of this. It is really unfortunate that Dr. Adami should pretend that these facts are unknown to those whom, with some cryptic implication, he terms "academic biologists."

(c) Moreover, Dr. Adami is hopelessly wrong in his use

of Herbert Spencer's term "direct adaptation." He says that the worker in pathogenic bacteriology is impressed with the fact that "direct adaptation" is one of the basal phenomena of living matter. This is the great discovery which he thinks it his duty to teach to academic biologists. He is singularly unfortunate, for he proceeds at once to show that he has never understood what Herbert Spencer meant by "direct adaptation." Dr. Adami says that direct adaptation is "specific modification in response to a specific alteration in environment." That is not so. As Mr. Herbert Spencer is at some pains to point out, a specific modification in response to a specific alteration in environment is not necessarily an "adaptation." It may in certain cases happen to be so, but on the other hand it may have no such quality. Such a modification may be destructive of the life of the organism, or it may be disadvantageous rather than adaptive, or it may be, so to speak, neutral and without significance. Such specific modifications in the case of the simplest living matter have, it seems probable, never been *directly* adaptive, but some of the many modifications so set up would, *under some of the many further changes of environment*, prove of value in the struggle for existence to the primitively simple living thing so modified, and would lead to its survival by natural selection. This is called by Mr. Herbert Spencer "adaptation by *indirect* equilibration" as contrasted with "adaptation by *direct* equilibration." I need not pursue the subject further. It is sufficiently clear that Dr. Adami is under the illusion that mere modification of an organism in response to change of environment is described by the term "direct adaptation," which it is not. Accordingly in this case also, as in regard to the words "variation" and "variability," he misunderstands what other people have said on the subject on which he lectures, and, in consequence, solemnly gives utterance to propositions which have no serious meaning.

(d) Dr. Adami proceeds to maintain that the retention of its changed character by a strain of experimentally modified bacteria multiplying by fission is an example of the "transmission" of an acquired character. He is probably aware that it is very widely admitted that no case of the transmission of what are called "acquired" characters from parent to offspring has been demonstrated in so far as those higher animals and plants which multiply by means of specialized egg cells and sperm cells are concerned. The well-known retention of induced change of character in very simple fissiparous organisms does not go far towards rendering it probable that transmission occurs in the case of elaborate multicellular organisms with specialized reproductive cells. Dr. Adami offers us a dissertation on the word "individuality," which is of no assistance in the matter, and later proceeds to state that Weismann "violently opposed" the doctrine of the transmission of acquired characters. This is a baseless charge. Weismann was a patient investigator, and anything but a "violent" controversialist. He came to the conclusion that not only had no case of such transmission on the part of higher organisms been demonstrated, but that the mode of development and structure of the reproductive cells was such as to make it improbable that such transmission could be brought about. Nevertheless, Weismann would have examined fairly and judiciously any attempted demonstration by a competent investigator of an instance of the transmission of such characters, and so at any time would "the academic biologists" of this country. Weismann would not have been interested in Dr. Adami's recent orations, since he was well acquainted with the life-history of both Protophyta and Protozoa.

It would not be right, since Dr. Adami has made a point of alluding to me, that I should leave his statements unnoticed, as I should have done had he not referred to me by name.—I am, etc.,

London, W., July 4th.

E. RAY LANKESTER.

SUGGESTIONS FOR A MINISTRY OF PUBLIC HEALTH.

SIR,—No excuse need be made in putting forward now a scheme for a Ministry of Public Health to form a basis for discussion, because such a scheme is both necessary and non-existent. After the war it will be clearly Medicine's duty to formulate proposals for such a co-ordination and carrying out of all medical services as shall not only maintain but promote the health of all classes in

all parts of the empire, both in peace and war. Such proposals will necessarily involve a Ministry of Public Health framed on sound lines. I submit the following:

The Minister—a medical man, because no other can safely state the needs of his ministry to the Cabinet, Parliament, or the public.

A Council of Thirty Members—12 medical, 18 lay—constructed thus:

Twelve Medical Members:

Director-General of Sanitary Service—this Service including "Public Health," "Tuberculosis," "School," and "Maternity and Child Welfare" Services.

Director-General of State Insurance Service, in which the Poor Law Service should be merged.

Director-General of R.N.M.S.

Director-General of R.A.M.C.

Director-General of I.M.S.

Director-General of Colonial M.S.

Director-General of Medical Education.

Two Representatives of Civil Hospital Service, one a physician, the other a surgeon.

Three Direct Representatives of the Medical Profession, one a man.

Eighteen Lay Members:

Two women.

Two civil hospital governors.

Two representatives of labour.

One representative each of the Board of Education, the State Insurance Board, the Admiralty, the War Office, the India Office, the Colonial Office, and the Treasury.

Five members appointed by the House of Commons.

By such a scheme, it seems to me, each department of service would be adequately represented, consistently with due compactness of the Council, the necessary dominance of the lay element would be ensured, and its composition closely fitted to the needs of the Ministry, checks would be provided against faddism, either lay or medical, and the needful connexion with other Government departments formed.

The "civil hospital service" would include the charge of asylums, dispensaries, and perhaps of the Home Civil Service Medical Service. Otherwise I think the list explains itself.

The scheme is, as I say, offered as a basis for discussion. We cannot begin too soon discussing such a Ministry.—I am, etc.,

Exeter, July 7th.

W. GORDON.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—There must be many medical men in a similar position to me as regards their medical student sons now serving with the army abroad. Take my case as illustrative. A country doctor, with a family of sons, anxious to get one of them qualified, to help him when he gets past work, or to help the mother, or his younger brothers in case of need. The eldest, a student of medicine at 16½ years old, after one year at medicine was in khaki, and before 18 in the firing line in Flanders, and now when over 20 still there. A second son follows in his wake, and so on.

The other side of the picture is to be seen in some of the medical schools. Lads who became students after the war broke out, who are unfit for general service, are allowed to remain at their studies, and are now in their third year, perhaps have passed two professional examinations and may be qualified, and either officers in the R.A.M.C. or practitioners earning a good income, while my sons are still first-year men and still fighting.

These "unfit for general service students" will in most cases be quite fit to carry on a hard working practice in opposition to the lads who return—those that are left of them alive or not permanently crippled. I sometimes picture my own practice, which I have worked hard to develop and tried to keep in my family, one day in possession of one of these men, who have done nothing for their country, instead of in the hands of my own son. If this war goes on, all my sons will have to go in time, and it is a terrible sacrifice to contemplate with no compensating conditions. I am not grumbling, but I am wondering if this is all quite right. What is going to be done for these fighting medical students when they return to find their places taken by the kind of men I refer to? Many of these so-called "unfit" can work as vigorously at home and as long hours as most perfectly "fit" men can, and many of us would like to know what really is the matter with them

that they are "unfit." If they are "unfit" for any kind of army service, it seems safe to say they are also "unfit" for the strenuous work of a medical practice as I understand it.

We have paid fees for a medical education which may never be got, and it is terrible to think that these lads may return at perhaps 24 or more years of age to begin their first year to find their "unfit" competitors qualified and flourishing who began their studies after they began to fight for the country. I may be wrong, but it is not in accord with my sense of justice.—I am, etc.,

July 2nd.

"AUX ABSENTS LES OS."

THE CO-ORDINATION OF BRITISH MEDICAL POLICY.

SIR,—A number of letters have recently appeared in the JOURNAL on this subject, and to me the general tone of them is that the attendance upon the less well-to-do needs organizing to a further extent than has hitherto been done. With that view I fully agree, but I am prepared to advocate a much greater step than has been suggested in the last few weeks as an ultimate goal, not in one step.

We must as a profession remember that we are largely conservative in political matters; that we look at the question from within a more or less carefully guarded enclosure; that, after all, we are public servants in so far as we are responsible for the health of the nation, being looked to for advice both publicly and privately. That we respond to our obligations in the vast majority of occasions is a credit that I believe no one will dispute. But if we assume so much responsibility must we not also assume more, and consider whether it is not possible for the mass of the people to obtain still further benefits from us, irrespective of whether it is to our financial advantage or no? If it is allowed that the State should look after the education of the people, can anyone dispute that the health of the people is still more a matter for State regulation and control? If not, then there should be no interference with medical practice by the State, probably not even the question of registration. But if yes, then it must follow that the majority in the State must have the right to regulate medical matters as far as it seems to that majority that improvement is possible in the health of the people, even to the extent of providing it out of State funds, of nationalizing the hospitals, the education and examination of students, and anything else that may be needed.

But that is a long cry from our present condition, and could not be done all at once. I doubt whether any of those of us who advocate a national service expect to see it working in a fully developed form during our lives; we only hope to see it started.

The first step seems to me to be the establishment of the Ministry of Health that we are promised, so that there may be a central authority to control medical matters in their entirety. Any form of medical attendance under the Insurance Act could best be under it. Health officers, tuberculosis physicians, Poor Law medical officers, infant and school medical officers, and all the other specialized importances would be under the Ministry. Hospitals and sanatoriums could better be provided under it, and many more of them are needed, especially "cottage" hospitals, where cases could be admitted for rest, as apart from cases requiring skilled surgical or specialized medical treatment. Provision ought to be made for women and children to receive treatment from the public service; drugs should be provided at the public dispensary, and not bought from a chemist in the manner now done under the Insurance Act; it is too extravagant, as every one in an industrial practice knows.

There is one remark I should like to contradict in the past correspondence. It is said that the "fiasco" was due to men being bribed from their allegiance to the Association. No such thing. It was due to the Representative Meeting passing a resolution telling us to go and make terms with the clubs after the chief cry for months had been "no more clubs"; it disgusted us, and we had no desire to remain in an organization which could fool us in that manner; such was my own feeling, and others expressed the same. Our resignations were not accepted; mine was not, at any rate.—I am, etc.,

Mumbles, July 9th.

F. DE COVERLY VEALE.

QUO VADIS (VEL CUI BONO)?

SIR,—I agree with Dr. Fordyce's dictum that the disciplinary control of the entire body of registered medical men cannot be secured by any known means. For this reason I have retired from medical politics. As a "farewell" I must, however, nail to the counter Dr. Fordyce's statement that Mr. Lloyd George and his subordinates had ready, in the event of a strike by the profession on the introduction of the Insurance Act in 1912, a whole-time service scheme, and the necessary staff to work it. It was a bluff pure and simple—*pace* Dr. Fordyce. The proof is, that in the one tiny area which held out neither Mr. Lloyd George nor his subordinates could find the necessary staff to work even this minute section. The real truth was that the financial inducement finally offered was good and sufficient, and the terms on the whole honourable and satisfactory. The vast majority of panel practitioners to-day are of the same opinion still—again *pace* Dr. Fordyce and the whole body of *extra*-panel practitioners, whose opinion on panel matters is valueless.—I am, etc.,

Hove, July 8th.

RAWDON WOOD.

BENEDICT'S TEST FOR SUGAR IN THE URINE.

SIR,—I have lately received a number of complaints from medical men that they have been unable to obtain satisfactory results when testing urines for sugar with the Benedict solution supplied to them by local chemists. On inquiry I find that in every instance the solution had been prepared according to the directions given in a trade publication, and that this solution is that described by Benedict for *quantitative* work, although the fact is not stated. It may be helpful, therefore, if I point out that Benedict's *qualitative* solution, employed in testing for sugar, is prepared as follows:

With the aid of heat dissolve 173 grams of sodium (or potassium) citrate and 100 grams of anhydrous (or 200 grams of crystallized) sodium carbonate in about 700 c.cm. of distilled water. Dissolve 17.3 grams of pure crystallized copper sulphate in about 100 c.cm. of distilled water. Cool the solutions to the temperature of the room, pour the second into the first, slowly and with constant stirring, make up to 1,000 with distilled water.—*Glycosuria and Allied Conditions*, p. 33.

The difficulty of having two separate and distinct solutions for qualitative and quantitative work may be avoided by employing the modified Benedict solution and method of estimating sugar in the urine I recently described (*Lancet*, April 21st, 1917, p. 613).—I am, etc.,

London, W., July 3rd.

P. J. CAMMIDGE.

EARLY SPLINTING IN GUNSHOT WOUNDS OF THE MANDIBLE.

SIR,—In Mr. Colyer's note on the treatment of gunshot wounds of the mandible he places fixation of the parts last and says that "to adapt splints in a 'field of sepsis,' as is so often done, is to ignore the most elementary surgical teaching."

I yield to none in my admiration of Mr. Colyer's crusade against sepsis in the treatment of these injuries, but I cannot think that he means that no fixation of any kind should be attempted until sepsis has been controlled. The constant movement of the fragments which in many cases accompanies every attempt at speech and deglutition is a potent factor in keeping up sepsis, to say nothing of the misery it entails on the patient.

The device used to keep the fragments still may, and by reason of the illness of the patient often must be, of the simplest, sometimes no more than a ligature of wire or silk; and it goes without saying that, whatever it may be, it should allow of free cleansing and in no way impede the irrigation of the parts.

If these points be borne in mind, early fixation, regardless of the presence of sepsis, is at once followed by diminution of discharge and increased comfort of the patient, as no one who has tried it can doubt for one moment.—I am, etc.,

London, W., July 11th.

J. H. BADCOCK.

Universities and Colleges.

UNIVERSITY OF MANCHESTER.

FROM the annual statement made by the Vice-Chancellor of the University of Manchester (Sir H. A. Miers) on the occasion of degree day on June 30th, it appears that the number of students that have withdrawn from the university during the past session to join the forces or to render national service, is approximately 64, and this, with the number who had previously withdrawn, makes a total of over 460 students, with 50 of the teaching staff and 36 of the servants of the university who are absent on military, naval, or other service, while 26 members are occupied in service at military hospitals. If to these be added the former students, there are in all about 1,700 past and present members of the university giving national service in some way; over 80 members had received distinctions for services in the army or navy. The normal activities of the university have been much curtailed both in teaching and research, and in one department the students have entirely disappeared. On the whole, however, the work has been maintained with greater success than was anticipated two years ago. The energies of the university were now either directly or indirectly wholly connected with the business of the war. Ordinary research had been abandoned, and the departments had devoted themselves to experimental and advisory work for various Government departments. Since the end of 1915 the Public Health Department had made over 60,000 examinations for the military hospitals in the Second Western Command, and special investigations had been carried out in connexion with the prevention of disease. There were now 560 men and 400 women students remaining at the university, which was less than half the usual number, and almost all of them were qualifying either as doctors, chemists, nurses, engineers, or to contribute in some way to the national service. At the beginning of the past session the total number of students was 1,028, which included 314 in the faculty of medicine, but was exclusive of those only attending evening classes. While the entry of men students had grown steadily less, there had been an increase of women students, mainly due to the remarkable increase of entries in the faculty of medicine. There were now 91 women medical students as compared with 67 in the previous session.

In alluding to the fund for the endowment of a department of Russian at the university, the Vice-Chancellor said he was now at liberty to announce that the anonymous gift of £5,000 was from Sir Wm. Mather, who had also given a further £1,000, and the original condition attached to the first gift that a further £5,000 should be obtained was now removed. The fund now stood at about £9,500, but the university needed at least £20,000 for the purpose.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

M.D.—F. C. Wilkinson.

FINAL M.B., CH.B.—*Part II*: R. A. Cooke, *S. G. Evans, *P. E. Gorst, *Phoebe A. Ince, W. A. Jackson, *G. R. James, *V. E. Jones, V. I. Levy, G. A. Mitchell, G. S. Swan, *Constance M. Tinkler, Frances Weighman, Mary H. Wild, H. G. Young. *Part III*: A. L. Davies, R. R. Evans, S. D. S. Greval, Mary E. Illingworth, W. M. Jones, Edna E. Mawson, M. B. Strock.

* Therapeutics. † Forensic Medicine and Toxicology.

UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examination indicated:

M.B., CH.B. (M., Mater. Medica and Therapeutics; P., Pathology; M.J., Medical Jurisprudence and Public Health).—J. S. Aitken, M.; C. O. Anderson, P.; J. D. Arthur, P.; A. K. Begg, M.; A. S. Bisset, P.; W. G. Burns, P.; J. Caddies, M., P.; W. J. S. Cameron, P.; T. W. Carstairs, P.; J. G. Coltart, M., P.; H. L. Coulthard, P.; A. M. Davidson, P.; *J. Donald, P.; W. Edgar, P.; M. F. Gibson, M., P.; G. O. Grant, P.; J. Hewitt, M., P.; H. J. Hollis, P.; R. G. Howat, M., P.; J. A. Jenkins, M., P.; S. H. W. Kameron, M., P.; J. Kirk, P., M.J.; A. C. Lindsay, M., P.; R. M. Courtney, P., M.J.; D. Maclean, P.; F. K. Macmillan, P.; A. W. M. Rorie, P.; R. Mair, M., P.; J. M. K. Maxton, M., P.; J. S. Meighan, P.; M. S. Molema, M., P.; J. B. Morrison, M., P.; B. F. Niblock, P.; *J. Nicol, P.; J. W. Peden, P.; J. Pollock, M., P.; J. M. Ritchie, P.; W. Scotland, M.; H. H. Spencer, P.; N. E. Stone, M., P.; J. B. Sweet, M.; J. L. Turpie, M.; J. A. Walls, P.; R. K. Watt, M., P.; R. Young, P.; S. Young, M.; Helen F. Allison, P.; Susan S. Bryce, M., P.; *Elizabeth P. Cameron, M., P.; *Mary T. L. Clark, M., P.; Emily L. Clow, M., P.; Veronica C. J. Davies, M., P.; Edith D. Dobbie, P.; Charlotte A. Douglas, M., P.; Margaret H. Grant, P.; Helen Hogg, M., P.; Alison M. Hunter, P.; Alice M'Elwee, M., P.; Alice M'Glashan, M., P.; Annie I. C. MacIardy, M.; Margaret E. MacLaren, M., P.; Mabel M. Maclean, M., P.; Caroline J. MacLennan, M., P.; Agnes H. Macwhirter, M., P.; Georgina Murdoch, M., P.; Kathleen Nicol, P.; Margaret M. Paterson, M., P.; Louisa E. Pigeon, M., P.; Helen L. Ralston, M., P.; Margaret N. Robertson, P.; Elaine B. S. Stocquart, M., P.; Muriel A. Stowe, M., P.; Jean B. Thomson, M., P.; Marion Thomson, M., P.; Helen B. Wilson, M., P.

Passed in Medical Jurisprudence and Public Health of the Fourth Professional Examination under the new medical ordinance: W. Barras, M. Chalmers, K. J. A. Gillanders, E. P. Irving, A. Kennedy, V. J. Perry, I. M. Robertson, J. J. Robertson.

* Passed with distinction.

UNIVERSITY OF ABERDEEN.

THE Duke of Richmond and Gordon was installed Chancellor of the University of Aberdeen on July 6th, and delivered an address.

The following degrees were conferred:

M.D.—J. M. Duncan, R. Richards.

M.B., CH.B.—*C. Reid (with second-class honours), J. W. Bowman, *F. W. Carter, C. A. Harvey, B. W. Jones, D. W. MacKay, Achyuta Menon Mannatazhat, A. Y. Milne, G. F. Mitchell, A. G. Reekie, J. M. Savage, J. I. Watson, C. Wood.

* Passed Fourth Professional Examination with distinction.

W. L. Yell has passed the Final Professional Examination with distinction, but will not graduate until he attains the necessary age.

The John Murray Medal and Scholarship has been awarded to G. R. McRobert as the most distinguished graduate M.B. of 1917.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE meeting of the Fellows of the College for the election of three Fellows into the Council in the vacancies occasioned by the retirement in rotation of Mr. Harrison Cripps and Mr. V. Warren Low, C.B., and by the death of Sir Frederic Eve, was held on Thursday, July 5th. The result of the poll was as follows:

Candidates.	Votes.	Plumpers
MR. VINCENT WARREN LOW, C.B.	295	38
MR. JAMES SHERREN	228	32
MR. W. HARRISON CRIPPS	220	10
MR. FRANCIS J. STEWARD	197	53
MR. H. BETHAM ROBINSON	188	15
MR. HAROLD BARR GRIMSDALE	147	28
Fleet Surgeon Percy W. Bassett-Smith, C.B.	137	13

The President declared Mr. Harrison Cripps and Mr. Low duly re-elected and Mr. James Sherren duly elected. Mr. Cripps being third on the poll becomes substitute member for the late Sir Frederic Eve until July, 1920.

633 Fellows voted; 626 by post and 7 in person.

Obituary.

ARTHUR WEBB JONES, M.D., B.S. LOND., F.R.C.S. ENG.

COLONEL A. H. TUBBY, C.M.G., A.M.S. writes:

By the untimely death of Arthur Webb Jones, the British community in Alexandria and numerous friends have sustained a great loss. Dr. Webb Jones was educated at Malvern College and St. Thomas's Hospital. He received the diploma of F.R.C.S. Eng. in 1900; not content, however, with this, he worked for the degrees of the University of London whilst engaged in active practice in Egypt, and he became B.S. in 1911 and M.D. in 1913. As the subject of his thesis for the latter degree he selected "Bilharziosis in Women," and on this question he was able to write authoritatively owing to his wide experience in gynaecological surgery in Alexandria.

For five years—1900–1904—Webb Jones served in the Egyptian army in the Sudan; and on leaving to settle in private practice in Egypt he received the official thanks of the Sirdar and Governor-General of the Sudan for his services. His merits and abilities were recognized by his appointments as medical officer for the Alexandria district, to the Egyptian State Railway, and of surgeon and gynaecologist to the Government hospital there. During the Gallipoli campaign the medical and surgical resources of Egypt were taxed to the uttermost, and Webb Jones volunteered and did yeoman service to the British troops from May, 1915, to December, 1916.

Webb Jones had not been out of Egypt since 1913, and when an epidemic of typhus fever broke out this spring in Alexandria, it found him, fatigued and somewhat out of health, though keen as ever upon his duties. He was called upon to give an intravenous injection of saline solution to a brother practitioner, dying from typhus, and accidentally inoculated himself in doing so. In about ten days the disease showed itself, and despite the assiduous and affectionate care of Colonel Sandwith, Consulting Physician E.E.F., of Captain Walker, R.A.M.C., and other friends, he succumbed on the eleventh day. His funeral was attended by representatives of every official and administrative branch with which he was or had been connected, and by very many others who desired thus to express their sorrow. Although it was not given to Webb Jones to fall fighting in the front ranks, yet it may be truly said that the manner of his death was that of one who fell with his face to the foe, for he died at the post of duty, and in the effort to save the life of a fellow medical man.

Of his abilities as a surgeon I have been given opportunities of forming an opinion. He was a sound diagnostician and a careful and skilful operator. His judgement was good and his successes notable. Looking through his notebooks we find his cases carefully recorded, and he was in the habit of adding his subsequent impressions and investigations to the account of each case, thus continually striving to perfect his knowledge and technique, and so to crystallize his experiences. As a colleague and friend, Webb Jones was most desirable, and happy were those who were admitted to his friendship. A winning manner, entirely free from any trace of self-assertion, and a sense of complete reliability which he diffused combined to render him a quiet tower of strength in trouble and illness. Had Arthur Webb Jones been permitted to reach the allotted span of life he would have gone far. He leaves a widow and a young family and numerous friends to grieve at his departure.

DR. J. T. BALLANTYNE, the senior practitioner of Darwen, Lancashire, died on June 26th at the age of 72. After studying medicine in the University of Glasgow he graduated M.B., C.M. in 1878, and first practised in Glasgow. A few years later he went to Darwen, where he practised for nearly forty years. He was a J.P., and was long a member of the Darwen town council, on which his knowledge of sanitary science was of great value. After serving some years as alderman he was unanimously elected mayor of the borough in 1898. In spite of the cares of a busy practice he found time to take a leading part in municipal affairs, and his year of office was successful. A colleague, "W. M.," writes: "Dr. Ballantyne was for many years president of the Darwen Medical Society, attending the meetings regularly, and taking a keen interest in all scientific questions. He was ever ready to further the welfare of the society, and regarded it as his special duty to promote good fellowship among the members. He had great diversity of tastes; his love of arts and music and his fondness for travel made him a delightful companion. In his public and private work he was one of the most fearless of men, and was at all times strongly opposed to any suggestion savouring of inefficiency or humbug. He could sing a good song and tell a good story, and appeared at his best when making a speech at a Darwen dinner. A huge man, with a large heart, he was always kind and sympathetic towards suffering humanity. He gave largely and unostentatiously. Darwen owes him a deep debt of gratitude for the forty years of strenuous life which he devoted to the public interest of the town of his adoption."

DR. ANDREW LEGAT died at South Shields on June 15th in his 94th year. He was educated at the University of Edinburgh, took the diploma of L.R.C.S.Edin. in 1844, and graduated M.D.Edin. in 1845. He had practised in South Shields nearly the whole of his life and only retired a few years ago. He was appointed a magistrate for South Shields in 1880 and was one of the oldest occupants of the bench. He had taken a great interest in the work of the British Medical Association and was an ex-president of the North of England Branch. In 1856 Dr. Legat wrote an account of the first case of apparent drowning treated in England by the Marshall Hall method. He also claimed to be the first medical man to give chloroform, in the North of England, for operation.

DR. JAMES THOMAS CALLCOTT, who died from heart failure recently at Invergarry, N.B., aged 68, was born in Sunderland and received his medical education at University College, London, and the University of Durham. He took the diploma of M.R.C.S.Eng. in 1874 and graduated M.B.Durh. in 1880 and M.D. in 1883. He was medical superintendent of the City Asylum, Gosforth, and had previously held the post of assistant medical officer to the Lancashire County Asylum, Whittingham, and deputy medical superintendent to the Durham County Asylum, Winterton. Dr. Callcott, who was unmarried, was a keen salmon fisher, and for several years pursued his favourite hobby while on holiday in Scotland. He was a member of the Newcastle-upon-Tyne Division of the British Medical Association.

MR. WILLIAM GEORGE TOTTENHAM POSNETT died on June 17th, aged 46. He received his medical education at the schools of the Royal College of Surgeons in Ireland and took the diploma of L.R.C.P.I. in 1893 and became a Fellow of the College of Surgeons in 1900. He held the position of surgeon to out-patients at St. Paul's Hospital for Urinary Diseases, London, and had been pathologist to the Johannesburg Hospital and in the Transvaal Government Bacteriological Laboratory. He was at Bloemfontein during the Boer war, and was one of the operators at No. 8 General Hospital, where he performed over 600 major operations. During the Zulu rebellion he held a commission as surgeon-captain. In August, 1914, he offered his services to the French Red Cross; he served at Yvetôt and received a warm letter of thanks from the French medical service. In July, 1916, he was appointed by the War Office to examine recruits. He was then in the best of health, but often spoke of the bad ventilation and insanitary state of the recruiting stations. About Christmas last he began to have rises of temperature, which he attributed to malaria. He gradually lost weight and suffered from cough and hoarseness. On March 13th tuberculous laryngitis was diagnosed and both lungs were found to be affected. Dr. Arthur Ransome, F.R.S. (Bournemouth), writes: "I have drawn the attention of the medical officers of the L.C.C. and the Local Government Board to the risks their officers are running under those conditions, and believe they have taken active steps to abate the evil. For Mr. Posnett, as my son-in-law, I had a warm affection, and early realized his great abilities as a surgeon, and this qualification, coupled with his high sense of duty, make his early death a loss to his country, as well as to those belonging to him; but if these lines should open the eyes of the authorities to the dangers to which medical men are subjected at home, as well as abroad, perhaps the sacrifice will not have been in vain."

WE have by an oversight failed to record the death of Dr. J. STEWART BOYD at Richmond on October 6th, 1916, after an illness of seven months. He was greatly missed at Custom House, Essex, where he had an extensive practice for twenty-seven years.

Medical News.

THE Minister of Pensions has appointed Colonel Sir John Collie, R.A.M.C., to be Director of Neurasthenic Institutions.

THE annual meeting of the National Association for the Prevention of Consumption will be held at 20, Hanover Square, on Monday next, at 5 o'clock, when Lieut.-Colonel G. Sims Woodhead will give an address on farm colonies for the tuberculous.

DR. C. W. SALEEBY will give a lecture on "Armoured Men" at the Royal Institute of Public Health on Wednesday next, at 4 p.m., in place of Lieut.-Colonel Monckton Copeman, whose lecture, owing to an official engagement, has been postponed until the autumn course.

ON July 5th John Henderson Bell, M.D., of Beaufort Mansions, Chelsea, convicted in the previous week of attempting to produce a disease in a sergeant of the Australian forces, was charged at Clerkenwell police court with a similar attempt in the case of Sergeant-Major Hawkins. Dr. Bell, in giving evidence on his own behalf, denied the charges. The magistrate found him guilty, and sentenced him to six months' hard labour for each of the two offences, the sentences to run concurrently. Leave to appeal was granted in both cases.

A Maternity Nursing Home at 13, Princes Gate, S.W.7, was opened by the Professional Classes War Relief Council early in 1915 for the benefit of the wives of professional men adversely affected by the war. Over three hundred babies have been born therein. Applications for admission or for assistance in regard to maternity expenses at home should be made to the secretary. We are in a position to say that the institution is well conducted and deserving of support. Probably many doctors in various parts of the country come across cases which have been hard hit by the war, and to whom such an opportunity as the institution affords of getting over the period of confinement would be a great boon.

THE special appeal tribunal appointed by the Minister of Pensions to consider appeals from invalided soldiers and sailors against decisions that their disabilities are not attributable to, or have not been aggravated by, naval or military service, has now begun to hear cases. The medical members of the tribunal are Dr. Norman Moore and Mr. Bilton Pollard.

A JOURNAL entitled *Quaderni di Medicina Legale* has lately been started in Italy. It is to appear monthly in 50-page numbers, and will deal especially with subjects of military legal medicine, malingering, and injuries and accidents among working people. It is edited by Dr. A. Cevidalli, professor of medical jurisprudence in the University of Parma, and is published at Milan (via Mascheroni, 20).

Psychobiology is the title of an American periodical which is to appear every second month. It will be devoted chiefly to the publication of the results of research in the field common to psychology and the various biological sciences, or having a distinct bearing on the biological foundations of psychology. Manuscripts intended for publication should be addressed to Professor Knight Dunlap, Johns Hopkins University, Homewood, Baltimore.

At the second Medical Congress of Venezuela, held in January, resolutions were passed inviting the Academy of Medicine to promote the fusion into a national league of hygiene the existing organizations against malaria, tuberculosis, syphilis, alcoholism, ankylostomiasis and quackery, and to appoint a permanent commission to organize and direct an investigation into the diseases of the country. It was decided to send to Sir Leonard Rogers of Calcutta "a message of admiration and gratitude" for his introduction of emetine in the treatment of dysentery and hepatic abscess. The third meeting of the congress will be held at Bolivar in 1919.

At a recent meeting of the administrative council of the Pasteur Institute, Paris, Dr. Albert Calmette, director of the Pasteur Institute at Lille, and Dr. Louis Martin, director of the Pasteur Hospital, were unanimously appointed subdirectors in the room of Dr. Chamberland and Professor Metchnikoff. Dr. Chamberland, who died in 1908, has had no successor till now. Dr. Calmette, who founded the Pasteur Institute at Saigon, has taken a leading part in the campaign against tuberculosis in France, and Dr. Martin, who has been associated with the Paris Institute since 1902, has made researches on the bacteriology of diphtheria, the prophylaxis of contagious diseases, tuberculous meningitis, tetanus, anthrax, and sleeping sickness. At the same meeting M. Vallery-Radot, Pasteur's son-in-law and biographer, was elected president of the administrative council.

A RECENT report shows that the Red Cross Advanced Stores Dépôt of the Joint War Committee of the British Red Cross and the Order of St. John has been at work at Baghdad for some time, and that there are twelve Red Cross motor launches in use. It is desired to establish a large fleet of such launches, picking up the sick and wounded along the banks, with motor ambulances to bring them to the river by the shortest route. Eighteen motor launches were dispatched from England between May 29th and the end of June, and five others are building. The hospital ship *Nabha* has rendered great service. The vessel had its own ice-making plant, and was able to turn out two tons of ice every twenty-four hours, which had been of great assistance to the hospitals. Provision is being made for a considerable number of hospitals in Baghdad, and also for an officers' convalescent hospital of fifty beds, and a convalescent camp of one thousand beds.

THE sixty-eighth annual meeting of the American Medical Association was held at New York from June 4th to 9th. The secretary reported that the membership on May 1st, 1917, was 82,501, and the number of Fellows 44,010, an increase for the year of 829. The Chairman of the Board of Trustees, Dr. W. T. Councilman, reported that the weekly average issue of the *Journal* of the Association during 1916 was 67,255. The principal item of expense in publication was that of paper, which was equal to one-third of the total expenditure; the cost of ink, rollers, wire, linotype, metal and supplies generally, together with that of labour, had increased. It was proposed to decrease the size of the *Journal*. A resolution had been passed at the February meeting of the Board that all papers read at the annual meeting should be treated as volunteer papers, and published in full or in abstract in the *Journal* or rejected as might seem best. The Chairman of the Council on Health and Public Instruction, Dr. Frank Billings, reported that the financial condition had made it necessary to abandon for the time being the programme of investigation, education, and legislation which had been followed during the past four

years. During the past year the Council had confined its efforts to the production of literature which could be supplied to State Boards of Health, educational and philanthropic bodies, women's clubs, and similar organizations. From June 1st, 1915, to May 16th, 1916, the Council printed and distributed 1,133,500 pamphlets, of which 750,000 were on minimum health requirements for rural schools; the others were on defence of research, conservation of vision, prevention of cancer, public health, sex hygiene, social insurance, care of babies, and public health measures as to venereal disease. The report stated that the Council was opposed to the use of alcohol except in the preservation of pharmaceutical preparations. It was decided that the next meeting should be held at Chicago under the presidency of Dr. Arthur Dean Bevan of that city.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Atiology, Westrand London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

INCOME TAX.

H. M. S. has for many years deducted two-thirds of his rent, rates, etc., in making his income-tax return. This year the surveyor refuses to allow two-thirds but offers "one-half."

* * The statutory rule is that H. M. S. can deduct a reasonable proportion of his rent, etc., "not exceeding" two-thirds. What proportion of his yearly outlay for rent and rates is expended for professional rather than private purposes is, of course, a question of fact. Speaking generally, the professional cost would probably bear a higher proportion to the private cost in large towns, and as two-thirds is the maximum, something less is generally accepted as applicable to smaller towns. One test that may be suggested is whether or not H. M. S. would spend more than one-third of his present rent if he were a solicitor, for instance, with a separate office and an identical income. A case presenting some slight analogy is that of a clergyman, who can deduct only one-eighth of his rent for a room set aside for the purposes of his calling.

LETTERS, NOTES, ETC.

FINGER SPLINT FROM CACTUS STEM.

MR. F. D. BANA, M.B.Bomb., M.R.C.S.Eng., D.P.H.Oxon. (Bombay), writes: A trolleyman, with a painful swelling on the first interphalangeal joint of the right index finger, applied for treatment here on May 25th, 1917. He had improvised a hollow splint from the fresh stem of a cactus, having removed the soft pulpy part from the centre. The splint measures 2½ in. in length by 1 in. at one end and ¾ in. at the other in diameter. From its slightly sausage-shaped curve it fitted the index finger comfortably, following the slight convexity of the finger, which, as everybody knows, is not quite as straight as the other fingers when extended. The fresh juice of the core of the stem is often used by the natives to paint any painful swelling; it adheres as a varnish. In this case the splint served as an excellent temporary support for the finger by resting it and preventing movement of the swollen joint.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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THE CLINICAL ORGANIZATION OF THE MEDICAL PROFESSION.

AN ADDRESS TO THE METROPOLITAN COUNTIES BRANCH,

BY

C. O. HAWTHORNE, M.D.,

PRESIDENT.

[AFTER thanking the members for his election as President of the Branch, Dr. Hawthorne paid tributes to the memories of Sir Victor Horsley and Dr. Major Greenwood, and continued as follows:]

We shall at least all allow that organization is a subject which merits attention, seeing that the term has become one of the master-words of the moment and that the methods of medicine, as many other methods, are likely in an increasing degree to be tested by it. Of organization for medico-political purposes it is hardly necessary here and now to speak in commendation, for it is a motive which explains, at least in part, our present meeting. I will, however, allow myself the expression of a personal conviction that no prospect of success in this direction presents itself outside the liberal and democratic constitution of the British Medical Association. Here is a free and open platform for every advocate who has counsel to give to his fellows, and if, even as in other organizations, it is the fate of minorities to suffer, there lies ready to hand an infallible prescription by which the experiences of a minority in the Valley of Humiliation may be changed into the triumphs of a majority and the delights of the Delectable Mountains. This prescription contains but two ingredients—the one a good cause; and the other an indomitable will. Another professional field in which the principle of organization is likely in the immediate future to find an increasingly close application is that related to the care of the public health, and I fancy most members of the profession are prepared to welcome a more intimate co-operation and a more orderly co-ordination of activities which up to the present have been directed by different, and sometimes by conflicting Government Departments. "A Ministry of Health" is an inviting phrase, and provided it be translated in harmony with an enlightened medical opinion it may command operations of great benefit to the nation. In the provision of this opinion the representatives of the British Medical Association have already shown their readiness and ability to take a due and appropriate share.

But neither in medical politics nor in preventive medicine do the great majority of medical practitioners find their daily occupation and concern. We have interests in both the one and the other, but our immediate responsibility and duty is the care of sick folk. Of course, complete success in the prevention of all disease and suffering would be the greatest of medical triumphs. But such an hour is not yet, and in spite of leagues and associations and committees there is likely for many a long year to persist an active demand for the services of those who can carry a knowledge of expert medicine to the bedside of the individual sufferer. "Send for the doctor" is one of the acute cries of human need, and it lies with us to secure, so far as possible, that this cry is not uttered in vain. Now an effective response to the claim implicit in such an appeal demands obviously fullness of clinical knowledge and soundness of clinical judgement. Aid from the laboratory and kindred sources we may obtain and ought to obtain, but after all, the final word lies not with these but with the bedside student. What I wish to inquire is whether it may not be possible by some scheme of organization to do something to enlarge the store of clinical knowledge and to secure its more effective distribution in the profession.

At the outset I state two preliminary propositions: First, that the acquisition and extension of clinical knowledge implies practical, personal, bedside study; and the second, that clinical problems are so varied and, not infrequently, so involved that their full educational values are most likely to be obtained by a combination of practitioners, each of whom is willing to throw his individual experiences and his individual judgement into the common stock. My preliminary thesis, in a word, is that to further and promote clinical efficiency we must establish and extend clinical organization.

Obviously for such an organization it is necessary to provide a centre, or rather a series of centres; and my suggestion is that the natural and most appropriate centre in each individual district is the local hospital. At present, with rare exceptions, there is no regular and recognized relation between the work of the hospital and the interests and activities of those who practise medicine in its neighbourhood, and it is this state of affairs which I wish to see remedied. Therefore I urge that, instead of being, as at present, outside and detached from the hospital scheme, the local profession shall be enlisted as part and parcel of its clinical machinery; and that in connexion with each hospital shall be organized an arrangement of mutual help in the prosecution of clinical knowledge and in the promotion of clinical efficiency. The most immediate and obvious benefit of such a scheme would be a better and more complete personal knowledge of individual cases, for every one concerned would be in a position to gain a full record of the patient—his medical history prior to his admission to hospital, the events observed in hospital, and also the later developments. The arrangements in other words, would remedy, or would help to remedy, what I fancy we all admit to be one of the most serious defects in our personal clinical equipment—namely, its patchy and partial character. Art is long, and especially long is the art of clinical medicine; and it is because of this that judgement is difficult. We must unite our experiences if within the brief compass of an individual life we are to obtain anything like an adequate survey of the wide field within which lie our duties and responsibilities.

To come now to practical details. Clearly, if any movement in the direction here suggested is to be developed there must be a first step, and my submission would be that this first step ought to be taken by the hospital. The hospital has both a recognized position and an existing organization, and these confer both opportunity and responsibility; and probably at the outset not too cordial a response must be expected. Mistakes and misunderstandings have hardened and emphasized a separation which never ought to have existed, and time and tact and temper will be necessary to get rid of their effects. An initial proposal might well be the establishment of an arrangement by which any practitioner who sent a patient into hospital should be invited to meet in consultation the hospital officer under whose charge the patient was placed. Apart from other benefits, this would secure accuracy in the earlier history and the possibility of completing at a later date the patient's record; and generally it would help to establish a habit of co-operation and to develop an atmosphere of goodwill. But the hospital ought to do much more than this. It ought to organize, say on one or two days in the week, a series of clinical demonstrations or consultations to which members of the local profession should be invited, and in which they should be asked to take part. Such meetings should by no means be occupied mainly or even largely with the presentation of odd, exceptional, and peculiar cases. On the contrary, they should enclose an attempt to display the actual clinical pictures or dramas provided by the wards and the out-patient department; to consider the meaning of events or combination of events existing as facts in individual patients; and to endeavour on a co-operative basis to frame in each instance a reasoned diagnostic, prognostic, and therapeutic scheme. Details of arrangement and management would doubtless differ in different localities, and these would be readily adjusted were it once recognized that as an effective aid to the promotion of professional efficiency clinical study ought to be organized, and that the natural centre for such organization in each individual district is the local hospital.

The principle thus stated would, in addition to those above defined, find many other opportunities for expression. Personally I should place much emphasis upon the educational value of *post-mortem* examinations. These are comparatively common in hospital work but difficult to obtain in private practice, and their absence is a real defect in the practitioner's experience. Hence I would make the hospital *post-mortem* room open to the local profession, and would arrange that any practitioner who would enter his name on a list kept for the purpose should receive notice when a necropsy was to take place. There might, indeed, be instances where the scheme of organization could be more readily commenced here rather than in

the clinical department. Whether on this side or on that, a beginning means much and could not fail to issue in larger ambitions.

Again, the clinical laboratory ought to be made a centre of practical interest to the practitioner, and the ideal scheme would enable him to attend in order actually to see for himself the results of the tests applied in connexion with cases for which he was responsible. Too many of us are content in this matter to accept reports for which we can supply no personal verification, and it may perhaps be asked whether such a proceeding is capable of ethical defence, seeing that in the relation between practitioner and patient there is implied on the part of the practitioner the guarantee of a personal responsibility.

A third possibility of the establishment of an organic union between the local hospital and the neighbouring profession would be the institution of a medical reference library with obvious advantages to all concerned. There exist a number of admirable atlases illustrative of various departments of clinical work, but their expense forbids their wide distribution, and they remain of little general service. To be effective these illustrations need to be displayed, and a clinical picture gallery constructed from these and other sources, and in every hospital, would mean within reach of the majority of practitioners an attractive and stimulating centre for the diffusion of clinical knowledge. Hospitals are usually very keen, and rightly so, on the creation of a pathological museum. But the pictorial side of clinical work has little recognition paid to its educational values, and many contributions of this order, save for some special reference, remain isolated from the interests they are well fitted to serve. The creation of an opportunity for their exhibition widely throughout the profession would be an educational advance of high merit.

Such, then, are some of the developments which might be expected were it once recognized that our hospitals ought to be, not merely centres of benevolence, but also centres of organized clinical enterprise and progress in which members of the local profession would find their share, their interest, and their pride. Before such a position can be reached there must probably be an educational campaign directed both to the profession and to the lay public, and especially perhaps to those among the latter who form the governors of our hospitals. We have recently had a demonstration of what can be secured when our hospital authorities are convinced that the institutions over which they preside have large public and educational interests to serve, and no one now objects to the institution of special hospital clinics for the treatment of diseases which but yesterday were held to be outside the range both of sympathy and of help. It can hardly be doubted that a similar welcome would wait on such a scheme as is here proposed when the responsible authorities were satisfied, as they surely could be, that its adoption would mean both an increased area of hospital usefulness and a greater measure of helpfulness for the individual patient.

I now go further and say that along such lines as are here defined may be found a large contribution to a question of the highest importance—namely, the provision of ready opportunities for post-graduation medical education and study. Most of us in our younger, more flexible, and more impecunious days—that is, in the days when we most need such opportunities—cannot afford to leave our practices for a number of weeks and months to visit one or other of the great educational centres; and even at the best the necessary brevity of such visits puts an inevitable limitation on their values. If post-graduation medical education is to become effective and widely spread, it must offer itself in more sustained opportunities and must secure centres not very far away from the scene of the practitioner's daily duty. My contention is that the local hospital ought to be such a centre, and its wide and continuous service makes it all the more appropriate to this end, seeing that the aim of post-graduation study is not to tempt the practitioner to forsake the wide horizons of general practice for some narrow and restricted sphere of work, but to raise the all-round proficiency of those who are the chief agents for carrying the help of medicine into the homes and lives of the people. The benefits of such an arrangement would not be all in one direction. On the contrary, the scheme here outlined would not only make available larger and more systematized clinical opportunities to the great body of the profession, but it would exercise a helpful and stimulating pressure on our hospital

staffs. It would urge them both to raise their routine work to the highest possible level and also to equip themselves with the latest developments of clinical doctrine and practice and to be agents for the communication of these to their professional brethren. Related to this is the suggestion that all such educational schemes should include opportunities for lectures or demonstrations by those whose original work had become wedded to clinical service as well as by others who had attained a recognized position of professional leadership and authority. These ends are perhaps for the fullness of time, but an opportunity for beginnings is ready to hand and wisdom will not despise it.

SUMMARY.

To sum up my suggestions in brief form I would say: (1) That the general efficiency of the profession may be promoted by the organization of co-operative clinical study; (2) that for such organization appropriate centres already exist in the shape of our local hospitals and kindred institutions; (3) that an effective scheme of this order demands the co-ordination of the work of the hospital with the interests of the local profession; and (4) that by movement in this direction are to be secured ready, sustained, and distributed opportunities for the cultivation and development of post-graduation medical education and study.

I submit these suggestions with great respect to the attention of the Branch.

THE ANTISEPTIC PROPERTIES OF ACRIFLAVINE AND PROFLAVINE, AND BRILLIANT GREEN;

WITH SPECIAL REFERENCE TO SUITABILITY
FOR WOUND THERAPY.*

BY

C. H. BROWNING, R. GULBRANSEN,

AND

L. H. D. THORNTON.

(From the Bland-Sutton Institute of Pathology, the Middlesex Hospital.)

(A Report to the Medical Research Committee.)

IN view of the attention which has recently been directed to the employment of "flavine" compounds and other basic benzol derivatives in the treatment of infected wounds, it appears desirable that certain features of these bodies, and especially of the flavine group of antiseptics, should be dealt with in greater detail than hitherto, in order that those who intend to employ these substances clinically may have more fully at disposal the indications for their use afforded by laboratory investigations. Subsequent trials along similar lines have fully substantiated the reports already published on the use of these antiseptics, but it is not proposed at present to enter further into clinical results until continued tests on an extensive basis enable a decision to be reached as to the best mode of application and range of usefulness. The powerful bactericidal properties of acridine dyes were pointed out by Browning and Gilmour, who also investigated brilliant green and other triphenylmethane compounds.† They observed in the case of acridine compounds that, in marked contrast to most other antiseptics, their action was enhanced by the presence of serum. With the exception of carbolic acid, we do not know of any other antiseptic which is not greatly weakened in its action by admixture with serum, nor are we aware that this property has been claimed for any powerful bactericidal substance. A further study of compounds belonging to this group was undertaken with a view to determining their suitability for therapeutic use in infected wounds (Browning, Gulbransen, Kennaway,

* We have much pleasure in acknowledging our indebtedness to the Medical Research Committee for a grant toward the expenses of this work.

† These are all "elaborate compounds of which most are brilliantly coloured and are used as dyes"; such characteristics are inseparable from the compounds in question, but they have been suggested for use clinically on account of outstanding properties which are likely to render them valuable in the treatment of infected wounds—at present so urgent a problem—and which are not shared by any colourless substances thus far known.

and Thornton). The substances investigated included 3,6-diamino-acridine derivatives with substituted methyl groups in the amino side-chains, or in the benzol rings, or in both positions; also the unsubstituted 3,6-diamino-10-methyl-acridinium compound—"flavine," now called "acriflavine"—prepared by Benda for Ehrlich, and originally named "trypaflavin," on account of its therapeutic action in trypanosome infections.*

The term "flavine" compounds will continue to be applied to the acridine group of compounds as designating them in relation to their use as antiseptics. The results of clinical trials in the case of acriflavine and allied flavine bodies have been reported by Colonel Pilcher, D.S.O. (see Browning, Gulbransen, Kennaway, and Thornton, also James), and by Ligat, and Thornton and Walker from the wards of the Middlesex Hospital. Since the publication of the above work the unsubstituted 3,6-diamino-acridine sulphate ("proflavine")† has also been examined more completely than had been done in connexion with the base by Browning and Gilmour.

It was found that while, in the case of all the diamino-acridine compounds tested, the antiseptic effect was enhanced by the presence of serum, especially for *B. coli*, diamino-methyl-acridinium chloride ("acriflavine"), and diamino-acridine sulphate ("proflavine") exerted the least degree of inhibitory effect on phagocytosis.

The effect on phagocytosis was in the first instance tested according to Wright's method, whereby equal quantities of human serum, washed human "leucocyte cream," emulsion of organisms and appropriate dilutions of antiseptic were mixed together, and then incubated in capillary tubes for twenty minutes at 37° C. At the end of this time the mixtures were spread on slides, stained, and the number of organisms ingested by fifty leucocytes estimated in each case; the control contained normal saline in place of the antiseptic. The serum and corpuscles were on every occasion obtained from the same subject. The organism employed was a twenty-four hour agar slope culture of *Staphylococcus aureus* emulsified in normal saline to give an homogeneous emulsion of about two thousand million organisms per cubic centimetre; a number of antiseptics were investigated simultaneously so as to avoid attaching importance to any differences in the results due merely to individual variations.

Observations made by Colonel C. J. Bond on the effect of these substances (acriflavine and proflavine) on leucocytes *in vivo* have yielded similar results to our own.† He estimates the influence of antiseptics on leucocytes in two ways: (1) By dressing a wound with gauze soaked in the antiseptic with protection against drying; at the next dressing the leucocytes entangled in the gauze are examined in normal saline with reference to their capacity to phagocytose starch granules previously dusted on the wound. Dead leucocytes lose this property. Or the pus cells from such a wound may be incubated with carmine granules in a plasticine cell. Colonel Bond finds that in spite of slight damage leucocytes in pus from a wound irrigated or dressed with acriflavine are capable of ingesting pigment granules when incubated. (2) A drop of blood from the finger is mixed with antiseptic in saline solution and then incubated in a hermetically sealed chamber. The leucocytes which emigrate from the clot and collect on the slide are gently washed in saline and then treated with 1 per cent. iodine solution, and their capacity to give the "iodophil reaction" is so tested. Any definite degree of damage to the vitality of the leucocytes hinders the elaboration of "iodophil substances" during the period of incubation. Hence the presence of the latter may be taken as a delicate method for detecting injury to the white cells. The "iodophil reaction" was obtained to a considerable degree with acriflavine and proflavine 1:1,000 in normal saline when employed in this manner.

These compounds are comparatively little toxic for the body as a whole, and although proflavine is slightly the

more inhibitory towards phagocytosis, its general toxicity for mice, as tested by subcutaneous injection, and also the irritating effect of concentrated solutions on the conjunctiva, are markedly less than that of acriflavine. The bactericidal concentration of proflavine is practically the same as that of acriflavine—that is, for *Staphylococcus aureus* and *B. coli* in serum 1:100,000 to 1:200,000. In the case of streptococcus (*pyogenes* and *enterococcus*) and the bacillus of malignant oedema it is also equal to acriflavine. The concentration which reduces phagocytosis of *Staphylococcus aureus* to 50 per cent. of the control is 1:500 in the case of acriflavine, and proflavine is only slightly inferior in this respect. The concentration of proflavine which produces slight irritation of the conjunctiva (rabbit) is 1:50 as compared with 1:150 in the case of acriflavine when applied for three minutes. The methods of test were those previously described.

The Parts Played by Phagocytosis and Antiseptics in Overcoming Local Infection.

Recent observations of Bond, Rous and Jones, and others, suggest that organisms may be protected rather than destroyed as a consequence of being ingested by leucocytes. This may bear somewhat the same relationship to the cellular aspect of immunity which anaphylaxis does to the humoral, but in view of Metchnikoff's classical observations it is difficult to relinquish the conclusion that phagocytosis is, in general, part of an important defensive mechanism. We have extended our previous work by studying the effect of prolonged contact of a solution of antiseptic in serum on the phagocytic power of leucocytes, when subsequently staphylococci are added. The mixtures of one volume each of "leucocyte cream," serum, and antiseptic solution were incubated in capillary tubes at 37° C. for two hours. The control contained saline instead of antiseptic. At the end of this time one volume of staphylococcus suspension was added, and after thorough mixing the whole was again incubated for twenty minutes in order to permit of phagocytosis occurring. Films were then made in the usual fashion. It was found on comparing in this way the flavine compounds with mercuric chloride that 1:10,000 of the flavine antiseptics, after two hours' contact with the leucocytes at 37° C. had little effect on the phagocytic power, whereas this concentration of the mercury salt reduced the phagocytic count to below 50 per cent. of the control. Now it is to be remembered that, so far as bactericidal action is concerned, 1:10,000 represents practically the limiting concentration of mercuric chloride, any further dilution of which with serum abolishes antiseptic action; on the other hand, such highly bactericidal concentrations of the flavine antiseptics after prolonged contact leave the leucocytes still capable of phagocytic action. Accordingly, both the flavine compounds are recommended for trial in the prevention and treatment of septic infection in wounds.§

Properties Desirable in a Therapeutic Antiseptic.

The question as to what constitute the most advantageous properties of an antiseptic depends almost entirely on the particular purpose for which it is used. Thus, the sterilizing of material outside the human body, as in disinfecting garments, instruments, etc., is a matter entirely different from sterilizing a wound; in the former practically the sole necessity is to destroy the organisms, but in the latter the properties of the antiseptic must be so adjusted as to ensure efficient action on the bacteria while at the same time giving rise to a minimum of tissue destruction or interference with those protective and proliferative functions upon which healing depends. A cogent illustration of the point in question is the harmlessness of flavine compounds when solutions of 1:1,000 strength are brought into contact with the peritoneum. It appears most likely that in wounds, especially when treated early, actual destruction of the bacteria through the sole agency of the antiseptic is not essential, it being necessary merely to ensure that no significant multiplication of the implanted pathogenic organisms takes place; in other words, a concentration powerful enough merely to inhibit proliferation

* In our previous work the abbreviation "flavine" was applied to the latter compound, but since this name might give rise to confusion owing to its use in connexion with other substances in commerce, the product here referred to will in future be called "acriflavine," as suggested by the Medical Research Committee.

† The specimen of this substance required for our investigations was prepared by Drs. Burger and Ewins in the Department of Biochemistry and Pharmacology of the Medical Research Committee, and we have pleasure in expressing our indebtedness to them for the valuable facilities which were thus placed at our disposal. The name "proflavine" has been suggested to us by the Medical Research Committee. As it is in the form of a salt (sulphate) that 3,6-diamino-acridine is recommended for use the name is, therefore, to be applied to the sulphate.

‡ We are indebted to Colonel Bond for permission to record these results (see also BRITISH MEDICAL JOURNAL, July 7th, 1917).

§ Proflavine represents an earlier stage in the production of acriflavine, hence it would be cheaper in use. The solubility of proflavine is similar to that of acriflavine in normal and hypertonic NaCl solution, and along with 0.5 per cent. sodium citrate; the addition of alkali to the neutral solution must be avoided, however, in the case of proflavine, as this causes precipitation. Clinical observations indicate that proflavine has haemostatic action.

is sufficient. The efficient prophylactic effect of flavine compounds in the treatment of contaminated wounds in civil practice before suppuration had set in bears out this view. Accordingly, it is far preferable to succeed in inhibiting organisms in a wound, while at the same time avoiding damage to tissues or diminution in their resistance, than to aim at obtaining bacterial sterility by means of reagents which produce necrosis and throw out of action protective mechanisms such as phagocytosis. Although for sterilizing instruments, etc., the more rapidly an antiseptic works the better, for wounds it is equally efficacious, from the point of view of healing, to destroy the organisms in ten minutes or in ten hours, provided that their virulence is efficiently controlled.

In connexion with the use of "bacterial charts," on which Carrel relies as a criterion for basing the prognosis of behaviour in a wound destined for suture which is undergoing treatment by frequent periodic flushing with hypochlorite solution, it must be remembered that diminution in numbers of the organisms is considered in this case to be practically synonymous with loss of power to cause pathogenic action. The fact that the effects which follow inoculation with bacteria depend very largely on the size of the dose is, of course, well established; but it is also, in general, impossible to determine by microscopic inspection the virulence of a given organism. Accordingly, the evidence accumulated by the bacterial charts must be clearly understood so far to apply under a special set of circumstances. There is no proof that the standards established in connexion with hypochlorite solutions will apply precisely to wounds treated by other antiseptics. Information on this point in connexion with flavine compounds and other substances must be interpreted without bias derived from a knowledge of the significance of the findings under the particular conditions studied by Carrel.

The Rate of Progress of Sterilization.

In view of these considerations as to what an efficient therapeutic antiseptic should accomplish, it appeared unnecessary that for therapeutic purposes in wounds there need be great rapidity of the lethal action exerted by antiseptics such as the flavines, which, so far from suffering diminution in potency through admixture with serous secretions, are most active in the presence of serum, and hence must continue to act for a long period, and which, in comparison with their bactericidal potency, are relatively harmless to the tissues. Dakin and his co-workers would also seem not to regard great rapidity of action as essential in antiseptics to be used for treatment, since they adopted two hours as the duration of contact between antiseptic and organisms in their experiments. Many observers, however, following more or less the classical procedure advocated by Rideal and Walker, estimate the bactericidal value of a compound according to the effect produced by contact of the antiseptic with the organisms for a comparatively brief period—up to fifteen minutes. It is difficult to determine from the results of such short contact experiments what conclusion, if any, may be drawn regarding the action of greater dilutions acting over longer periods, as would almost necessarily be the case in wounds unless the antiseptic is immediately fixed or inactivated.

Browning and Gilmour, following the procedure of Churchman, originally tested the antiseptic power of a substance by incorporating it in melted agar medium, and then, after cooling, they inoculated the surface by stroking with a loopful of a dilute suspension of a 24-hour culture. In later work the method adopted by us was to test the power of inhibiting growth and killing the organisms in fluid medium.

The substance to be tested, in a volume usually not exceeding 0.1 c.cm., was added to small test tubes containing 1 c.cm. of the culture medium, which consisted in one series of 0.7 per cent. peptone water and in the other of undiluted serum, and then 0.1 c.cm. of a 1 : 20,000 dilution in saline of a twenty-four peptone water culture was added. A control was made with peptone water or serum without antiseptic; one loopful of this mixture when stroked immediately on agar yielded twenty or more colonies of staphylococcus or *B. coli*. The tubes were then placed at 37° C., and were examined at the end of twenty-four to forty-eight hours in order to determine the concentration of antiseptic which killed the organisms introduced; the development of turbidity, of course, indicated the occurrence of definite proliferation of the bacteria, but subcultures were made also on agar and in peptone water. The results of both methods of subculture corresponded in general; but it was sometimes found that cultures containing antiseptic, which showed no turbidity after incubation and in which, therefore, little or no multiplication of organisms had occurred, still contained living bacteria.

We selected the quantity of bacteria employed for the inoculation dose because, when added to the standard volume of fluid used in our tests (1 c.cm.), a loopful yielded a convenient number of colonies for estimating subsequent increase or decrease. The impression may arise, however, that this minute quantity was employed because the flavine antiseptics could not withstand a test involving the rigour of a larger inoculation. Hence we add the following experiment:

ESTIMATION OF BACTERICIDAL CONCENTRATION OF ACRIFLAVINE FOR *B. COLI* IN OX SERUM (57° C.).

The tests were carried out as previously described; but three parallel series were set up, which differed only in the amount of organisms used for inoculation. Of a twenty-four hour peptone water growth of *B. coli* (Escherich) each tube (1 c.cm. volume) received respectively, in Series A, 0.1 c.cm. 1 : 20,000 dilution; Series B, 0.1 c.cm. 1 : 1,000; Series C, 0.1 c.cm. undiluted culture. The mixtures were placed at 37° C. and subcultures made on agar at intervals. The controls contained no acriflavine.

TABLE I.

Time of Subculture.	Dilution of <i>B. coli</i> Culture used for Inoculation.			Controls.
	A. 1 : 20,000.	B. 1 : 1,000.	C. Undiluted.	
At once ...	(+ 1 : 100,000 — ?	1 : 10,000 ?	1 : 10,000 ?	15 colonies in loopful from Series A; ∞ from C.
2 hours ...	(+ 1 : 100,000 D — ?	1 : 40,000 D 1 : 20,000	1 : 40,000 D 1 : 10,000 D ?	No increase as compared with "at once."
5 hours ...	(+ 1 : 100,000 D — ?	1 : 100,000 D 1 : 40,000	1 : 40,000 D 1 : 20,000	Increase.
24 hours ...	(+ 1 : 400,000 D — 1 : 100,000	1 : 400,000 D 1 : 40,000	1 : 100,000 D 1 : 40,000	Increase.

+ = Growth. — = No growth. D = Decrease in number of colonies as compared with control made from same series "at once."
? = Concentration not determined.

Thus, a twenty-thousand-fold increase in the inoculating dose causes only about a two-and-a-half-fold increase in the amount of antiseptic necessary to produce sterilization.*

Experiments on the rate of progress of sterilization were carried out as an essential part of the work preliminary to our first report and the results were briefly referred to, but it appeared then to be unnecessary to enter into details on this point. It seems, however, that observers may experience some difficulty in dissociating the conception of potency of antiseptic and bactericidal action from that of rapidity of sterilization. Further, sufficient emphasis, perhaps, has not been attached to the fact that, in order to secure the best performance of the flavine antiseptics, it is essential that they should act in a serous medium. Therefore the experimental results are now published more fully—the method of the tests was that already described. The progress of sterilization has been investigated by making subcultures from the antiseptic mixtures at intervals of two, five, and twenty-four hours. The subcultures were made by inoculating a loopful of the mixture into 10 c.cm. of peptone water, and also by stroking agar and then incubating for forty-eight hours at 37° C. The following table (II) gives the results of representative experiments.

Thus, it is clear that, as compared with the other substances tested, the maximum bactericidal action of the flavine compound is developed comparatively slowly (proflavine behaves similarly), whereas mercury perchloride, chloramine-T and phenol, all exert their maximum effect within two hours and no significant change occurs subsequently. The flavine compound has by that time exerted only a restraining effect on the multiplication of organisms in the higher dilutions, which will become sterile later on: this is shown by the relative scantiness of growth when a subculture is made on agar from the tubes containing those particular concentrations. The progressive action of the flavine compound is evident both in the watery (peptone)

* Similar results were obtained with *Staphylococcus aureus*, but with the heavy inoculation distinct proliferation preceded the lethal action.

TABLE II.—Rate of Progress of Sterilization with Flavine Compounds and Other Antiseptics.

Time in Hours.	Acriflavine.		Chloramine-T.		Mercury Perchloride.		Phenol.	
	0.7 per cent. Peptone Water.	Serum.	0.7 per cent. Peptone Water.	Serum.	0.7 per cent. Peptone Water.	Serum.	0.7 per cent. Peptone Water.	Serum.
<i>B. coli.</i>								
2 hours { +	1:1,000	1:100,000	1:10,000	1:5,000	1:4,000,000	1:20,000	1:500	1:500
... .. { -	?	1:20,000	1:5,000	1:1,000	1:2,000,000	1:10,000	?	?
5 hours { +	1:2,000	1:100,000	Ditto as above	Ditto as above	Ditto as above	Ditto as above	Ditto as above	Ditto as above
... .. { -	1:1,000	1:20,000						
24 hours { +	1:2,000	1:150,000						
... .. { -	1:1,000	1:100,000						
48 hours { +	1:10,000	1:1,000,000						
... .. { -	1:2,000	1:200,000						
<i>Staphylococcus aureus.</i>								
2 hours { +	1:10,000	1:100,000	1:10,000	1:1,000	1:1,000,000	1:20,000	1:250	1:250
... .. { -	?	1:20,000	1:5,000	1:500	1:660,000	1:10,000	?	?
5 hours { +	1:10,000	1:100,000	1:10,000	1:500	Ditto as above.	Ditto as above	1:500	1:250
... .. { -	?	1:20,000	1:5,000	?			1:250	?
24 hours { +	1:100,000	1:400,000	1:10,000	1:500			1:500	1:500
... .. { -	1:20,000	1:200,000	1:5,000	?			1:250	1:250

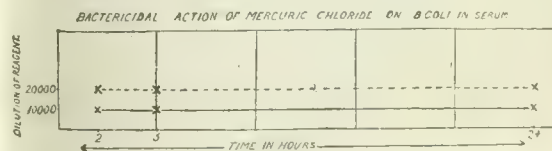
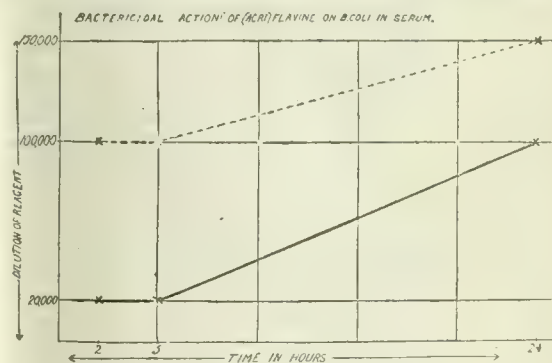
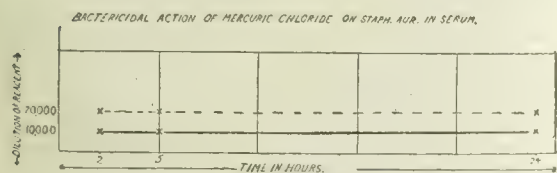
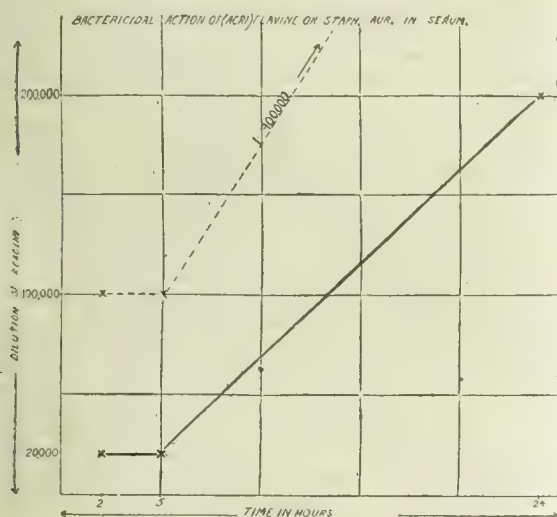
+ = Growth in subculture in peptone water. - = No growth. ? denotes that the lethal concentration was not determined.

medium and also in serum. The following graphic representations (all to the same scale) of the results in serum demonstrate strikingly the difference between the progress of sterilizing action of diamino-methyl-acridinium chloride (acriflavine) on the one hand, and mercury perchloride on the other; in this respect the mercury salt behaves similarly to the other antiseptics tested, although, of course, much higher concentrations of the others are

has been observed in the case of the allied methyl-violet compounds by various observers. Accordingly a fifteen minutes' test on the Rideal-Walker plan, especially in a watery medium with the flavine compounds, will reveal so low a "coefficient" as to discourage those who would seek to estimate the therapeutic possibilities of a substance according to this criterion.

The Importance of a Serum Medium in Intensifying the Antiseptic Action of Flavine Compounds.

The results shown by the table also illustrate exceedingly well the fact which has been repeatedly remarked upon—namely, that serum is essential in order that the full bactericidal activity of the flavine compounds should develop. This is especially true for *B. coli*, but also holds for the other organisms tested—namely, *Staphylococcus*



* Indicates actual observations. The heavy line shows lethal concentrations. The broken line shows non-lethal concentrations.

required, as shown in the table. After two hours' action the difference between the lethal concentration of mercury perchloride and of diamino-methyl-acridinium chloride is practically negligible, as we have previously noted; subsequently the effect of the flavine compound becomes at least ten to twenty times more potent than that of the mercury salt, and even a further increase in the sterilizing action has been observed to occur from the twenty-fourth to the forty-eighth hour (see table). Brilliant green (sulphate of tetra-ethyl-diamino-triphenylmethane carbinol), which was first employed in the treatment of infected wounds by Leitch,* is also slow in action, a feature which

* In our previous report the experimental basis for the conclusion that brilliant green is preferable to malachite green as a therapeutic agent, has been fully stated.

aureus, *Streptococcus pyogenes*, and *faecalis* (enterococcus), and the bacillus of malignant oedema.

Relative Bactericidal Potencies for *B. coli* (see our previous report)—

of acriflavine in water*	...	...	1
" " in serum	...	...	80
of mercuric chloride in water*	...	...	800
" " in serum	...	...	8

* Containing 0.7 per cent. peptone.

Hence, other things being equal, the most satisfactory therapeutic results are likely to be obtained from these antiseptics when the conditions of the wound dressing are so arranged that the antiseptic is acting in a serum medium.

In order to test this point further, as far as possible *in vitro*, the sterilizing action in varying concentrations of serum has been estimated, and it has been found with staphylococcus* and *B. coli* that even 25 per cent. serum causes a ten to forty-fold increase in the bactericidal action of "acriflavine" and "proflavine" as compared with the effect in 0.7 per cent. peptone water (higher amounts of peptone—that is, 5 per cent.—diminished the bactericidal power).

Investigations have not yet decided upon what factor this intensifying action of serum depends. Preliminary experiments along with E. L. Kennaway have shown that the fluid derived from boiled serum, which contained a trace of protein, on some occasions intensified the action, while other specimens lacked this effect. A specimen of human cerebro-spinal fluid containing only a trace of protein also exhibited the intensifying action on acriflavine as compared with the effect in 0.7 per cent. peptone water, and in this specimen of cerebro-spinal fluid the bactericidal effect was equal to that in undiluted serum. Thus it is possible that the flavine compounds may have an application in the treatment of cerebro spinal infections when introduced intraspinally. But it is essential that clear indications of the suitable dosage should first be obtained experimentally, since the cerebro-spinal system represents a locus in which intense and peculiar pharmacological effects occur. As regards cerebro-spinal meningitis, it has been reported that "the use of flavine by intraspinal injection has been distinctly unfavourable" (Gray); but no details of dosage are given.

Therapeutic Application of Brilliant Green.

Antiseptics which are diminished in their activity by serum ought clearly to be renewed frequently in a wound in order that a concentration lethal to the bacteria may be maintained (unless complete sterilization could be effected almost immediately by a single application!). The danger attending this procedure is, of course, the possibility of toxic action exerted by the substance on the tissues, and it is for this reason that carbolic acid and mercuric chloride, which are poisonous both locally and also after absorption, are generally avoided; on the other hand, the neutral hypochlorite solutions are rapidly converted into innocuous compounds. Among antiseptics of the type inactivated by serum, brilliant green possesses the advantage of being an extremely potent bactericide—far exceeding the flavines in watery solution—while at the same time it is comparatively harmless to phagocytosis, as well as to the tissues locally, and when applied to a wound it is devoid of general toxic action on the body.

Brilliant green 1:2,000 in water represents a bactericidal concentration for staphylococcus and *B. coli* which is respectively 500 and 7 times that of Dakin's solution; at the same time it is much less harmful to phagocytosis than is hypochlorite. Hence it might be anticipated that brilliant green would prove valuable when employed according to Carrel's approved method of intermittent irrigation at two-hourly intervals. Lieut.-Colonel Hull has applied brilliant green in this manner, and we are indebted to him for an unpublished communication to the effect that "brilliant green 1:2,000 has proved superior to Dakin's solution for use according to Carrel's method with two-hourly flushing." Brilliant green has previously been used in the form of wet dressings with very favourable results by Leitch, and also by Ligat, who, by this method, however, found flavine compounds greatly superior; it is clear from what has been already stated why this should have been Ligat's experience. Webb also considers brilliant green superior to "eusol." As regards further modes of application of brilliant green, Lieut.-Colonel Hull reports having used a 1:2,000 solution in the form of hot stipes with exceptionally good results in the case of acute septic compound fractures and amputation stumps. In burns, brilliant green 1:2,000 was also used to irrigate the burn, which was then treated by the paraffin method, the paraffin containing 1:2,000 brilliant green. This treat-

ment of burns in Colonel Hull's hands proved superior to any tried method.

Suggested Applications in Wound Treatment.

The sterilizing action of flavine compounds—acriflavine and proflavine—progresses gradually as compared with that of mercury perchloride, phenol, or chloramine-T. Thus, after two hours' contact in the presence of serum, mercuric chloride is practically equal to acriflavine in its lethal effect on staphylococcus and *B. coli*. But by this time the effective action of the mercury salt on the bacteria has come to an end, and a concentration which has then failed to kill the organisms exerts subsequently little or no inhibitory effect on the proliferation of the survivors. On the other hand, concentrations of the flavines which at this period have merely inhibited multiplication, later on prove bactericidal, so that finally the flavine compound is ten to twenty times more lethal than corrosive sublimate. Experiments show that such concentrations of flavine, while effectively controlling the bacteria, do not interfere with phagocytosis. The clinical evidence which has already been obtained indicates that when the flavine compounds are used for therapeutic purposes in the treatment or prevention of septic infection in wounds this slow progressive action is not a disadvantageous feature, since, on the one hand, the tissues are not harmed by the concentration of the antiseptic employed, and, on the other, admixture with the serous secretions of the wound enhances the sterilizing effect instead of bringing it to an end. It is therefore suggested that, in estimating the value of antiseptics for therapeutic purposes, a test such as that associated with the names of Rideal and Walker, which involves only a brief contact between antiseptic and organisms, is not likely by itself to afford satisfactory indications, although it has been found invaluable as a means of determining the relative potencies of quickly acting bactericidal agents designated for sterilizing instruments, clothes, polluted fluids, etc.

There is a clear indication that for the treatment of wounds it is advisable to avoid too frequent flushing with watery solutions of the flavine compounds.† The explanation is in all probability a twofold one. In the first place, the maximum antiseptic effect of flavine is obtained in a serous medium. Further, since the antiseptic properties—and also most probably other actions of these bodies—are not rapidly neutralized by the tissue secretions, too frequent additions of fresh doses may lead to undesirable cumulative effects on the tissues locally. This would account for unsatisfactory results following two-hourly irrigations with acriflavine solution used merely as a substitute for the approved hypochlorite. However, brilliant green has proved of great value when employed in watery solution by Carrel's approved method of frequent intermittent flushing, which is to be explained by the fact that it acts best in watery solution, and is applicable in a highly bactericidal concentration without causing harmful effects to the tissues, either locally or generally.

Should it be desired to adopt the method of introducing flavine compounds into wounds by means of tubes, in place of packing with gauze soaked in the 1:1,000 solution once or twice daily, it is suggested that the best results may be obtained by introducing small amounts of fluid, the frequency of the irrigations not exceeding three or four in the twenty-four hours. There is, however, no reason so far for suggesting that the method of irrigation will prove superior to packing adequately applied; in fact, the evidence now at disposal points definitely in the other direction. It is hardly necessary to comment on the numerous advantages which would attend a method necessitating only one or two manipulations of the patient daily.

Once the infection has been practically overcome considerably weaker solutions of flavine bodies than 1:1,000—for example, 1:5,000—may be subsequently employed with advantage, or in late stages the application of flavine may be intermitted for a day every few days, dry dressing being substituted in the intervals, or one may use "stimulating" applications such as Leitch first demonstrated brilliant green (1:1,000) to be. Since individual variations in the behaviour of the tissues of different patients must

* For some unascertained reason the bactericidal potency of flavine compounds for staphylococcus in dilute peptone water shows considerable variations in an extended series of experiments, whereas with serum the results are remarkably constant, hence the "lift up" due to the serum is caused to vary.

† We are indebted to Dr. Carrel for a preliminary account of observations on this point in the case of acriflavine.

play an important part in the process of healing it is important to discover at this stage what compound will secure the best progress.*

Prevention of Sepsis.

Special attention is directed to two further points—first, the possibility of preventing sepsis by the use of flavine compounds in early wounds at a period before the evidence of infection has developed. It may be doubted whether it is advisable to practise immediate suture of war wounds in the fashion which has been so successful in civil practice after thorough surgical cleansing and pouring in as much acriflavine 1:1,000 as the tissues will contain; possibly an interval of some days should be allowed before suturing, and if success follows this procedure the time may be shortened. It may be noted here that there is every indication that proflavine will be at least as harmless to the tissues as acriflavine when injected subcutaneously and between muscle planes.† Secondly, attention is directed to the promising results which have attended the use of flavine compounds with the purpose of preventing recrudescence of acute septic manifestations when operating in an area already infected, for example, in secondary amputations.

The Importance of Preliminary Operative Procedure.

It must be emphasized again that the usual surgical procedures are an essential preliminary to the use of flavine or brilliant green, in order that these antiseptics may be enabled to act effectively. As we have stated in our previous communication in connexion with the necessity for procedures which shall combat or prevent septic infection, "there is a great measure of agreement that the removal of dead tissue and the conversion of the wounded area into a free surface by incision and excision are essential factors"; and, again, in relation to the prophylactic application of flavine, "of course such treatment is to be used in addition to operative procedures." No quantity of flavine bodies, nor of any other feasible antiseptic so far available, seems likely to prove efficacious when there is failure to remove considerable portions of necrotic tissue or foreign bodies. Intimate contact of the antiseptic with the infected tissue must be secured.‡ The fact should not be overlooked that in our first publication we expressly emphasized such considerations. On the other hand, it would require the greatest optimist to assert that operative procedures in themselves achieve all that could be desired in the treatment of infected wounds. Thus, there is little doubt that the appropriate employment of efficient therapeutic antiseptics, combined with operative measures, can effect an almost incalculable saving; such benefit will be especially evident if the antiseptics may be applied simply and quickly.

It has been the purpose of our work thus far to examine certain little-known antiseptics, like brilliant green, or substances like the flavine bodies, whose almost unique characters as potent bactericides do not seem even to have been suspected. Laboratory tests as well as clinical trials have demonstrated, *inter alia*, that these compounds are devoid of harmful side-actions which might prejudice their use. Accordingly, we venture to urge most strongly their employment on an extensive scale, as we believe that their outstanding properties can be utilized practically to great advantage, and will lead to general recognition of the fact that they constitute a notable addition to the treatment of infected wounds and other accessible localized infective lesions. Work is in progress with a view to the development of substances suited for special uses, and it is hoped that further advance may be effected if those interested in special clinical aspects will formulate the requirements which they desiderate in substances to be employed for their particular purposes.

SUMMARY.

1. Flavine compounds and brilliant green are antiseptics which exert a slowly progressive bactericidal action.

* In certain cases the prolonged application of flavine dressings to the skin has caused the appearance of a vesicular eruption, which has rapidly disappeared on interrupting the treatment.

† The absorption of flavine compounds is followed by an appearance of green fluorescence in the urine, but no toxic action has been found to result therefrom. Observations on intravenous injection will be recorded elsewhere.

‡ Several clinical observers have applied flavine compounds incorporated in a paste with a view to securing "dépôt" action (see Bond, BRITISH MEDICAL JOURNAL, July 7th, 1917).

Concentrations of these substances which at first inhibit and finally kill bacteria, are without harmful effect on phagocytosis or on the tissues locally or generally; hence they are specially suited for therapeutic purposes in infected wounds. Flavine compounds may be applied to the peritoneum with safety.

2. Flavine compounds (acriflavine and proflavine) are enhanced in their bactericidal potency by the presence of serum; brilliant green, in common with most other antiseptics, is reduced in its activity by serum.

3. The most suitable method of application of an antiseptic for therapeutic purposes must depend very greatly on its behaviour in the presence of serum. When the antiseptic is inactivated by serum, frequent renewal of the watery solution is indicated as in Carrel's procedure; this, of course, is only permissible provided that the substance is not in itself toxic.

4. Brilliant green satisfies the requirements for application by repeated irrigation, as a powerfully bactericidal solution (1:2,000) in water is practically innocuous to the tissues. On the other hand, since flavine compounds are most bactericidal in serum, the indication is to arrange the wound dressing so that these antiseptics may act in a serum medium; also, since these bodies are not rapidly thrown out of action by serum accumulative deposit should be prevented by avoiding too frequent additions of considerable quantities of the antiseptic solution. Clinical experiences have substantiated these conclusions, and the evidence at disposal points to the application of flavine bodies by means of gauze packing or some appropriate modification of this procedure as likely to yield the best results. Thus there is evidence that, by taking full advantage of the properties of flavine bodies, a relatively simple technique may be followed.

5. The application of the flavine compounds especially for the purpose of preventing the onset of septic manifestations in early wounds is emphasized; also their use for preventing exacerbations after operating in areas already infected.

6. Operative measures are an essential preliminary to the effective use of therapeutic antiseptics in wounds, since the antiseptic can act only when brought into intimate contact with the infected tissues.

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MEDICAL AND SURGICAL NOTES FROM MESOPOTAMIA.

BY

G. GREY TURNER, MAJOR R.A.M.C.(T.).

PART II.

HEAT-STROKE.

THE cases coming under the heading "Effects of Heat," though interesting, were depressing and disappointing, for so very often treatment was unavailing. I shall not soon forget the streams of patients in June and July who were hurried to the bath house, nor the occasion when nearly a dozen stertorous patients lay in the open air along the side of the creek, many of whom went to make up the sixteen funerals that left our hospital the next day. These men were not weaklings, but often big strong fellows who might be expected to be the last to go under. Nearly every case illustrated the importance of prophylaxis and of early treatment, and those that developed in hospital often recovered as the result of prompt measures to reduce the temperature. But the heat regulating centres are so much deranged that relapses are common, and there can be no

* Part I was published on July 14th, page 53.

doubt that anybody who has suffered from a severe attack should be sent out of the country. *Post-mortem* examination in these cases was disappointing, the appearances were not uniform or characteristic and there was much less cerebral or meningeal mischief (to the naked eye) than we expected. The congestion of the internal viscera which we always found was, I am sure, only a consequence of the slow process of dying from coma. There is a great deal of work to be done on these cases, and until their minute pathology and chemico-pathology is better understood the methods of treatment must be empirical and haphazard. Prophylaxis is the most important thing, and the responsibility for the transport and care of troops coming fresh to a moist hot climate like Basra in May, June, and July, must always be great. Every detail must be attended to, and the soldiers must be tended like ignorant children, and no point is too small or trivial to be neglected.

As a result of conversations with men who had suffered from the effects of heat in its various forms, I am satisfied that those who tolerate heat badly at home should not be sent to this climate. New troops, and especially their officers, coming to tropical countries should be educated as to the precautions necessary. New-comers revel in the sun and suffer; they should be taught that the sun is an enemy to be avoided, that the head and back of the neck should be covered, and that advantage should be taken of every little bit of shade. But it takes some time before one instinctively walks at a funereal pace and seeks the most trivial of shades. Men should never leave camp without their water-bottles, and every care should be taken to avoid exhaustion.

JAUNDICE.

In May and June many men suffered from jaundice, and one medical officer in charge of 62 beds had as many as 25 cases under his care at one time. I doubt if this jaundice was really of the epidemic type, and we all thought that at least some of the cases were malarial in origin. Many different factors were probably at work, but in the absence of adequate laboratory facilities at that time we were unable to examine them by blood culture, etc. Two cases died, and at the *post-mortem* examination I found all the appearances which we associate with delayed chloroform poisoning, and which must have been the result of some profound toxæmia. In another case, a coloured subject, my colleague, Lieutenant F. G. Thomson, found catarrhal pancreatitis, but in that instance the symptoms were largely abdominal pain and distress.

Being interested in the question of infection of the gall bladder, I examined many of the cases with this in view. In several the liver was enlarged and tender, and in a smaller proportion the tenderness was limited to the region of the gall bladder, but there was no case of cholecystitis requiring operation, though, as will be mentioned later, I had several of the latter following enteric group infections.

DYSENTERY.

The dysenteries formed a large proportion of the medical cases admitted. The bacillary varieties were the more common, but the amoebic variety occurred also, and for them emetine is almost specific; indeed, if it fails, it suggests either a mixed infection or that the diagnosis must be revised. I had an admirable illustration of its value in the case of a patient who was admitted to hospital for the closure of an appendicostomy, which I did by removing the remains of the appendix. This man told me that he developed dysentery in India and in this state went on leave to England, where he was medically treated for some weeks without benefit. He then consulted a surgeon, who arranged a series of treatments by ionization. After eight applications he was no better, and was taken into a nursing home, where appendicostomy was performed. He remained in the home for a month, living only on light diet, and having daily irrigations of the bowel. While following this regimen he was very well and had no symptoms of dysentery, but as soon as he went out and began to take ordinary food and exercise all his troubles returned, and he passed large quantities of blood and mucus. He then went to a practitioner with a large experience of tropical medicine, who prescribed emetine. At the end of a month he was perfectly well and had never had any recurrence in spite of hard campaigning both in France and Mesopotamia. In the bacillary variety the effect of the antidyenteric serum

is often very remarkable, but if it is going to be successful it produces its good effects promptly. Many of the cases that reached us were too far advanced for treatment by this means, and in October we had quite an epidemic of fatal cases. In a few patients I tried appendicostomy without success, but one very severe case made an excellent recovery as the result of caecostomy. This operation combines all the advantages of appendicostomy without any of the disadvantages and disappointments, and if the patient recovers the subsequent operation for closure is a small matter in comparison with the benefit derived.

Liver Abscess.

The classical complication of liver abscess is far from common considering the large amount of dysentery, but I saw over a dozen cases. Three were discovered in the *post-mortem* room, and in all of these the final cause of death was rupture of the abscess into the peritoneal cavity. Others were merely suspected and cleared up under treatment by emetine; seven cases required operation for drainage. In all the interesting feature was the absence of any history or symptoms of well-developed dysentery, and in at least two there was no history of bowel trouble whatever.

The classical descriptions must have been founded on old-standing cases, for as a rule most of the symptoms described are absent. Pyrexia with slight local pain and tenderness on pressure over the right hypochondrium with slight enlargement of the liver upwards have been the suggestive symptoms, the diagnosis being confirmed by the elevation and immobility of the right wing of the diaphragm as demonstrated by x-ray examination and made absolute with the exploring needle. All my cases were treated by open incision and drainage through a lower intercostal space, the diaphragm being stitched to the parietes before being incised. In the one case that died after operation there were multiple abscesses in the liver, with empyema and pericarditis. The amoeba was never found in the pus evacuated at the time of operation, but was usually demonstrated about the fourth day. A course of emetine (one grain daily for a week) was always given after operation. In no class of case was the co-operation of physician and surgeon more helpful, and in nearly all my patients I was indebted to my medical colleague Lieutenant F. G. Thomson for valuable help in diagnosis.

Other Surgical Complications.

Other surgical complications of dysentery were perforation of the colon and acute peritonitis without perforation. In one of the cases of the former complication an inflammatory mass formed in the right iliac region simulating an appendix abscess. There was a large slough in the caecal wall with localized peritonitis, and though the appendix contained a dysenteric ulcer it was not the cause of the symptoms. I also saw cases of local thickening of the pelvic colon following dysentery, and on two occasions the condition very closely simulated a new growth in the bowel. Several of the chronic cases developed symptoms suggestive of appendicitis, and I was once or twice led to operate only to find a normal appendix. These patients may have definite attacks of abdominal pain, but the history and the diffuse tenderness over the caecum and ascending colon, and often over the sigmoid as well, enabled a diagnosis to be made.

BERI-BERI.

We had one or two cases of "beri-beri," and any number of men suffering from so-called "debility." These were to me a most interesting group, for, as I have already said, I am sure the debility of active service is some type of nutritional disease probably allied both to scurvy and beri-beri.

"P.U.O."

A diagnosis of "P.U.O." (pyrexia of uncertain origin) used to be very frequently made, but it became less and less so as the facilities for laboratory investigation increased, a large number of the cases turning out to be enteric group infections.

PAROTITIS.

When I first arrived at Amara in July I was astonished at the large number of cases of parotitis under treatment in the wards; I have certainly seen many more than I

have previously met with in the whole of my experience. I have notes of twenty-three of these cases, but many occurred when I was occupied with administrative duties and was not able to find the time to record them. The type is quite different from what one is accustomed to see at home, for they nearly all suppurate early, and form abscesses which discharge abundantly. In one patient there was enormous destruction of the tissues overlying the parotid, giving an appearance very like cancerum oris. Many of the earlier cases proved fatal, but I believe the primary disease was the real cause of death. At first I was inclined to think that the infection might be specific, but though Captain Stevenson, I.M.S., kindly examined several specimens of the pus for me he only found a coccal infection. Probably the organisms gain access to the gland along the duct, and the only common factors were that the patients had almost without exception been under treatment for some disease requiring milk diet, and that no special attention had been paid to the hygiene of the mouth. They nearly all came from field ambulances where there were no nurses, and just at a time (July and August) when the vitality of every one was at its lowest ebb, and the personnel of those units was taxed to the utmost. But even with scrupulous attention to the mouth this complication did arise among patients under treatment in our own hospital, but with, I think, two exceptions it was only in cases in the later stages of exhaustion from typhoid or dysentery.

When the cases came under my observation the proof of infection of the duct was usually evident, but whether *post* or *propter* I am unable to say. The papilla was reddened, and quite often pus could be squeezed from it, and sometimes in abundance. At a later stage the normal flow of saliva was absent, only a little thick glairy mucus being obtained on pressure. The destruction of the gland was very widespread, and it would be interesting to know what the ultimate effect on the salivary function will be. The abscesses often burst spontaneously into the external auditory meatus, or pointed near the angle of the jaw. In some of the slighter cases the question of mumps cropped up, but there has really been nothing to support the suggestion, for the swelling is usually unilateral, and nearly all suppurated; there has never been orchitis, and the condition has never spread among the other patients in the ward. As showing the care necessary in opening these abscesses, and the importance of employing Hilton's method, I may refer to a case which had previously been operated upon, and which was admitted to our hospital with complete facial paralysis. As he said, before the operation he could not open his eye because of the swelling of the face, but since he had never been able to close it. Though I never saw facial paralysis as a complication of the condition, it developed in one of my patients some days after the evacuation of pus. In this case the onset of the parotitis was preceded by herpes of the area of the fifth nerve on the same side. The paralysis was clearing up when the man was evacuated down the line three weeks after the incisions had been made.

The following is a summary of the cases of which I have notes. The series does not represent the true mortality, because, as I have said, some of the worst cases occurred at a time when I was not able to keep records:

Parotitis.

Total number of cases ...	...	...	...	23
Primary disease:				
Enteric group infections ...	...	...	...	16
Dysentery ...	...	...	...	3
Jaundice ...	...	...	...	1
Pyrexia of unknown origin ...	...	...	...	1
Nephritis ...	...	...	...	1
Parotitis ...	...	...	...	1

Four cases did not suppurate, and all recovered; 19 cases suppurated, and of these 4 died. Of the 23 cases, 11 affected the left side, 6 the right, and 6 were double.

GALL BLADDER INFECTIONS.

The most interesting complications were the gall bladder infections, and they were not at all uncommon. The cases that came to operation were particularly interesting, because they supplied a clue to those that did not require surgical interference, and because in them it was possible to establish the identity of the infecting organism. I operated on six cases. In two the gall bladder condition was frankly a complication of an enteric

infection on the down grade. In one the enteric infection had presumably occurred three months previously; during convalescence there were attacks of colic followed by a distended gall bladder, and numerous gall stones were found in the acutely inflamed viscus. In the other three cases the gall bladder infection and the enteric were concurrent. In four of the cases paratyphoid A organisms were obtained in pure culture from the bile, in one the organism was not quite typical, but was probably of this nature, and in the remaining case it was not possible to have a bacteriological examination made. All the cases recovered as the result of drainage.

The cases I saw in which an operation was not necessary usually came on some weeks or months after an illness that might be interpreted as an enteric group infection. They had acute attacks of pain followed by marked tenderness over the gall bladder and sometimes palpable enlargement. But they were not very ill, and the attacks grew less frequent and less severe, so that I did not consider it necessary to operate. The future will show whether these infections are followed by the formation of gall stones in such a proportion as to suggest a causal relationship.

RENAL COLIC.

As the weather began to get cooler we had several cases of renal colic, and though they very closely simulated calculus, in no single instance was I able to demonstrate a stone. In all the cases there was an excess of oxalate crystals in the urine, and I believe that the irritation caused by the passage of these crystals down the ureter was the correct explanation of the symptoms. When on the right side appendicitis was very closely simulated, and the diagnosis was often a matter of anxiety. An abnormally slow pulse, and the fact that the rigidity was strictly limited to the middle line, together with deep tenderness over the kidney, were all in favour of ureteric origin. At the early stage, when the diagnosis was in question, there were no urinary symptoms, and beyond the presence of oxalate crystals urinary examination did not give much help. At a later stage a trace of albumin, with large numbers of hyaline casts and a few blood and pus cells, established the diagnosis. Most cases cleared up quickly, but some were not free from pain for several weeks. A mild infection arising in this way probably explained the several cases of perinephritic abscess which also cropped up about this time.

In one case a paratyphoid infection of the kidney began so acutely as to simulate appendicitis, and it was probably an oxaluria which determined the site of infection in this instance.

THE WOUNDED.

Until the middle of December, when we began to get some wounded, the surgical cases had only represented a very small proportion of the total admissions.

I saw something of the wounded from the Kut relief force in April of 1916, but after the gallant garrison had to surrender at the end of that month the stream of wounded ceased. All through the summer months there were occasional casualties due to snipers, the attentions of Arab marauders, and to the accidents which always attend an army in the field. In December the wounded were of the ordinary types. Taken as a whole the wounds were not seriously infected, though there were occasional exceptions, but I never saw a case of tetanus nor of gas gangrene, and even in the hot weather, when resistance was at its lowest ebb, the accidental wounds healed remarkably well. Apart from recent wounds there have been a few relic bullets to be removed, and I am more impressed than ever with the wisdom of extracting missiles when it can be done without running unjustifiable risks. The cases I speak of all illustrated the importance of general methods of examination, for I was able to find the bullets and cut down on them with precision, relying on clinical signs only. They had previously escaped the surgeon's knife because the estimate of their depth by x-ray methods was supposed to have shown them in inaccessible positions. An x-ray apparatus without an expert in charge is not much use, for anything but extremely accurate localization is worse than useless. Our unit was fortunate in having Captain McCabe Dallas in charge of this department. Talking of x-rays reminds me to mention the need of other diagnostic instruments, such as cystoscopes, sigmoidoscopes, etc., which in a big station are almost as necessary as at home.

OPERATIONS OF ELECTION.

At Basra I did several operations of election for herniae, hydrocele, interval appendicitis, haemorrhoids, etc., and two very typical cases of torn cartilage, but as the weather got hotter I had to give it up because the patients so frequently developed jaundice, or malaria, or enteric group infections, or some trouble during convalescence more serious than the original disability. At Amara, with better climatic conditions, I again operated on any case that called for interference; all operation wounds healed perfectly. My only anxiety was the dust, which finds its way into everything, and I was afraid would spread the sort of minor infection which I had found to be so prevalent. However, I took the precaution of using my instruments out of antiseptic, and of having a carbolic towel near the operation area, and relying on mops used directly out of a solution of mercury perchloride 1 in 4,000, and this technique proved most efficient. Emergencies and minor surgery had, of course, always to be dealt with, and I had a few cases of acute appendicitis, but never a ruptured ulcer or strangulated hernia. It is rather surprising that there were so very few dislocations and fractures, for we drew our sick from some thousands of troops.

ANAESTHETICS.

At first we used nothing but chloroform, and although the patients took a good deal, or appeared to do so, for there was probably a lot of evaporation from the mask, they went under its influence most quietly, and there was practically none of the struggling we so commonly see at home. I am sure that this is due to the absence of alcohol and the very moderate use of tobacco—in fact, the only patient who did struggle hard was under arrest for drunkenness, a very rare crime where alcohol is not easily obtained. After a death from delayed chloroform poisoning, I threw tradition to the winds, and used ether with the greatest success. With a room temperature of 110° F. we found it answered splendidly, even when given by the open method; certainly a lot of ether was consumed, but the Ormsby or the Clover were equally successful and very little more extravagant than when used at home. At Amara we used nitrous oxide, which is the greatest possible convenience. Infiltration anaesthesia and spinal anaesthesia are both very useful, and the former I have frequently employed.

DENTAL CASES.

Among soldiers septic teeth and their complications cause a great deal of misery, as well as no inconsiderable disability, and I am satisfied that every hospital should have at least one dentist for every 1,000 beds. There is always a lot of extracting to do, but so many teeth can be saved by simple stoppings, and dentists can do so much to allay discomfort and lessen disability by the repair of dentures, etc., that their services are highly important. One general hospital had a dentist on the staff with a proper outfit and two mechanics, and in a very short time the department proved itself invaluable.

EYES.

Surgeons with ophthalmic experience are also indispensable in every general hospital, or even nearer the front if communications are long, because there are so many questions which may involve the sight of one or both eyes that can only be decided by those with special training.

THROAT, NOSE, AND EAR.

In the field of throat, nose, and ear surgery there is certainly less need for experts, but someone in each station that could be called upon in a consultative capacity is most useful. Impaction of cerumen, furunculosis of the auditory meatus, and trouble from old running ears were all common. The two former can easily be dealt with, and in my opinion the latter need not unfit a man for military service. Much can be done to relieve an old otitis, and even if not suitable for the fighting line there are many opportunities for employing such men at the base. At our hospital at Amara the "permanent base men" proved themselves invaluable as general duty orderlies at a time when our own staff was very much depleted by illness.

MILITARY SERVICE AFTER OPERATION.

I saw many cases illustrating active service after operations, and I am glad to be able to give the lie to those pessimists who state that our military hospitals are crowded with men who have been unsuccessfully operated upon for hernia, hydrocele, varicose veins, etc. Of course there are recurrences, and also men who complain as bitterly of their scars as of their original disability, but these are the exceptions. I was long enough at the hospital to see many of the patients on whom I had operated return wounded and without any complaint about the result of their previous operation. And it is the same out here; and, on the whole, I am surprised that men can undergo so much after even quite serious operations.

CONCLUSION.

The medical side of the hospital was always well employed, and, indeed, the campaign has furnished great opportunities for physicians. It has also shown the need for most liberal laboratory accommodation, and a first-rate pathologist with a good staff could be fully and profitably employed at every hospital.

We have followed the admirable plan of making *post-mortem* examinations whenever possible, and in all doubtful cases. I have usually made the examinations myself, and am able to say that if anything they are less unpleasant than similar investigations at home. Of course we make them as soon after death as possible, usually only a few hours, and never longer than twelve. Six in the morning is the best time, but I have often had to do them at three in the afternoon, and even with the thermometer at 110° and higher they have "not been too bad," to use a common service expression.

To many of us the life of the army is repellent, and will provide a great incentive to the promotion of something like a lasting peace. But from the medical point of view there are some compensations, and the war will at least have taught many men the great advantage of an unstinted appeal to laboratories and x-ray departments, and also the advantage of the very free consultations which can always be had for the asking in military hospitals. These lessons will not be lost, and must have an effect on civilian practice after the war.

On the whole, both patients and staff have kept very cheerful. There were a few cases of suicidal cut-throat, but always in men who were exceedingly ill. The hospitals are very nice, and the wards being light, airy, and cheerful the patients are very well off, though it would be ridiculous to say that they have all the luxuries which they enjoy in France or at home; yet at Christmas it would have been difficult to detect any difference. They are all glad to get into such comfortable quarters after their experiences at the front. The nursing orderlies are very good, and have worked splendidly, but the addition of sisters to the personnel has been a great advantage in every way; they greatly add to the welfare and comfort of the patients, and relieve the responsibilities of the medical officers. In the hot weather the great difficulty was to provide adequate change and recreation, both for patients and personnel. The services of regimental bands were available from September onwards at Amara, and were not only much appreciated but of great help in keeping men interested and amused. Pianos and gramophones were also very useful in relieving the monotony, and the concert parties which toured the stations during the autumn were most enjoyable. At all times the Y.M.C.A. provided entertainment and change, and every one acknowledged the extreme value of their services.

I must not forget to mention the great psychological value of the mail day. Baths and bathing are useful agents, provided they are taken at the proper time of day. Fishing can be indulged in towards evening, and provides relaxation for its devotees. Officers fond of shooting could always get sand grouse and often partridge, and there are duck and snipe, though further afield. Others enjoyed polo, and horse exercise was very popular.

From October to the end of December the evenings were cool enough for active games, and tennis, cricket, football, and hockey were indulged in and greatly appreciated after the long hot season.

The Amara Clinical Society was a great success. The idea originated with Lieut.-Colonel S.F. St. D. Green when A.D.M.S. Our first meeting was mainly devoted to the

subject of scurvy, a series of cases among Indians being shown by Major Connor and Captain Kamat, I.M.S. Subsequent meetings were held fortnightly, when subjects such as enteric, dysentery, wound treatment, and secondary haemorrhage were discussed, and at other meetings cases and specimens were shown. Weekly inter-hospital clinics between an Indian general hospital and a British general hospital were also held and were of mutual help, especially in the direction of keeping up the interest of medical officers.

I would plead for the establishment of schools for officers at all medical reinforcement camps, so that not only may the time of waiting be usefully employed, but the overwhelming monotony relieved. In this connexion I would like to add my testimony to the excellence of the Sanitary Museum at Makina. Similar museums for the exhibition of the newer splints and surgical appliances might be started at the big bases and be combined with a reference library of the literature of the war.

I am much indebted to Colonel W. H. Starr and Lieut.-Colonel H. J. Bond for the facilities afforded to me and for the invariable interest which they took in my work.

A CASE OF ACHOLURIC JAUNDICE.

BY

W. H. McKINSTRY, M.B., D.P.H.,

TEMPORARY CAPTAIN R.A.M.C.,

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On April 25th, 1917, the following case was sent to Queen Alexandra Military Hospital. The patient had been seen previously by Surgeon-Colonel Culver James, H.A.C., who, not being satisfied with the diagnosis (spleno-medullary leukaemia), referred him to the laboratory for an examination of his blood.

A preliminary examination of a blood film was sufficient to dissociate the patient's condition from spleno-medullary leukaemia, so he was admitted into Queen Alexandra Military Hospital, and placed under the care of Captain H. J. S. Morton, R.A.M.C., to whom I am indebted for the following notes of his history and condition, together with the notes from the patient's mother.

The patient, Pte. —, complains of no definite symptoms. He states that "as long as he can remember" he has noticed that "the whites of his eyes have occasionally been yellow." Almost ever since he joined the army he has noticed shortness of breath, palpitation and pain over the heart on exertion, and stitch in the side. These symptoms were slight, and he paid no attention to them. Fourteen weeks ago, during an inspection in France, the medical officer noticed that he was "jaundiced," and he was sent to hospital, where he has remained. He had never reported sick, and complains of nothing now. He states that he is much yellower some days than others, and that it was only discovered seven weeks ago that his spleen was enlarged.

Past History.—He was ill when 8 years old with "abdominal trouble and jaundice." Since then he has been very healthy. He had never been abroad except to France (one week).

Family History.—Father and mother both suffer from heart trouble. Brothers and sisters healthy, except youngest brother, who suffers from anaemia and weakness. No other member of the family has ever suffered from jaundice.

Present Condition.—The patient is a healthy well-made boy, 22 years of age; skin lemon tint; conjunctivae yellow with distinct jaundice, especially around the periphery. No pyrexia; tongue clean; digestion and appetite good. No haematemesis or bleeding from the gums.

Heart and Chest. Normal; pulse 80; slight pulsation of carotids and subclavians.

Abdomen. Liver felt two inches below the costal margin; edge palpable, but not hard. Spleen very large, hard, and firm. Dullness on left side of chest behind from the eighth rib downwards in the scapular line, and continuous with the splenic dullness.

There is slight enlargement of glands in the groin, but no other glands appear to be enlarged. Teeth very good, no foci of suppuration discovered; no digestive troubles; no stigmata of congenital syphilis. There is a definite jaundice tint on the soft palate.

April 30th, 1917. Jaundice of conjunctivae not so marked to-day.

The patient's mother supplied the following interesting facts (I quote her own words):

Between the age of 3 and 4 years my son (the patient) had a very bad attack of jaundice, which lasted for three weeks or longer, and for which he was attended by a medical man. Not being satisfied with the doctor attending, another doctor was

called in and he found him to be suffering from a growth on the spleen. He was taken to the local hospital and detained five months. He came out of hospital in fairly good health, but two years after he had another attack of jaundice, and has had it on and off ever since. I have another son, aged 13 years, who is also yellow. I have also a little girl, aged 11 years, who is delicate and bloodless. I have had one miscarriage, and my husband is now in hospital suffering from blood poisoning resulting from ulcerated legs. This is the fourth time he has been in hospital for this disease.

From this history and from the weak positive Wassermann return of the patient's serum I think we are safe in concluding that there is a strong syphilitic taint.

Examination of the Patient's Blood.

There was marked microcytosis and anisocytosis. These two characteristics were so striking at the preliminary examination made when first seen as to at once call attention to his urine and conjunctivae. Polychromasia, poikilocytosis, and punctate basophilia were also present, together with a few microblasts. No myelocytes were found.

Total count:

Red blood corpuscles ... 5,600,000 per c.mm.
White blood corpuscles ... 5,000 "

Differential count:

Polymorphs ... 65 per cent.
Large lymphocytes ... 20 "
Small lymphocytes ... 8 "
Hyalines... ... 6 "
Basophiles ... 1 "
Haemoglobin ... 65 "

The blood serum was decidedly yellow, and gave an indefinite reaction for bile with strong fuming nitric acid. The serum was not haemolytic to the red cells of another patient.

The fragility of the red cells was tested with different strengths of salt solution, and at the same time controlled by blood taken from the laboratory orderly. The result is appended:

Saline Solution.	Patient's Blood.	Orderly's Blood.
1 per cent. ...	No haemolysis	No haemolysis.
0.9 " ...	Partial haemolysis	No haemolysis.
0.8 " ...	Total haemolysis	No haemolysis.
0.7 " ...	Total haemolysis	No haemolysis.
0.6 " ...	Total haemolysis	No haemolysis.
0.5, 0.4, and 0.3 per cent.	Total haemolysis	No haemolysis.
0.2 per cent. ...	Total haemolysis	Slight haemolysis.
0.1 " ...	Total haemolysis	Total haemolysis.

A Wassermann test gave a weak positive reaction.

Urine.—Examined on several occasions, it was at no time high coloured, nor could any bile be detected chemically. When examined by the spectroscope, the characteristic absorption band of urobilin was seen at the junction of the green and blue.

Faeces.—Dark brown in colour, and free from blood.

Many cases of acholuric jaundice have been recorded since Mikowski in 1903 accurately described the condition. Clinically they may feature hypertrophic biliary cirrhosis, splenic anaemia, Banti's disease, Addison's disease, or congenital syphilis with enlargement of the spleen and liver, but the characteristic blood changes of the former are said to be sufficiently definite to differentiate them. In making a diagnosis it is well to keep in mind one or two points—namely:

1. The blood serum of the above mentioned diseases may contain bile.

2. Marked enlargement of the liver has been noted in cases of acholuric jaundice. In most cases, however, very little permanent enlargement is found.

3. The urine, although usually free from bile in acholuric jaundice, is on certain occasions, particularly when the jaundice is more pronounced than usual, distinctly bile coloured.

Nowadays there is a tendency among clinicians to divide cases of acholuric jaundice into familial and acquired, and in the latter group syphilis appears to be a potent factor. Whether it produces the characteristic

blood and visceral changes (and I see no reason why it should not), or whether it acts like any other debilitating agent and simply predisposes the patient to the action of other toxin or toxins, is at present undetermined.

Whatever the cause of the disease may be, it appears as if some toxin acting on the spleen causes destruction of the red blood cells with the liberation of haemoglobin, from which the liver by increased activity elaborates bile pigment, usually in sufficient amount to stain the skin and conjunctivae, but, as a rule, not enough for it to gain access to the urine; while the bone marrow is stimulated to increased production of red blood cells, which, owing to the demands made by the system, arrive in the circulation ill-formed and immature.

I wish to record my thanks to Surgeon-General Dallas Edge, C.B., for permission to publish the case, and to Captain H. J. S. Morton, M.B., R.A.M.C., for supplying me with the clinical notes.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DERMATITIS FROM HANDLING GERMAN BOMBS.

A CASE of dermatitis from handling a German bomb which fell in the air raid on June 13th has lately been attending the skin clinic at Charing Cross Hospital. The patient was a Royal Naval gunner who was detailed by the Admiralty to the extremely dangerous work of removing the detonator from an unexploded bomb which had crashed through a house in the East End of London and buried itself 7 ft. deep in loose earth in the basement. He had to dig away the earth in the dark and, on reaching the bomb, to unscrew and remove the fuse. In so doing the loose powder from the exploder fell on his hands, and it was to this that he rightly attributed the dermatitis.

The dermatitis did not appear till about eight days after he had handled the bomb. When I saw him a few days later the palms of his hands were stained yellow as if by picric acid, the hands were swollen, inflamed, and oedematous, the skin felt hot and tense, and there were deep-seated vesicles between the fingers and on the dorsum similar to those of dysidrotic eczema. The state of the hands recalled the dermatitis from T.N.T. powder, of which a number of cases in munition workers have lately been under treatment at the clinic. The condition took about a fortnight to cure under soothing applications, such as calamine liniment followed by a zinc paste, and when I saw him on July 9th the skin had practically returned to normal. He informed me that should he be detailed for further work of this kind he will be protected by rubber gloves, which will be all the more necessary as the attack will probably render his skin hypersensitive for some time to come to the action of the explosive powder and irritants of an allied nature.

J. M. H. MACLEOD, M.D., F.R.C.P.,
Physician for Diseases of the Skin, Charing Cross Hospital.

HAVING had several cases of dermatitis from the bombed area in the City, I should like to add a few notes to supplement those of my cousin, Dr. J. H. Sequeira, and others. In the majority of cases the vesicles appeared on the ninth day. One case, however, of severe dermatitis of both hands, which I showed at the New London Dermatological Society, did not present any eruption till the fourteenth day after the patient had dug out of the earth an unexploded bomb, which, in so doing, he handled a good deal. The long interval in this case is probably to be accounted for by the bomb not having exploded. The dermatitis set up was similar to the T.N.T. cases of munition workers, in which the period of incubation after contact with the powder does not seem so definitely timed, but is determined more by the cutaneous irritability of the individual skin. The sago-grain vesicles on the fingers due to contact with bombs dropped may, it seems, appear as early as the third day, as occurred in one of my cases. A gentleman had gone into a building in the City shortly after a bomb exploded on July 7th. He felt the contact with "the powerful fumes" at the time. On July 10th he noticed the small lumps on his fingers and felt his

face was swollen. When I saw him two days later he had the usual vesicles on his fingers and an erythematous dermatitis of his face. About the same time I saw two other gentlemen from the same bombed area who also had erythematous dermatitis of the face, but no vesicles on their hands or fingers. Another patient, in addition to bullae on his hands, presented curious linear bullous lesions on his forearms, as if the localization and character had been determined by the patient having scratched that part with contaminated fingers. In only one of the cases I saw was there suppuration, and that was in a young girl from Hoxton, with an extensive bullous eruption of the left foot, which developed on the ninth day after perambulating in the debris. Her left boot had a large hole in the sole, through which the irritant penetrated and set up the mischief. Her right shoe was less defective and her right foot thus escaped damage. These cases seem to me to substantiate Dr. J. J. Pringle's remark, quoted by Dr. Adamson (p. 46).

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TREATMENT OF WOUNDS WITH BISMUTH IODOFORM PARAFFIN PASTE.

IN this note I wish to point out the great advantage of the bismuth iodoform paraffin paste, or B.I.P., advocated by Professor Morison and employed by him at the Northumberland War Hospital.

The following is the method of treatment which I now adopt in bony injuries, whether recent or chronic, for it is bony injuries in which this treatment gives particularly successful results compared with other methods.

First, the wound edges are excised, if this has not previously been done. Secondly, a free incision is made and loose fragments of bone and foreign bodies are removed. Thirdly, the wound is well dried with gauze. Fourthly, methylated spirit is swabbed over the wound, and, finally, with the wound as dry as possible, B.I.P. is well rubbed into the surface; a teaspoonful is usually sufficient. The wound is then lightly packed with dry gauze, and dry gauze is placed over the surface.

The following day I usually change the surface gauze, as there may be a little oozing. Then, provided the gauze packing keeps dry, it can be left in for at least a week.

If it becomes very moist with discharge I take it out and mop up the discharge with a dry swab (in contradistinction to bathing it with a wet solution), and then repack it occasionally, gradually allowing the wound to close up.

I do not intend to discuss the pathology, as this has been done by Dr. L. G. Anderson,¹ but there are a few points to which I should like to call attention.

Firstly, the reason I emphasize keeping wet dressings away from the wound is because these leave a fluid residue which wets the gauze packing, and is thus apt to give a false impression of the amount of discharge; it also washes out some of the B.I.P.

Secondly, I consider that forcible syringing of deep wounds, especially if they are not carefully dried afterwards, is a very common cause of pocketing and spread of infection along the lines of least resistance. If B.I.P. is used as described above, I feel sure that many secondary operations for establishing drainage will be averted.

Finally, in cases undergoing this treatment, an enormous amount of redressing on the boats, trains, and in hospitals would be avoided, resulting in a great economy of dressings (almost 50 per cent.) and of time and labour for the hard-worked nursing staffs. In addition to this, the patient himself will benefit and much appreciate being dressed once a week instead of daily or oftener, as the process is usually painful and very fatiguing to an already exhausted person.

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Captain R.A.M.C. (T.C.),
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SMALL-SPORED RINGWORM OF THE SCALP IN AN ADULT.

WE are in the habit of telling people that they need not fear contagion of the ringworm fungus after the age of 15 years.

Mrs. B., aged 61, was sent to me by Dr. Llewellyn, of Bath, a few weeks ago with a rather large oval patch on the side of the scalp. Some children with tinea tonsurans had stayed with this lady and had used her brushes. I

¹ *Lancet*, March 3rd, 1917.

extracted some of the "stumps" and asked Professor Walker Hall to examine them. He reported that the majority of the hairs contained the *Microsporon audouini*.

In the Section of Dermatology of the Royal Society of Medicine on January 18th, 1917, Dr. Graham Little showed a case and said he had never met with a previous example of ringworm of the scalp in an adult. In the discussion Dr. MacLeod said that in all his experience at Charing Cross Hospital and the Victoria Hospital for children he had only seen one instance of *Microsporon audouini* affecting the adult scalp. The President (Dr. J. H. Stowers) said he thought it more than probable that instances are overlooked owing to an erroneous impression existing that this disease is limited to childhood.

Clifton, Bristol.

HENRY WALDO, M.D., M.R.C.P.

Reports of Societies.

SHELL SHOCK.

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, on May 11th, Dr. F. C. PURSER read a paper on shell shock. He grouped the cases met with in this country into three classes: (1) Shell shock proper; (2) traumatic neurosis; (3) mental alienation. The symptoms of the first class were: (a) Headache; (b) insomnia; (c) dizziness, probably mental confusion; (d) tachycardia; (e) tremor; (f) general mental and physical depression. Most cases recovered fairly well with rest, warmth, quiet, and occupation. Other symptoms which made the outlook less favourable were: (a) loss of memory; (b) mental confusion; (c) epileptiform attack; (d) *petit mal*; (e) profuse sweating. The President, Dr. H. C. DRURY, said that "family stock" was an important factor in these cases. It must be concluded that the shell shock cases had less stable nervous systems than normal persons. Dr. CRAIG said that in the cases he had seen symptoms developed six weeks or so after some shock—for instance, being partially buried. Sensory phenomena were curiously uncommon, except retinal hyperaesthesia. Officers frequently exhibited some of the symptoms of exophthalmic goitre. With regard to treatment, he had not much faith in suggestion, but had found ionization often useful. Colonel CLARKE considered twitching of the face an important sign. Sweating was very marked. Many of the cases were miners in civil life, and might therefore exhibit nystagmus due to their previous occupation. Captain LAW frequently found accidental burial the exciting cause. He considered "suggestion" useless, and recommended quiet surroundings. Sir J. W. MOORE commented on the tendency to relapse. Dr. CRAWFORD thought brain concussion largely accountable. His own experience of shell fire resembled the effects of a kick on the head. Dr. PURSER, in reply, agreed that in ordinary cases sensory symptoms did not occur, but in more severe they did. As regards treatment, the men ought to be employed, but kept out of touch with war matters. He still had some faith in suggestion.

Reviews.

THE INTERNAL SECRETIONS.

THE work on this subject by Professor E. GLEY has been translated into English by Dr. MAURICE FISHBERG, and published in New York under the title, *The Internal Secretions: Their Physiology and Application to Pathology*.¹ After a brief historical sketch of how this doctrine of internal secretions developed, he defines the endocrine glands as those presenting cells with characteristic granular elements in close relation to the efferent vessels of the organ, the venous blood of which must have the physiological action and the properties of a specific substance. Many of the organs, however, which are included among the endocrine glands do not satisfy all these postulates.

¹ *The Internal Secretions: Their Physiology and Application to Pathology*. By E. Gley, M.D., Member of the Academy of Medicine of Paris, etc. Translated from the French, and edited by Maurice Fishberg, M.D. New York: Paul B. Hoeber, 1917. (Cr. 8vo, pp. 241, 2 dollars.)

But several of them, nevertheless, belong to that category by virtue of certain facts connected with them. The spleen and the thymus are examples of such organs. Neither is histologically or embryologically a glandular organ, yet they discharge into the blood products akin to internal secretions. In addition to the methods of studying the products of internal secretions by an analysis of the blood from certain organs, and by physiological experiments, there is another and a simpler—in fact so simple that it has turned experimenters from the rational path of investigating the physiological properties of the venous blood to the administration of organic extracts. That method, however, though not absolutely defective, is incomplete and inadequate. For there is *a priori* no proof that the substances present in the extract existed in the living glandular tissue; that the substances present in the living gland are regularly excreted into the venous blood of the gland; and that there is a conglomeration of substances which is evidently not discharged at random or continuously into the venous blood of the organ, but that at certain times when required for special purposes one definite substance, the sole product of secretion, passes into the venous blood. Upon such narrow basis the practice of opotherapy has been introduced, and Professor Gley utters many warnings against the hypotheses that are too liberally formulated, and against the risks of acting upon them.

OPHTHALMOLOGY.

THE last volume of *Transactions of the Ophthalmological Society of the United Kingdom*² was published before the lamented death of the president, Mr. Walter Jessop, whose presidential address on some ophthalmic lessons of the war forms the opening chapter. Succeeding chapters include full reports of discussions on the treatment of syphilitic eye affections by the newer methods, and on foreign bodies in the eye and orbit; the latter dealing for the most part with civilian injuries, but not exclusively so. A later meeting was given up to communications on injuries of the eye, at which a paper by Professor F. De Lapersonne was read, and Major J. F. Cunningham contributed notes on war injuries of the eye and orbit in cases seen at the Boulogne base since April, 1915. Captain M. H. Whiting also read a note on concussion changes in the crystalline lens observed in the present war, and Mr. Jameson Evans discussed the peripheral lesions of shell concussion. Mr. Treacher Collins discussed very fully the subject of concussion hypotony. Subsequent discussions were held on diseases of the eyelids and orbit, diseases of the cornea, diseases of the uveal tract, diseases of the optic nerve and retina, and diseases of the lens—all adequately reported in the present volume of *Transactions*, and the valuable report of the subcommittee of the society on detachment of the retina is printed in full. To the section on diseases of the nervous system Dr. S. A. Kinnier Wilson contributes a paper on dysmetropsia, a term which he proposes to substitute for "dysmetropia" to signify disturbance in the visual appreciation of the measure or size of objects, whether by over- or under-estimation. This account of the pathogenesis of a symptom to which attention has not often been drawn is of interest to the neurologist and to the ophthalmic surgeon. The volume ends with the report of council, in which it is announced that Sir George Berry will deliver the Bowman lecture this year.

Dr. WILBRAND of Hamburg, who is an authority upon the relation between diseases of the eye and nervous system, published shortly before the war a volume of lectures³ in which he maintained that it is impossible to construct a complete theory of the act of sight by the consideration of the physiology and anatomy of the organs of sight, without amplifying the knowledge thus gained with facts obtained clinically and in the pathological laboratory. In these lectures he seeks to combine pathological with physiological facts, and to furnish his hearers with a complete theory of vision. Commencing with the functions of the eye, he passes back along the optic tracts to the visual cortex, examining in turn the functions of each part of

² *Transactions of the Ophthalmological Society of the United Kingdom*. Vol. XXXVI. London: J. and A. Churchill, 1916. (Demy 8vo, pp. 533; illustrated, 12s. 6d. net.)

³ *Die Theorie des Sehens*. Von Dr. Wilbrand. Wiesbaden: Verlag J. F. Berman, 1915. (Sup. roy. 8vo, pp. 51; 2 plates, 10 figures. 1s. 9d.)

the visual apparatus. We are thus furnished with a very complete theory, but it is no more than a theory. The time at his disposal was no doubt insufficient to give the known facts upon which he founded much of his hypothesis, but he is somewhat dogmatic, and many of his opinions stated as facts have but a slender foundation. It is perhaps impossible to give elementary lectures in a limited time without dogmatism. Some of Wilbrand's views upon the nervous control of dark adaptation and the secretion of the visual purple have already been opposed by Stargardt, who had at his command cases in which war injuries had severed the sympathetic nerve. Stargardt came to the conclusion that the secretion of the visual purple was not under the control of the nervous system. There is much experimental work which tends to disprove Wilbrand's theory of dark adaptation. The book is interesting, and if the theories are taken as largely speculative it may be read with profit.

NOTES ON BOOKS.

DR. A. J. ROSANOFF has translated and re-edited Dr. ROQUES DE FURSAC'S *Manual of Psychiatry*,⁴ and has produced a tolerably short and well-arranged account of the subject that should be of service to students and medical practitioners in search of a somewhat abstract but scientific account of mental disease. It is divided into two parts. The first deals with general psychiatry, and contains chapters on the etiology and symptoms of

⁴ *Manual of Psychiatry*. By J. Roques de Fursac, M.D., and A. J. Rosanoff, M.D. Fourth edition, revised and enlarged. New York: J. Wiley and Sons, Inc.: London: Chapman and Hall, Ltd. 1916. (Post 8vo, pp. 533; 14 figures. 10s. 6d. net.)

insanity, and on the general practice of psychiatry. The second part gives accounts of the special forms of insanity: Kraepelin's classification of mental disorders is followed more or less closely. The text is clearly written, and is enriched by examples and statistics taken from both French and American sources.

*The World's Wonder Stories for Boys and Girls*⁵ has been written by Mr. A. G. WHITE to explain the universe to children who will ask questions. Here the reader will find set out the why, how, when, and where of the world at large, the evolution of life, religion, morality, and science. The author writes clearly, in a simple style, and does his best to supply rational answers to the many questions he raises. The volume should be full of interest to those for whom it is written, and should prove but little misleading to their immature intelligences. And it contains little to which a modern teacher would be likely to object.

MISS LAVINIA DOCK, in a small work entitled *Hygiene and Morality*,⁶ has expanded a paper presented eight years ago to the international congress of nurses in London. It is addressed to nurses and women social workers, and its theme is the social significance of venereal disease and the part which women should take in the crusade against prostitution. The book is an earnest, well-written, and well-informed plea for a higher standard of morality.

⁵ *The World's Wonder Stories for Boys and Girls*. By A. G. Whyte. London: Watts and Co. 1916. (Cr. 8vo, pp. 285; 40 illustrations.)

⁶ *Hygiene and Morality: A Manual for Nurses and Others, giving an Outline of the Medical, Social, and Legal Aspects of the Venereal Diseases*. By L. L. Dock. New York and London: G. P. Putnam's Sons. 1917. (Cr. 8vo, pp. 204. 5s. net.)

MEDICAL AND SURGICAL APPLIANCES.

A Portable High-frequency Apparatus.

A FORM of high-frequency generator has been introduced which has the special merit of small compass and portability. The lighting current of the usual range, either alternating or direct, is used and transformed through a small generator into current of high potential and of the necessary rapidity of oscillation. To the generator is attached an electric cable, with a handle into which is inserted a glass vacuum applicator, and by this means the violet rays (effluve) or the sparks are brought to bear upon the particular surface or passage of the body which it is desired to treat. The applicators are made in a large number of different forms. When pressed against the skin the radiant applicator gives rise to no painful sensations. It is produced by the Sterling Corporation (Great Britain), Limited, of 16, Wigmore Street, London, W. 1.

MEDICINAL AND DIETETIC PREPARATIONS.

Touraine and Anjou White Wines.

IT was not without reason that the rich and the great of the renaissance in France built their chateaux in Anjou and Touraine and chose sites on the Loire or one of its tributaries. These districts have been called, not without good cause, the garden of France, escaping the chills of the north and the torrid summer of the south. They have many vineyards and their wines have qualities which commend them to the judicious. Some of them resemble hocks, but the ordinary run have usually more character than the ordinary run of German wines, and the finest need not fear comparison with the finest of the German. Since the stocks of many German wines in this country must now be getting very low, it is obvious that the

present is a particularly favourable time for the introduction of French wines corresponding to those types of German wines which have hitherto been most popular in England. Messrs. Alex. Wood, Campbell, and Co., 62, Crutched Friars, E.C., are accordingly taking advantage of the opportunity to introduce a considerable number of varieties of the white wines produced in Anjou and Touraine as substitutes for German wines of the hock and moselle type; they have forwarded to us eight samples of these for examination, which we have analysed, with the results given in the table below.

The figures in the table indicate that the samples are natural unadulterated wines. As regards the still wines, the analytical figures for the first four samples given in the table are very similar to the corresponding average values for hock and moselle; the average acidity is perhaps slightly higher than that for the German wines, but the difference is not sufficient to be of consequence. The fifth sample, Fleur de Touraine, differs from the others merely by containing a small amount of reducing sugar and a slightly higher percentage of alcohol. The acidity of two of the samples of sparkling wines is quite low, while one contains a low percentage of sugar for a wine of this type.

The proportions of sulphate calculated as potassium sulphate show that none of the wines have been "plastered," while the total sulphurous acid in the case of the still wines falls well within the limits which are considered quite permissible, and is very small in the case of the sparkling wines; no other preservative could be detected. All the samples can fairly be described as of excellent and delicate flavour, the sparkling wines being, in our opinion, particularly good in this respect.

Name of Wine.	Specific Gravity at 15.5° C.	Alcohol by Volume per Cent.	Grams per 100 c.cm.			Rotation in 100 mm. Tube.	Reducing Sugar.	Grams per 100 c.cm.			
			Total Acid as Tartaric Acid.	Volatile Acid as Acetic Acid.	Extract.			Sulphate as Potassium Sulphate.	Total Sulphurous Acid (SO ₂)	Total Tartaric Acid.	Ash.
Touraine	0.9956	12.31	0.99	0.17	2.30	-0° 2'	0.19	0.087	0.012	0.187	0.23
Trèves	0.9977	11.08	0.97	0.18	2.64	-0° 19'	0.89	0.074	0.009	0.326	0.18
Chavagnes	0.9952	11.96	0.91	0.14	2.31	-0° 5'	0.41	0.113	0.012	0.240	0.21
Vouvray Tête	0.9956	11.80	0.90	0.15	2.39	-0° 4'	0.40	0.093	0.013	0.232	0.21
Fleur de Touraine	1.0000	13.15	0.90	0.12	3.66	-0° 24'	1.75	0.098	0.007	0.193	0.22
Sparkling Grand Vin d'Anjou	0.9974	13.05	0.63	0.11	3.17	-0° 15'	1.57	0.046	0.006	0.222	0.15
Sparkling Vouvray Tête ...	1.0037	12.58	0.65	0.13	4.88	-0° 35'	3.45	0.049	0.003	0.208	0.17
Sparkling Touraine	1.0126	9.95	0.94	0.14	6.44	-0° 48'	5.05	0.042	0.004	0.246	0.18

THE MESOPOTAMIA COMMISSION.

[Fourth Notice.]

THE INDIAN MEDICAL SERVICE.

THE Parliamentary Mesopotamia Commission is very severe upon the system of military administration in India, which it describes as "cumbersome and inept." In its relation to medical matters the position is complicated by the interlocking of the duties of the Director-General of the Indian Medical Service, and of the Director of Medical Services in India who has medical charge of the armies, both Indian and British, in peace and at war. Both posts may be held by the same officer, but, with the exception of a short period in 1916, during which Sir Pardey Lukis held both, have never been so held.

The Director-General of the Indian Medical Service is essentially a civil surgeon-general; practically his duties in relation to military arrangements in the field are confined to calling up the military medical reserve from civil employment on the demand of the military medical authorities, and supplying the drugs and certain parts of the equipment they ask for. He has to see that the medical store depôts in India are kept full and to appoint medical storekeepers. These store depôts supply the civil hospitals in India, but must also be prepared to meet any military emergency. The personnel he must supply in response to the demand of the military are officers of the Indian Medical Service drawn from civil employment, and the war reserve of military assistant surgeons and sub-assistant surgeons; he must also take measures to recruit civil medical men for military work, and must keep up the cadres of the Indian Medical Service, of military assistant surgeons and of sub-assistant surgeons.

The Director of Medical Services, India, who, with the brief interval mentioned, has always been a senior officer of the British Army Medical Service (R.A.M.C.), is directly responsible for the Army Bearer Corps, consisting of Indians of all casts, except sweepers, and the Army Hospital Corps for station hospitals for British troops, made up of sweepers, cooks, dhobis (laundrymen), and bhists (water carriers). The divisional medical stores and medical stores for station and regimental hospitals he obtains from the Director-General, Indian Medical Service. The ambulance tongas, hospital clothing, petty supplies, and menials for mobilized hospitals, Indian troops, he obtains from the supply and transport department. His tentage he must get from the ordnance, and furniture from the military works department. These complicated arrangements do not seem to be ideal, but are part and parcel of the mould into which military medical matters were cast during the Napoleonic wars. The theory is that the Army Medical Service is responsible only for the supply of personnel (medical officers, nurses, and orderlies), drugs, instruments, and dressings. As shown above, the matter in India is further complicated because the D.M.S., India, must draw drugs and certain equipment through the D.G., I.M.S.

Sir Pardey Lukis, D.G., I.M.S.

The specific references to the Indian Medical Service in the report of the Parliamentary Commission are not numerous, although its officers are included in the praise given to the executive medical officers for their zeal and devotion to duty.

The references to Colonel Hehir and Lieut.-Colonel Carter were mentioned last week; the other Indian medical officer referred to is Surgeon-General Sir Pardey Lukis, Director-General of the Indian Medical Service, who was appointed Director of Medical Service when Surgeon-General MacNeece, A.M.S., left India, and held the post for a short time until, "in accordance with the unwritten law that forbids a surgeon-general of the I.M.S. to serve as D.M.S., India, Surgeon-General O'Donnell (A.M.S.) arrived to take his place." The references to Sir Pardey Lukis in the report of the Parliamentary Commission are as follows:

Sir Pardey Lukis's term of office was one of energy—much additional hospital accommodation was provided, convalescent sections were established both for British and Indian troops, sixteen stationary sets of x-ray apparatus were ordered for military hospitals in India, the provision hitherto being confined to mobile sets, five of which were now released for use in Mesopotamia; electric light and fans were ordered for several hospitals, and the status of embarkation medical officers at

Bombay and Karachi was improved. Final sanction was received for the increase of the Army Bearer Corps from 9,500 to 14,000. The Government of India was asked for the first time to purchase motor ambulance cars, instead of relying, as hitherto, on private donors.

Meanwhile, with an eye to things actually in Mesopotamia, additional staffs were dispatched for river hospital steamers, active steps were taken to send increased apparatus for water sterilization; a special "Mesopotamian" diet for British troops was drawn up and approved; additional river hospital steamers and barges were ordered from home; designs were prepared for ambulance trains on the railways in Mesopotamia then being constructed; additional hospitals were asked for and dispatched.

Altogether, the energy displayed and the speed with which new proposals were carried through compares well with previous conditions.

In the next paragraph the Parliamentary Commission praises the energy of Surgeon-General Treherne, A.M.S., who succeeded Surgeon-General Hathaway, A.M.S., and the work of the Army Sanitary Committee sent out by the War Office to Mesopotamia, adding that "sanitation and the prevention of disease are now properly organized, and appliances of all kinds are being continually improved, as better transport facilities on the Tigris distribute the necessary machinery and apparatus."

Lieut.-Colonel R. M. Carter, I.M.S.

A private letter, which bore internal evidence of being a private letter, addressed by Sir Victor Horsley eleven days before his death to Major (now Lieut.-Colonel) Carter, was published in the *Weekly Dispatch* for July 8th. In the next issue of that paper (July 15th) the following apology appeared:

We desire to state that the letter which appeared in last Sunday's *Weekly Dispatch* from the late Sir Victor Horsley, relating to the Mesopotamia scandal, was published without the consent or knowledge of Major (now Lieut.-Colonel) Carter, to whom it was addressed.

In making this explanation, which is due to Lieut.-Colonel Carter, we also wish to point out that the letter contained several orthographical inaccuracies (such as the misspelling of names of places in Mesopotamia) which were made in transcribing the original document.

HEALTH OF MUNITION WORKERS.

(Continued from p. 50.)

VENTILATION.

The object of ventilation is twofold: (1) the removal of foul, exhausted, or polluted air, and (2) the supply of fresh air in its place—that is, air pure and clean to breathe, and an atmosphere stimulating and refreshing. Air entirely pure from the chemical point of view may afford an atmosphere of a most depressing character highly detrimental to physical efficiency.

The impurities liable to be added to the air inside the workshop are:

1. *Carbonic acid*, given off in the breath of human beings and by fires, gas lights, or any other form of open combustion. The increase in the amount of carbonic acid is accompanied by a parallel diminution in the oxygen of the air. The chemical changes produced in this way are not perceptible by the senses and there is no reason to suppose that they are, even under the most defective systems of ventilation to be found in factories, in any substantial degree harmful in themselves. Since, however, they are capable of easy and accurate measurement they are recognized as a useful index of the prevalence of more harmful impurities. It should not be assumed that a low percentage of CO₂ necessarily indicates a satisfactory atmosphere.

2. *Various ill-defined volatile substances* arising from human beings, from the skin and the alimentary canal, especially when personal cleanliness is absent and sweating is profuse. The sum of these conditions gives the familiar "smell of humanity"; the substances are probably harmless in themselves, but they excite a feeling detrimental to comfort and efficiency.

3. *Bacteria*.—Apart from the question of tuberculosis there is no doubt that the common catarrhal conditions (colds, sore throats, "influenza") are for the most part spread from an infected individual to his neighbours by organisms which are carried in the expired air with droplets of moisture, especially during coughing and sneezing, though also during ordinary breathing and speaking; though these diseases are often regarded as

trivial in character, it appears likely that if any correct estimate of loss of time and diminished output owing to "colds" could be obtained, they would prove to be the most important source of industrial inefficiency.

4. *Dust and Fumes.*—Some of the most common of these impurities are injurious because they are unpleasant, for example, the smell of hot oil, of various varnishes and the like. Others are directly harmful, for example, fumes from stoves, smoke, dust, etc.; and a further kind are of the nature of poisons, for example, fumes of lead, of brass, or of tetrachlorethane.

Relaxing and Stimulating Atmospheres.

It would be a mistake to suppose that a workshop with a large cubic capacity in relation to the number of work-people and the kind of process in operation does not require any definite ventilation, for in large shops there is a mass of stagnant atmosphere which is depressing and relaxing, and fails to provide the stimulating effect of cool air in gentle motion. This exhilarating influence of atmosphere depends essentially upon the cooling of the skin by moving air, and it is necessarily closely connected with questions of temperature and heating. Damp warm air is more relaxing than dry air at the same temperature; and the relaxing effect of a warm, damp atmosphere is much reduced if moving air is brought to play on the body; change of skin temperature is one of the essential features of a fresh, pleasant air. These considerations are fully borne out by direct experimentation in the laboratory, and the desirable atmosphere is characterized by being: (a) Cool rather than hot; (b) dry rather than damp; (c) diverse in its temperature in different parts, and at different times, rather than uniform and monotonous; and (which is intimately connected with this diversity) moving rather than still. The explanation of the familiar advantages of such an atmosphere lies in the cooling and varying stimulation of the skin of the exposed parts of the body.

Local Exhaust Ventilation.

For certain operations it is necessary to provide localized exhaust ventilation. The essentials are a duct along which a flow of air is maintained in a definite direction, and an opening or openings in the duct through which sufficient air is admitted to allow the flow to be maintained. This air carries with it dust, heated fumes such as arise from melting scrap lead, and volatile vapours such as are evolved when dope varnish evaporates. Where a keen draught, as for the removal of dust, is required, pressure fans are employed; where large volumes of air are to be removed volume fans are more economical, but care must be taken to see that the ducts are not constricted at any point, and that the total area of the openings is greater than that of the fan. Heated fumes may usually be removed without using mechanical power, but the duct must be vertical, of ample diameter and height, opening below into a bell-mouthed hood and surrounded above by a suitable wind cowl.

HEATING.

The heating of workshops in a variable climate presents great difficulties. Conditions at different times of the day and varying circumstances of use and occupation all require consideration. The ideal method is by radiant heat; rather old-fashioned stoves scattered about a shop may give good results, while the excellent and invigorating conditions which prevail in many smithies and forges are easily recognized. Gas-heated radiators, in which burnt gas escapes into the shop, are not permissible, and the plan by which warmed air is pumped into the shop—commonly known as the "plenum system"—tends to create a relaxing and depressing atmosphere and affords a striking example of how chemically pure air may, by its uniformity and monotony, constitute an atmosphere in which good work is hardly possible. The ventilation and heating of each shop, or group of shops, should be in the hands of some responsible person, but the workers must co-operate. Particularly is it important to attend to the ventilation of shops in which women are employed, since they are specially susceptible to the effects of defective ventilation.

STIMULATING ATMOSPHERE.

Whether a workshop has a satisfactory stimulating atmosphere may generally be judged by the sensations, especially on first entering from the outside air. The ordinary thermometer measures the temperature of the air; the wet bulb thermometer determines the humidity,

and gives an important measure of the facility with which the body can be cooled by sweating. These instruments, however, give only very imperfect data as to the cooling and skin-stimulating properties of any atmosphere, and it is necessary to have in addition some measure of the rate at which a warm body will lose heat. This has been investigated by Professor Leonard Hill by means of the "kata-thermometer." It consists of a large bulbed spirit thermometer (of standard size); this is heated in hot water, and the rate of cooling measured by taking the time which the meniscus takes to drop from 100° F. to 95° F., while the instrument is suspended in the atmosphere. This gives the dry reading, and shows the rate of cooling due to radiation and convection. To take the wet reading the bulb of the kata-thermometer is covered with a damp muslin glove and the operation repeated, giving the rate of cooling when evaporation is added to radiation and convection. The difference between the two readings gives the rate of cooling by evaporation. The rate of cooling at body temperature is recorded by means of a factor (determined for each kata-thermometer) in mille calories per square centimetre per second. The number of seconds occupied in the fall from 100° to 95° is divided into the factor.

Readings of the wet and dry bulb thermometer taken at the same time show how with the same wet and dry bulb readings the rate of cooling may be strikingly different. The kata-thermometer, like the human body, notes the rate of change, while the thermometer notes a given state, or the result of change. Thus the kata-thermometer takes count of the movement of the air and indicates conditions of comfort.

The following examples illustrate the results obtained. A comparison of the first, second, and third sets of readings shows that with the same temperature widely different rates of cooling may exist:

	Temperature.		Rate of Cooling at Body Temperature in Mille Calories per sq. cm. per sec.		
	Wet Bulb.	Dry Bulb.	By Radiation, Convection, Evaporation.	By Radiation, Convection.	By Evaporation.
1. Bright, pleasant day in May, out of doors	60	68	27.2	7.5	19.7
2. Brass foundry (good)	60	72	24	7.3	16.7
3. Machine shop (bad)	61	72	15	4.6	10.7
4. Cartridge annealing and cleaning (bad)	64.5	80.5	17.5	3.0	14.5
5. Cartridge annealing and cleaning (good)	54.5	60	24	9.0	15.0

LIGHTING.

The essentials of good lighting are:

- Adequacy.
- A reasonable degree of constancy and uniformity of illumination over the necessary area of work.
- The placing or shading of lamps so that light from them does not fall directly on the eyes of an operator when engaged on his work or when looking horizontally across the workroom.
- The placing of lights so as to avoid the casting of extraneous shadows on the work.

Natural light is to be preferred, on grounds of health as well as of economy, and roof lighting to lateral lighting. With a good system of roof lighting the illumination is very uniform.

The position of permanent working points should be so adjusted in relation to the windows and to internal obstructions in order to secure, so far as practicable, adequate daylight for each, and the effect of light-coloured walls and white ceilings on the general brightness of the room and in affording an effective background to dark objects should not be overlooked.

A shop where the ceiling is uniformly whitened and lighted by arc lamps shaded from the workers is illuminated by an agreeable diffuse light which casts no shadows. To produce the best effect the entire top surface can be covered with sheets of metal and enamelled white. Such a method of lighting may prove to be more costly in up-keep, but it has compensatory advantages in promoting the health of the workers, and thus may prove to be

economical in the long run. Lighting by fish-tail gas burners is very poor, but excellent lighting is obtained by the use of incandescent mantles and gas under pressure. The lamps in lofty shops can be placed high up so that they shed a diffuse light without directly throwing a glare into the workers' eyes. Abundant evidence has been obtained that when lighting conditions are improved there is a gain both in respect of the quantity and quality of the work. Failure to keep windows and skylights clean is a great source of economic loss. Windows should be hung on swivels so that they can be swung round and cleaned.

Eye-strain.

Eye-strain and headache are caused by unsuitable lighting and by the employment of workers on fine work without first testing their eyesight. The standard suggested as the minimum is $\frac{2}{3}$ in both eyes (Snellen's types) — $\frac{1}{2}$ in one eye may suffice in some cases—and the ability to read standard type 0.45 at 1 ft. distance. Any worker who complains of frequent headaches, pains in the eyes, or shows signs of conjunctivitis, should be tested again. The frequency with which conditions calling for treatment occur is shown by the experience of one factory where 8 per cent. of the workers had been obliged to obtain glasses since starting work; 12 per cent. found sight difficult at night, 7 per cent. complained of eye-strain, and 10 per cent. appeared to have latent eye-strain. Among women machining shells only 18.7 per cent. of eye defects was noted. In the fuse department, on the other hand, where fine processes demand close attention, there was 64 per cent.; 8 per cent. of the workers had been obliged to obtain glasses since starting work; 19 per cent. complained of eye-strain; 10 per cent. in addition appeared to have latent eye-strain as shown by headache, blepharitis, etc.

SICKNESS AND ACCIDENTS.

In investigating the question whether conditions in the factory are causing sickness among the workers, absence, broken time, irregular time-keeping, or diminished output of the individual worker must be recorded; and the sickness register, kept by a duly authorized officer, scrutinized weekly. If in any factory there be an undue proportion of sickness, it will usually be found that there is lessened vigour and activity among those not actually sick, for disabling conditions or influences which make some definitely ill injure all the workers in the factory. Fluctuations in sickness rates are mainly seasonal; the rate is always above the mean in January, February, March, and April, and occasionally in November also. July and August and December usually show least sickness; holidays may partly account for this. In some localities and kinds of work, however, hot weather causes an increase of sickness.

Medical Examination.

The foundation of any sound system of dealing with industrial disease lies in prevention and the recognition of the beginning of disease. The first step, therefore, is to provide for the medical examination of all workers on their admission to the factory, in order to ascertain that they are, initially, physically fit for employment. In some munition works there is in addition, in special departments, a periodical medical examination.

Having made sure that the individual worker begins well, the management must eliminate as far as possible all conditions which favour the occurrence of accidents by providing for the effective guarding of machinery, the use of safety appliances, the regulation of dangerous processes, careful cleaning of machinery, and adequate lighting. For the individual it must provide proper sanitary conditions and canteen facilities, and an adequate medical and nursing scheme. The appointment of trained nurses for both day and night shifts has proved of great value to employers and workers alike, particularly in factories where women are employed. The duties of a factory nurse include (a) supervision of the health of the workers, (b) superintendence of the rest room for those who are temporarily indisposed, (c) following up cases of sickness at home, (d) first aid treatment of injuries, and (e) in the absence of medical advice observing and controlling in its initial stages any threatened outbreak of the influenza type of sickness, which, if it extends, may temporarily paralyse output.

In times of peace a large number of accidents, of greater

or less severity, occurred in factories, particularly in metal, engineering, and shipbuilding works; many accidents, therefore, were to be expected in munition factories, where metal and engineering work and certain dangerous trades and manufactures are carried on, and where many of the workers are inexperienced.

For the avoidance of accidents and the prevention of serious consequences of slight injuries intelligent and vigilant supervision by the foreman is necessary, and a sufficient number of workers should be trained in first aid to ensure that there are one or two persons so trained in each shop. An aid post or local dressing station is established in each workplace and provided with sterilized dressings, triangular bandages, alcoholic iodine solution, and a bottle of eye-drops; it is placed under the charge of some person, trained in first-aid work, preferably the foreman or forewoman. There is also a central dressing station, providing a surgery, a rest room, a store room, and nurse's room. It has impervious washable walls and floor, hot and cold water laid on to a sink, and a foot-bath. Here the cases dressed at the aid post can be dressed again if necessary, and more serious injuries dealt with. It is provided with stretchers, splints, and bandages for major accidents, and a store of bandages and dressings for minor injuries, from which the aid posts are replenished, a simple sterilizer and necessary surgical implements, and simple lotions and drugs. Preferably it is put in charge of a trained nurse, who should have ambulance assistants selected from employees trained in first-aid work. Many large works now have a medical officer on the staff responsible for the supervision of the surgery and available for serious cases before removal to the hospital. A record of each case is kept, the nature of the injury, the way in which it was caused, and the progress of the case being recorded. The patient is supplied with a card giving instructions as to dates of attendance, and so on. The need for a medical organization of this kind is shown by statistics; in eleven works of moderate size, employing 35,000 workers, 38,000 surgical dressings were performed in the first ten months of 1915, the ratio varying from 19 per 1,000 employed per month to 221 per 1,000. In Woolwich Arsenal the organization, central and local, includes nine medical officers (two women), a matron, four nursing sisters, and a large staff of nursing orderlies and clerks. In 1914-15 there were 150,000 attendances for treatment or medical examination.

INJURIES OF THE EYE.

The importance of organizing suitable treatment of eye injuries is very great; apart from the risk of permanent injury, the loss of time through neglect of trivial accidents to the eye, due to delayed or unskilful treatment, is very serious. The Moorfields Eye Hospital in London recently reported that it was receiving about a hundred cases a week from munition and armament factories, involving the loss of three hundred days a week, or, say, forty men idle a week from this cause. At the Birmingham Eye Hospital about 15,000 cases of eye injuries are seen annually; the majority are slight, but even in these, when promptly treated, the loss of time to each man averages half a day, so that in this one district alone from five hundred to seven hundred days' work are lost annually from trivial accidents. At the Royal Eye Hospital, Manchester, it is estimated that small chippings of metal in the eye cause the injured person to be absent from work on an average for three days. By neglect to prevent sepsis a trivial injury may be converted into one which runs a prolonged course, and may lead to more or less impairment of sight, or even loss of the eye. The attentions of fellow-workmen at the time of the accident should be limited to the use of suitable eye-drops provided by the management. There is still a great prejudice among workers against the use of goggles, but in many classes of work it is essential to guard the eyes against flying particles of metal. The eye-guard should be strong and cheap, light and comfortable, allow free play of air, and not impede vision. Protection is required in front, below, and on either side, but the upper part may be left open for ventilation. Glass or other transparent medium, after a time, becomes pitted and obscured, and the guards, therefore, should be so made that the glass can be easily removed and replaced. Experience shows that there is no danger to the eye should the glass be broken by flying chips.

(To be continued.)

British Medical Journal.

SATURDAY, JULY 21st, 1917.

MESOPOTAMIA.

A FORTNIGHT ago it was pointed out here that a careful study of the report of the Parliamentary Mesopotamia Commission showed that one of its most important conclusions—that in which the opinion was expressed that the medical defects disclosed in Mesopotamia were not due to the shortage of river transport—was not justified by the facts set out elsewhere in the report, but was, in fact, in direct contradiction. The demonstration of this error justified the suspicion that the conclusions of the Commission in other respects should not be accepted without close examination. The two days' debate in the House of Commons last week brought out many other instances, and Mr. Balfour expressed a very widespread opinion when he said that the general character of the manner in which the Commission approached the question was not the proper method of dealing with great State affairs. To condemn anybody or punish anybody, or remove any one merely on the strength of the Commission's report would be, he said, to inflict a grave injustice upon individuals, and it was the business of Parliament not to be misled by the stream of public opinion, however natural, and "to be thrown over some cataract of public immorality." He exonerated the Commission from any desire to do anything but strict justice, but pointed out that its method of dealing with the great questions involved made strict and fair justice almost impossible. We believe that he expressed the considered opinion of the country in attributing the breakdown of the medical arrangements mainly to the general lack of adequate medical equipment, due to the deliberate policy of the Indian Government and the House of Commons of cutting down military expenditure. That there was a medical catastrophe after Ctesiphon no one can seek to deny, but the defeat at Ctesiphon was in itself a catastrophe, and it is undoubtedly true that when a defeated force has to retreat through a country overrun by marauders, the wounded must suffer if they are not to be left behind to have their throats cut. The main fault attributed to the responsible officers on the spot was in not foreseeing the possibility of defeat and retreat, and to apportion the blame among them is a task which Parliament cannot itself undertake, while the Government declares that it cannot treat the findings of the Commission as a judgement upon which punitive steps could properly be founded without further proceedings. In its search for a tribunal the Government first proposed to make use of an Act passed last year to meet a special case and to appoint under it a body consisting partly of legal members, but when the objections to this course were developed, it offered to pass a special Act appointing a special tribunal. After some days' consideration, however, both these proposals were abandoned, and the Government fell back upon the plan of leaving the Army Council to deal with military officers in the ordinary way.

The Parliamentary Commission has, in fact, itself been on trial, and its chairman in its defence has stated the procedure followed. Every witness was requested to put in writing the statement he wished to make, was then examined on it, the record of this examination was sent to him for correction, and the

corrected record alone used as evidence. The facts stated and recorded in the narrative of the campaign were contained in documentary evidence laid before the Commission. All documentary evidence was sworn to and all oral evidence was on oath. In a few cases in which statements were made by subsequent witnesses affecting previous witnesses and the fresh evidence was used, the witness so affected was recalled and re-examined. The contention founded on this is that the natural course would be for the Army Council to ask each officer concerned if he has anything to say or further facts to bring forward, and if he has, to appoint a military court of inquiry. The Government and the House of Commons have now decided that this course shall be followed, and we have no doubt that the officers concerned will welcome the decision. The services of Lord Hardinge as Permanent Under Secretary of the Foreign Office are to be retained, at the instance of the Foreign Minister, and apparently other civilians could be dealt with by the heads of the departments to which they belong. It must not be forgotten that the primary fault lies with the Finance Department of the Government of India, acting with the approval and, indeed, under the impulsion of the House of Commons.

The Chairman of the Parliamentary Commission has himself appealed to Parliament to "drop this useless and fantastic innovation of a special tribunal, and the waste of time which its discussion entails, and give its attention to those reforms in Indian administration the urgency of which is so clearly shown by our report." On this we would only say that this urgency, in respect of medical matters at least, was not shown for the first time in the report of the Commission. On the contrary, every one of its recommendations with regard to medical administration has been made time and again, but has been turned down on the ground of expense.

THE CENSUS OF 1911: OCCUPATION AND HOUSING.

II.

At the 1911 census information was sought by means of which classification, both by personal occupation and by industry, could be effected. It is impossible within our limits of space even to summarize the results, and we merely glance at a few points of interest. Taking the industrial classification (net total in industry or service), domestic indoor service still claims the largest total of employed persons, 1,302,438, of whom 1,260,673 are females. Agriculture is a good second with 1,229,555, and an easy first as an occupation for men with 1,134,714, followed by coal mining, which employs 971,236 persons, of whom 968,051 are men.

The figures for agriculture are very remarkable. For the first time since 1851 the number employed has increased, a diminution of 11.8 per cent. (using comparable figures) being converted into an increase of 5 per cent. Actually 69,475 more males were returned as employed in this industry than in 1901. The question whether this change is due merely to difference of classification or method is discussed, but no explanation along these lines is forthcoming. The returns of the Board of Agriculture and Fisheries of area under crops and head of live stock do not provide any definite confirmation of an increased agricultural development since 1901; the tentative suggestion is put forth that an extension of fruit farming and market gardening may have contributed in some counties to arrest the decline of the number of persons classified as farm workers.

With regard to women in industry, comparison is best made with the unmarried, as this group has been less affected by changes in the method of return. In both sexes the proportion occupied in the age group 10 to 15 has declined since 1901, but while the proportions of occupied males in age groups 15 to 20 and 20 to 25 have remained nearly steady, those of occupied unmarried women have considerably increased. In each successive decade up to 55 to 65 the increase in the proportion occupied was much greater for single women than for males.

From the tables showing the proportions occupied an estimate can be formed of the numbers of women available to recruit industries in such times as the present. The age group showing the highest proportion of occupied single women is 20 to 25, where it is 777 per 1,000; this compares with 974 per 1,000 males of the same age. In the words of the report, "The possibilities of recruitment of the ranks of labour from this source are, therefore, considerable, though not as great as is, perhaps, sometimes assumed. They may, no doubt, also be increased in times of stress by diversion of some of the existing labour from its normal employment, such as domestic service and the making of clothing."

In 1891 and 1901 the number of rooms occupied by a family had only to be recorded when the occupancy was of less than five rooms; in 1911 every occupier had to return the number of rooms in the occupation of his family, while, for the first time, a definition of the term "room" was attempted.

The commonest size of tenement was found to be that consisting of four rooms (nearly 25 per cent. of the whole); about 21 per cent. consisted of five rooms; tenements of three and of six rooms were about equally common, amounting in each case to about 14 per cent. of the total, so that over 73 per cent. of the total tenements were of from three to six rooms; 5.1 per cent. of the population were housed in tenements of ten or more rooms, 7.5 per cent. in tenements of not more than two rooms. Analysis of the population housed in tenements of less than ten rooms shows that a little more than 9.1 per cent. were housed under conditions allocating more than two persons to the room, a class designated in former census reports as "overcrowded."

It appears probable that the number of tenements of less than five rooms existing at the time of the last two censuses was much understated, seemingly on account of the form of question used, which led to the assumption that, when the number was unstated, the tenement really consisted of five or more rooms. This would explain the apparent increase of tenements of three rooms having more than two occupants to the room. Tenements of one and two rooms, which declined between 1891 and 1901, still further declined between 1901 and 1911. The tenement statistics for the county of London show considerable variations from those of the country as a whole, especially in the predominance of the smaller tenements. Of 1,000 tenements occupied by private families in London, 541 are of less than four rooms, 324 of from four to six rooms, and only 135 of more than six rooms; in England and Wales as a whole, the proportions are 255, 593 and 152 respectively.

The proportion of children under ten years of age to total population in each size of tenement is highest (27.4 per cent.) in tenements of two rooms, and gradually diminishes as the size of the tenement increases, being 6.4 per cent. in tenements of ten or more rooms. Tenements of less than five rooms comprised more than 70 per cent. of the total in twelve of the large towns (including London), the

highest percentages being 83.1 at South Shields and 82.9 at Gateshead. In twelve others the proportion was less than 25 per cent., the two lowest being Handsworth with 15.2 and Leicester with 17.5.

We next come to statistics of buildings. The number of inhabited buildings or "houses" was 7,141,781 compared with 6,260,852 in 1901; the average number of persons to an inhabited building was 5.05, against 5.20 in 1901. Among the large towns, the highest average was 8.23 at Devonport, the lowest, 3.97, at Halifax. Such comparisons are not, however, very illuminating, as size is not taken into account, a factor which also affects the value of contrasting tenement statistics.

DENTISTS AND MILITARY SERVICE.

THE Local Government Board has issued a memorandum announcing the arrangements agreed to for the time being by the Army Council with regard to dentists whose names appear in the current *Dentists' Register* and who are in actual practice. Men who were under 35 on January 1st last, and are fit for general service, unless exempted on local or personal grounds, will be available for military service. Men of 35 and over, as well as men of any military age who are not fit for general service, whose local claim for exemption is not upheld, may be granted exemption if they place themselves at the disposal of a Dental Service Committee, about to be set up, to utilize their services in some district where they are urgently needed. This Committee will contain representatives of the British Dental Association, a medical representative, and representatives of the Government departments mainly concerned. Its duty will be to ascertain in what areas there is urgent need for dentists, and to assist dentists who are exempted from military service for the purpose of practising in such areas in complying with that condition. The secretary's address is 19, Hanover Square, London, W.1. The Army Council reserves the right to take a registered dentist of any military age, and in any medical category, for duty with the army in his professional capacity if it wants him. The reason for all this is given in a footnote which states that the Central Tribunal "from evidence submitted to them are impressed with the danger of further reducing the number of registered dentists now in this country. Whether any particular dentist should be granted exemption must obviously depend to some extent upon the requirements of the place in which he practises, but they are inclined to think that unless it be shown that his services are not required he should be granted exemption." It will be observed that registered dentists of military age, but over 35, or unfit for general service, are to be given two alternatives—army conscription or occupational conscription—their professional services being made use of in either case. The Army Council, with the concurrence of the Local Government Board, intends, therefore, to apply to the registered dental profession a form of pressure which has not hitherto been applied to any other section of the community. There is plenty of evidence that in many districts there are not enough dentists for the needs of the civil population, and the army also, we believe, is under-staffed with dentists; but the proposed arrangement is open to criticism on various grounds. In the first place, no reference is made to medical men who are at the same time on the *Dentists' Register*. Presumably it is not meant that they should be affected, but that the Central Medical War Committee should deal with them as though they were in medical practice. This is an unsatisfactory position, and we should like to know that the Central Medical War Committee has formed a definite policy with regard to men with medical and dental qualifications who

are engaged in the practice of dentistry. Questions next arise as to the functions and powers of the new Dental Service Committee, which is to place out dentists in districts where they are urgently needed. The composition of this body does not suggest that it will possess the requisite knowledge of the dental needs of the community, or the machinery for obtaining such information. Again, what will be its criterion of dental needs? Already a considerable number of unregistered dentists have been exempted by local tribunals in the alleged interests of the teeth of the industrial population. Will the Dental Service Committee ignore the presence of unqualified practitioners in estimating the dental needs of any given district, or will it confine its attention to those areas in which there is a shortage of both registered and unregistered dentists? Such questions occur at once, and cannot be lightly put aside. The committee did not create the anomaly of the ubiquitous unqualified dentist, but we fail to see how it can do much good if it evades it. By the law of the land dentistry is a branch of medicine. The General Medical Council keeps the *Dentists' Register*, supervises dental education, and takes disciplinary action against registered dentists. The dental business of the Council is transacted, in the first instance, by a Dental Committee of the Council. Just as there is no separate General Dental Council, so it would seem undesirable to set up a distinct Dental Service Committee working altogether apart from the Central Medical War Committee, and unaided by its organization. The fusion of these two bodies would not, it is true, solve the problem of the unregistered dentist in relation to the needs of the industrial population; but a Dental Service Committee as a branch of the Central Medical War Committee would be in a far better position to acquire knowledge and take action than as an isolated body. The Army Council and those advising it do not seem to have taken a wide view of the matter.

FARM COLONIES FOR TUBERCULOUS SOLDIERS.

DURING the past year the National Association for the Prevention of Consumption has urged the formation of farm or garden colonies where discharged tuberculous soldiers, while regaining their health, may be trained in open-air occupations. At the annual meeting of the association on July 16th Professor Sims Woodhead sketched his own idea of a model farm colony. It should consist of a large enough tract of land to allow variety in the forms of cultivation introduced. The aim was not only to provide the patient with suitable and congenial work, but also to give him an occupation which should serve him as a means of livelihood, and a part of the farm colony, therefore, should be laid out on a generous allotment system. The colony should serve as an educational centre and show how much could be done to improve the conditions of farm workers and the hygiene of farm buildings. To that end every farm colony should be a microcosm in which the maintenance of health and the prevention of infection should be absolutely secured. He thought also that accommodation should be provided for advanced cases. As far as possible, the patients should do the whole work of the colony themselves, and even the overseers should be tuberculous patients who were coming to the end of their term. The patient should help to contribute to the cost by his own labour. The State must provide the land, and it might also contribute towards preparation of the land and erection of the general buildings. But the special buildings, particularly the hospital buildings, should be jointly provided by local taxation, Treasury loan, and voluntary subscription. As the patient got stronger a certain portion of his earnings should be set aside as a bonus for him when he made a new start in life. In the subsequent discussion Sir R. W. Philip suggested that there was some risk of opening the door of the farm colony too wide. If the colony was to be a dumping ground for all grades of tuberculosis, its purpose

would be defeated. There must be a clear separation between early and presumably curable cases and dying cases; for the latter, of course, humane provision must be made, but not that of a farm colony. The class of cases to be taken were those which lasted a much longer time than the sanatorium could afford to keep them. Sir William Osler said that the essence of success in the treatment of the consumptive soldier was that he must remain a soldier—that is, he must be under control. Discipline was a very necessary factor in the life of a farm colony. Sir A. Griffith-Boscawen, M.P., Parliamentary Secretary to the Ministry of Pensions, said that his department had been faced with the difficulty that medical boards had generally assumed that when a man was discharged for tuberculosis the condition was not attributable to military service, and the result was that until lately the man had been turned adrift without pension or other provision. In France in such cases the benefit of the doubt was given to the man. The conditions of the service might at least have brought out the disease earlier than it would otherwise have manifested itself. The policy now was to assume in all cases that the disease was the result of military service unless the contrary was clearly proved.

SELECT FLAPDOODLE.

RUMOUR, according to Skeat, is from a root *ru*, meaning to make a humming noise, as insects that gather together and fly away apparently haphazard, but keeping in a bunch. So with certain sorts of mankind, who love to fuss and hum and buzz in bunches. Instances are afforded by some kinds of members of Parliament and journalists. The war has produced several examples. For some months the buzzing was all about slackers who would not go and fight, and young men out of khaki went so much in dread of reproaches in public places that a buzzing arose that they should be badged. Now the buzzers are off on another breeze, and have their stings out for the recruiting department and its medical examining boards because they are endeavouring to do the irksome duty imposed on them by the Legislature, with the approval, if not at the instance, of these very same members of Parliament and journalists. No feebler, more illogical, case than was made during the recent debate in the House of Commons on the administration of the Review of Exceptions Act can ever have been put to a village debating society; one member after another got up and talked balderdash, yet Mr. Macpherson, for the War Office, threw over the recruiting department and medical examining boards, and put their critics on to a "select" committee. It may be that the methods of the recruiting department under the Review of Exceptions Act, the instructions issued by it to the medical examining boards, and the constitution and method of procedure of these boards call for inquiry. A large department—which in the old conscript countries has been built up through very many years of work and experience—has had to be improvised here, and it is more than likely that mistakes in principle and detail have been made, but to refer the matter to such a select committee as this was not the right way to put things straight. The "select" have been roving at large seeking out scandals, and have succeeded in unearthing a certain small number of mistakes made by medical boards—possibly five in a thousand of the men sent to the boards by the recruiting officers to be examined. We are in the midst, perhaps in the crisis, of the greatest of wars, and the proceedings of the "select" are sheer waste. They have caused the waste of acres of paper and of uncounted hours of work of honest printers; yet there is a great shortage of paper and of printers to do work that will help to get on with the war. Again, the armies in France, in Macedonia, and in Mesopotamia are in daily need of drafts to meet the daily wastage among the men who are doing their duty in the fighting forces. Every man whose name appears in the long casualty lists must

be replaced. But the efforts of the "select" have the effect of checking the replacement. The energies of the chiefs of the recruiting department are being used up to satisfy the curiosity of the "select," and the men—so to call them—who wish to shirk are clogging snooks at the local recruiting officers and invoking the names of the "select." There was another concession made as a result of this same debate which is not working well. The Government promised that all men who had served abroad and had been discharged from the army, but were now coming compulsorily under the Review of Exceptions Act, would be finally discharged if they made a claim. This may be only justice to many such men, but in this wholesale form the concession works practically as an injustice to others. Early in the war the Army Council, we believe, adhered to the old-standing principle that if a man could not be made fit to rejoin his unit in six months he should be discharged, and probably many men discharged in these early days are now fit to serve, if not in the fighting line, then in various capacities behind the front or in this country. As it is, men who were wounded later are not now being discharged automatically under the six months rule, but, after a proper interval of treatment, are examined with a view of ascertaining whether they can be of use to the army in any capacity; they may well feel that there is a discrimination against them. Nobody wants to bear hardly on men who have done their bit, but there should be even justice for all.

THE TREATMENT OF TETANUS.

A THIRD edition of the Memorandum on Tetanus, by the War Office Committee for the study of that disease, has been issued. The full text of the second edition of the memorandum was published in the *JOURNAL* of November 11th, 1916, p. 647. The new edition follows the general line of the second, but has undergone revision. In discussing the therapeutic or curative treatment, the Committee now states still more emphatically than before its opinion that "in acute general tetanus the best method of treatment lies in the earliest possible administration of large doses of antitoxic serum by the intrathecal route, repeated on two, three, or four days in succession, and combined, if thought desirable, with intramuscular injections," the latter being the appropriate form of treatment of chronic forms of tetanus, particularly localized tetanus limited to one limb. The Committee further states that experience has shown that in the treatment of acute general tetanus the best results are obtained from very large doses of serum, and that "the more acute the case the larger should be the dose of serum employed. The object is to saturate the body with antitoxin as quickly as possible, and to maintain the saturation. For this purpose from 50,000 to 100,000 units may be given during the first few days of treatment." Tetanus antitoxin is issued to military hospitals in two strengths, and for acute general tetanus the high potency serum, put up in phials of 8,000 units, should be used. In an introduction to this third edition the question whether the memorandum is to be looked upon as an army order or as a number of suggestions which may or may not be carried out, according to the inclination or judgement of the officers in charge of hospitals, is dealt with. It is stated that in so far as the memorandum concerns the prophylactic or preventive treatment it is to be regarded as an army order, but in so far as it concerns the therapeutic or curative treatment, as containing suggestions; for it has never been the policy of the army medical authorities to interfere with the treatment of the sick soldier by his medical adviser.

THE SOLDIER'S HEART.

CARDIOLOGISTS have approached the subject of the soldier's heart from many points of view, and the conclusions arrived at and the recommendations for treatment have been almost as numerous. In his recent Chadwick lecture,

published in the *Middlesex Hospital Journal* (May, 1917), Dr. J. S. Goodall has brought them under review and has roughly classed them as optimistic and pessimistic. The former all put faith in some form of treatment, but the latter form the majority. By analysis of a large number of cases he is led to the opinion that over-irritability, sometimes of the nervous mechanism and sometimes of the muscular, is the main feature of the condition generally described as soldier's heart. This excess of irritability may be due to emotion, overwork, excessive use of alcohol or tobacco, or to insufficient rest. Believing that a very high proportion of cases of Graves's disease are produced by shock, nerve strain or violent emotion, he regards many forms of cardiac irritability in young subjects as being due to hyperthyroidism. The relation of suprarenal activity to tachycardia is also discussed, but no positive conclusions can be drawn from the evidence available. The heart muscle may acquire over-irritability and the result produced upon the cardiac action will depend upon the integrity or otherwise of the paths of cardiac impulse, which in itself may originate elsewhere than in the sino-auricular node. From the clinical point of view the irritable heart, due to overwork and insufficient rest, is generally found to lie more or less horizontally and is described as "soft and squashy." A similar condition is noticeable among old men or among workers who suffer from chronic toxæmia of any kind and after infective fevers. As regards diagnosis it is maintained that the best test is the reaction to graduated exertion. It will be remembered that in his report on the results of observations at the Hampstead Hospital and elsewhere, Dr. Thomas Lewis expressed the same views and advised that method of diagnosis and prognosis in preference to any of the time-honoured physical signs. The practical outcome of the study points to the need for greater care in graduating the training of recruits. Over-strain, especially in the early stages of training, must be avoided and adequate rest must be provided after special exertion, more particularly in cases where the man has been recently the subject of any infective illness.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

ABOUT a year ago an appeal was made on behalf of the War Emergency Fund of the Royal Medical Benevolent Fund. This fund is intended to help medical men who, when called up to serve with the military forces, had to leave on very short notice, without time to make adequate provision for the continuance and maintenance of their practices during their absence. Such men have had to face a severe fall in income, while many expenses, such as rent, insurance, taxes, family maintenance, and education, could not be reduced. In a year or two after their return they will, it is hoped, recover their position, but in the interval they may stand in much need of help, and it is to meet such needs that the War Emergency Fund has been established by the Royal Medical Benevolent Fund. The list of those who have responded to the appeal made last year is published at p. 25 of our advertisement columns and contains many liberal donations. We notice, for instance, sums of £280 contributed by the West African Medical Staff in Nigeria through Dr. W. I. Taylor, of Lagos; of £150 (first instalment) by the Otago Division of the British Medical Association, and of over £95 collected from his friends by Dr. G. Maxwell Simpson. Such examples may well be followed by other medical organizations and members and Divisions of the British Medical Association, for the need is great, and the sum already received (£4,000) in response to the appeal made last year falls very short of the £25,000 which the committee managing the fund considers to be necessary. In this appeal the Royal Medical Benevolent Fund is supported by the Presidents of the Royal Colleges of Physicians and Surgeons in England, by the Directors-General of the Medical Departments of the

Royal Navy and of the Army, by the Regius Professors of Medicine in the Universities of Oxford and Cambridge, and by Sir John Tweedy, a past President of the Royal Medical Benevolent Fund.

THE WAR COLLECTION AT THE ROYAL COLLEGE OF SURGEONS.

MODESTY is an uncommon virtue and the more prized on that account, but it may be carried to excess, and this has happened with regard to the war collection at the Royal College of Surgeons of England. Though small, it is very interesting, but it is very badly displayed; it is crowded together in a small room not too well lighted. Not only are the stands too close together, but they have too many shelves, and there are too many specimens on each shelf; to inspect them properly the visitor ought to be something of a gymnast or contortionist, able to study a specimen by looking with his head through his knees. The error is the more striking because there is close by a well-lighted room, almost empty, which would afford ample space for the display of the specimens at a convenient level for the eye. We understand that the collection will be enlarged and rearranged for the opening of the winter session in October, but we would suggest that something might be done at once, for the collection now is not only interesting but instructive, and its instruction is wanted now by the surgeons who have to treat the wounded. There are already some bone specimens which throw a vivid light on what goes on in an infected bone wound; there is, for instance, one of an excised upper part of the humerus, but there are many others. We hope that Professor Shattock, the pathological curator, and the other authorities of the College, will look at the matter from this point of view—namely, the importance of the collection to surgeons at the present moment; it would be better to risk loss by a stray bomb than loss of knowledge now urgently needed.

MINISTERIAL CHANGES.

It cannot be said that the ministerial changes announced on July 18th have aroused any enthusiasm or materially added to the strength of the Government. The resignation of Mr. Austen Chamberlain is a real loss, the extent of which has only been accentuated by the masterly speech in which he announced his retirement. He has been a sincere friend of India, and has shown noteworthy appreciation of the importance of the application of scientific knowledge and method to the welfare and health of the teeming millions of that great country. Mr. Winston Churchill has another opportunity to prove his capacity for high office, and everyone will hope that he may show the judgement and constancy needed for that to which he is now appointed. He has a difficult task in succeeding Dr. Addison, who has been a member of the Ministry of Munitions since its formation, and as Minister has shown, to quote the words of the *Times*, "capacity, foresight, and no little courage in grappling with difficult industrial conditions." As Minister in Charge of Reconstruction (without portfolio) he will have no easy task, for which, however, his long apprenticeship to social work particularly qualifies him. Reconstruction will include problems of demobilization, some of which are already arising; they will affect the medical profession not only directly, inasmuch as the number of medical men to be demobilized eventually is large in proportion to the total number of the profession, but also indirectly, through the effect of the demobilization of our large combatant forces, and the return of the men to civil life. Reconstruction is not altogether a matter for a far-off time of peace. In order that the best possible may be obtained from the nation, reconstruction must be continually going on, even in time of war, and it is possible that the new Minister of Reconstruction may find matters in connexion with the relation of the Army Medical Department to the civil community and the civil medical profession which merit his attention.

THE QUEEN'S VISIT TO FRANCE.

DURING the visit of the King and Queen to the armies in France Her Majesty spent most of her time in seeing the medical arrangements behind the lines. A comprehensive tour had been arranged by Sir Arthur Sloggett, Director-General A.M.S., and, acting on his advice, Her Majesty found it possible to visit the more representative hospitals at all the bases. Particular attention was paid by the Queen to the arrangements for the nursing staffs, including their mess huts and sleeping quarters, and the homes for sick sisters and for those who are convalescent. The Queen also inspected the convoys, which at certain bases are in charge of women drivers and are responsible for the carriage of the wounded between the trains and the local hospitals.

PROFESSOR HARVEY LITTLEJOHN, Dean of the Faculty of Medicine, University of Edinburgh, informs us that he knows of several senior students who are anxious to do hospital work or to help in practices during the summer vacation; he will be glad to answer communications. From inquiries occasionally received it appears that there are senior students at other schools who are anxious to act as residents in hospitals, temporarily, but we are not aware how far the hospitals are prepared to entertain such proposals.

In a leading article published by the *Times* in one of its issues last week there is a passage which shows that the respective duties of the Army Medical Service in India and the Indian Medical Service were not understood, or had been forgotten, and as the error has not, so far as we have observed, been corrected, we think it necessary to call attention to the facts (see p. 83). In dealing with the responsibilities of individuals, the *Times* article spoke of excuses made for the Indian Medical Service. We are not aware that it has been considered necessary to make excuses for any officers of the Indian Medical Service. Sir William Babbie, who was mentioned by name in the *Times*, is a distinguished officer of the Army Medical Service, and to the same service belong Surgeon-Generals MacNeece and Hathaway.

Medical Notes in Parliament.

The Mesopotamia Report.

SHARP CRITICISMS IN THE COMMONS.

THE debate in the Commons on the Mesopotamia report, on July 12th and 13th, was somewhat sensational in character on account of its reaction against the findings of the Commission and also because of the unexpected resignation of the Secretary of State for India, Mr. Chamberlain, who nevertheless made a vigorous and spirited defence of his conduct. At the onset the Attorney-General, in stating the legal position which the Government had been obliged to consider, reminded members that the Commission had no judicial function and that the evidence had no legal value. Therefore, if any action was to be taken against the person censured a fresh inquiry must be instituted. Mr. Chamberlain in his speech showed that the report was misleading in certain essential particulars. Mr. Balfour in defending Lord Hardinge censured the censors. Mr. Asquith surprised the House by alleging that he had nothing to do with the critical decision for the fateful advance towards Bagdad, and Mr. Lloyd George took up earnestly a suggestion by the ex-Premier that in the existing conditions of the war there should be no further proceedings inasmuch as they would not conduce to the prosecution of the war, which was the supreme need. Such were the principal features of the Commons' discussion.

The points brought out can easily be indicated. Sir F. E. Smith, in his trenchant speech at the opening, quoted the terms of reference to the Commission in proof that it was appointed to report upon the responsibility of departments of Government concerned in this campaign,

and not to pronounce a final judgement on any individuals. The witnesses were expressly indemnified both in regard to their evidence and the production of documents. No charges were made, and none of the persons censured had been recalled for the purpose of presenting any defence to the allegations which were evolved in the course of the inquiry. After each witness had given his evidence he departed, and Sir F. E. Smith told the House emphatically that it would be a travesty of justice if disciplinary action were to be taken upon findings reached by the Commission in these circumstances. No court, he said, would convict the meanest criminal under such conditions. In illustration of what happened, he said that a favourite method of eliciting a conclusion was for a member of the Commission to say to a witness in the box, "Now, tell me, who do you think is responsible on the whole for this?" The Attorney-General was unable to quote the evidence, because, of course, if any quotation had been made in the House, all the evidence would have had to be presented, and it is reckoned against the public interest that the notes of evidence should be issued at present. He next discussed the question what course could be taken. He showed that a court-martial at the present stage could not be contemplated because of all the lengthy preliminaries that would have to be gone through with witnesses scattered over great distances and with the probability that the matter would not be concluded within the period fixed by the Statutes of Limitations for such cases. The Government favoured the use, for setting up a fresh court of inquiry, of an Act passed last year, to meet a case in which both military officers and civilians were involved. This provided that three military officers and two judges or ex-judges should form the tribunal. The Attorney-General admitted that the procedure was not exactly suited to the present matter. In fact, as Mr. Montagu afterwards pointed out, civilians would come before the court only as witnesses, whereas military persons involved would be the subject of the court of inquiry. Indeed, it appeared as if unless the military subordinate chose to defend himself by making a charge against the officer, the officer's conduct would never come before the inquiry. The Attorney-General did not contest this definition, but maintained in effect that the tribunal would serve the purpose. He intimated that the Government was willing, if the House preferred it should do so, to set up a special tribunal by means of a bill. In either case the Government would pay all expenses for the defence by counsel of persons involved. But the one thing to which the Government was absolutely committed was that under no circumstances would it sanction punitive action as the result of the report of the Commission.

It became quite evident as the debate proceeded that the House regarded the first proposal of the Government for an inquiry as unsatisfactory. But it was not until Mr. Chamberlain rose that the situation really became dramatic. Lord Hugh Cecil, who was a member of the Commission, said earlier in the debate that there was no idea, he believed, of punishment in the criminal sense of the word on the part of the Commission. It had been concerned with administrative efficiency and responsibility, and he declared his amazement at finding it was supposed to have recommended that the War Committee of the Cabinet should be impeached. Mr. Chamberlain startled the House by announcing that he had tendered his resignation of his position as Secretary for India because he felt that he could not appropriately hold it while his conduct was under censure and subject to inquiry. He mentioned that this decision was final, and its acceptance was only delayed by the absence of the King from the country. Mr. Chamberlain's speech was one of the ablest he has ever delivered, and, though he apologized for frequent reference to notes, saying that he made these references because of the need for accuracy, he did not thereby weaken his hold at the House in the slightest degree. In particular he was concerned to correct a misleading impression given by the Commission in its suggestion that the War Committee took the course it did. As to the advance towards Baghdad "for political considerations" because there was "great need of a striking success in the East," Mr. Chamberlain, in tones of warm indignation, said that by the mutilation of telegrams the Commission had led people to think that the Government, to restore their shattered fortunes, had deliberately sent men on a hazardous gamble. To correct this matter, Mr. Chamberlain paraphrased the telegram as it ran in the original, filling in the gaps left in the report of the Commission. The blank which he supplied made the passage read as follows:

It would seem that Persia is drifting into war on the side of our enemies. The Arabs are wavering and will probably join the

Turks unless we can offer them a great inducement. We are therefore in need of a striking success in the East, both to prevent Persia being carried away and to secure the support of the Arabs.

Mr. Chamberlain was interrupted by Sir Archibald Williamson, another member of the Commission, who said that it was impossible for the Commission to publish this matter fully, but Mr. Chamberlain retorted that no opportunity for misunderstanding ought to have been allowed. He went on to tell the full story of the circumstances in which the Baghdad advance was sanctioned. He brought out the fact that the matter was referred to the combined general staffs, and that the War Committee acted on the unanimous advice of their military experts both at home and in India. He also stated, on information from Sir John Nixon himself, that the Turkish reinforcements which turned the scale actually arrived only on the day of the battle of Ctesiphon.

Mr. Chamberlain afterwards dealt with the hospital arrangements. He said he did not offer one word of excuse or palliate the horrible breakdown which had occurred. But he pointed out that he was for fifteen or sixteen months without information upon which he could act, and he claimed that when he could he did so with all possible energy. As to the private telegram to the Viceroy regarding the threatened concentration of 60,000 Turks which the Commission blamed him for not forwarding to Sir John Nixon, Mr. Chamberlain said that it never was supposed to be the duty of the India Office to convey military intelligence to India. That was done by the War Office, and Mr. Chamberlain put it that this telegram was really a personal matter.

Mr. Balfour was even stronger in his criticism of the Commission. After deploring that Mr. Chamberlain had resigned, he said that in his opinion the Commission was quite as much on its trial as any of the gentlemen they had arraigned. He referred to the way in which they had blamed Lord Hardinge for not transmitting to Sir John Nixon the telegram about the threatened concentration of Turks, and said that so far from either Mr. Chamberlain or Lord Hardinge being criminals in that matter, if any persons were criminals it was the Commission, who must be so labelled for presenting the matter as it had. Mr. Balfour warmly defended Lord Hardinge, saying that the latter had twice tendered his resignation of the permanent Under Secretaryship of Foreign Affairs, but that he (Mr. Balfour) had refused to accept it. In regard to the transport deficiencies and the medical breakdown Mr. Balfour presented his own view without hesitation. He reminded the House of the way in which India had been bled white in providing men and supplies, including medical supplies, for theatres of war outside India. He recalled that Lord Hardinge had in pre-war years deliberately exceeded by two millions a year the expenditure reckoned by Lord Nicholson's Commission to be needed for military purposes, those purposes being defined as security from external land attack and internal revolution. He pointed out the exiguous position in which the Indian Government had been placed, and said in short that India, like Great Britain, was unprepared for this war, and that what had happened was very like what had happened at home when we found ourselves short of munitions. He further insisted that such a catastrophe as this always occurred when an army advanced far into a savage country where the wounded could not be left, if as in this case, a reverse occurred. He held that the Government had had to depend upon Sir John Nixon's assurance and the military expert opinion that the advance could be made; if it could have been done there would have been no breakdown, inasmuch as instead of having 3,500 wounded there would not have been more than 500.

At the sitting on Friday, July 13th, Sir Archibald Williamson, a member of the Commission, defended the report, but asked the House to distinguish between the conclusions of the report and the conclusions of the newspapers, which, he said, were entirely different. He defied any man with balanced judgement to read the report carefully and to read what was said by the newspapers and to find the same result from the two readings. Captain Aubrey Herbert said that he had returned from Mesopotamia burning for the punishment of certain men, but even more anxious for the salvation of the troops there. What was the debate doing, he asked, to help on the war? It seemed to be a national habit whenever we got into difficulties to appoint a commission to increase them. Loss of time meant loss of lives. There had been a sub-war all through the war of one department against another. No man had a greater admiration for the R.A.M.C. officers in the field, which he had witnessed on many fronts; their sacrifices were without limit, but the corps had suffered from the aggressive departmental spirit. There

had been a spirit of jealousy; in Mesopotamia it was generally considered that the Indian Medical Service was more broad-minded and tolerant. There had been a vast improvement in the R.A.M.C., and the far-reaching reforms introduced had made the system in France almost as perfect as it could be. He deplored, however, the lack of frankness in dealing with deficiencies in Mesopotamia and the Dardanelles which affected the lives of men, and he said that where that lack of frankness occurred, it seemed to him as bad as treason in the field. At the same time, and especially in the case of Sir John Nixon, whose qualities he eulogized, Captain Herbert deplored newspaper trials.

The speeches of Mr. Asquith and the Prime Minister came near the end of the debate. The ex-Premier, who scarcely ever refers to the newspapers, quoted from a "paper" which, he said, was called *The Morning Post*, wherein he had been accused of being the "villain" of this piece and Mr. Chamberlain his victim. Mr. Asquith mentioned that during the period when the decision for the advance towards Baghdad was taken he was for ten days on the sick list and forbidden by his superior authority (his doctor) to attend to any public affairs. He defended the decision, however, and claimed to be an accessory after the fact. In face of the unanimous expert opinion in favour of this undertaking the War Cabinet would have been told that they were a set of "timorous, pigeon-livered politicians, cowardly, fearful to take risks," if they had refused to accept that advice. Coming to the present situation, Mr. Asquith spoke of the difficulty of setting up a new tribunal, and, as already has been stated, raised the question whether in the present warstrain it was desirable to spend time and labour in going over this matter. He asked whether it might not be better in the existing circumstances to attend to "the capital matters"—a phrase which he drew from a quotation from Burke sent him by a correspondent a few days before. That passage concluded, "Applaud us when we run, console us when we fall, cheer us when we recover, but let us pass on; for God's sake let us pass on."

The Prime Minister, somewhat to the surprise of the House, returned to the first of the two alternative proposals made by the Attorney-General on the previous day and declared his preference for it, believing that it would be workable and adequate. He stated, however, that the matter seemed to him to be one for the House, and he went on to take up the suggestion of Mr. Asquith that it might be better not to set up another tribunal. He made perfectly plain his wish that, if offences had been committed and they were serious, they should have severe punishment, but he asked the House to reflect that twenty millions of men were at that hour interlocked in deadly conflict for the future of the world. He told the House that for two or three days the Army Council, the chiefs of the army, the War Cabinet, the House of Commons, and the House of Lords had been discussing the methods of dealing with the findings of this Commission, which had nothing to do with the practical prosecution of the war. He mentioned, too, that he had been called from a meeting of the heads of the Admiralty and of shipowners on the important question of protection against submarines, in order to give his mind to this subject. He appealed to the House not to lose its sense of perspective, but to rise above these things and to say to the Government: "Get on with the war."

The only subsequent speaker was Commander Wedgwood, author of the minority report, and the debate then lapsed.

Sir Henry Craik on the Contradictions of the Report.

In the course of the debate on July 12th on the Mesopotamia Report Sir Henry Craik said he had a large number of constituents who were in the medical profession, especially in the Indian Medical Service and in the R.A.M.C. He had studied what the report said with regard to the profession, and found its conclusions vague, indiscriminate, and even contradictory. In illustration, he quoted paragraph 111, which said that passages in the evidence of Lord Hardinge, Surgeon-General Hathaway, "and other responsible witnesses" might lead to the inference that the medical breakdown in Mesopotamia was due to the shortage of ordinary river transport, for which, of course, the medical authorities were not responsible. The report said that if this were true it would follow that the medical authorities must be relieved of blame, yet it went on to say it could not agree with such a contention. In other paragraphs of the report the Commissioners pointed out also that if the medical authorities were not responsible for the ordinary river transport they must be relieved of all blame, and yet

elsewhere said that, in their opinion, the known shortage of ordinary river transport, if anything, aggravated rather than palliated the omissions of the medical authorities. Sir Henry asked how these contradictions were to be reconciled. It seemed to him that the Commission desired to find in some way or other a scapegoat and had found him anywhere except in the right direction. The long history of the medical services in India had been a fight against the most miserable cheese-paring by the financial authorities in India. He put far more trust in the conclusion of the Vincent-Bingley Commission than the more sweeping conclusions of the Parliamentary Commission. The Vincent-Bingley Commission urged over and over again that the evil had come from the way in which the medical service had been starved. Referring to the position of Sir William Babbie, Sir Henry Craik said that because in the nine months he was in India he did not reconstruct the whole medical service, breaking through the bonds and shackles that had been imposed by years of service, he was blamed. That single reflection by the Commission, constituted as this was, on a man with the record of Sir William Babbie, was an absolute mistake. In concluding his short speech Sir Henry protested that the medical men should not suffer in this way whilst the Financial Secretary to the Indian Government was given, as he understood, a higher and more important post.

DEBATE IN THE HOUSE OF LORDS.

The debate in the Lords, which also took place on July 12th and 13th, did not add much information. Lord Lansdowne, speaking as a former Viceroy, ascribed much that had happened of late in India to the changes made in 1905 and 1908 in the military system. He referred especially to cutting out of a supply member from the Council, when the "one man" arrangement was made. The supply member was the official to whom the India Government would have looked when the questions as to transport and supplies arose in regard to the advance to Baghdad. Lord Loreburn construed the report as not reflecting on the honour of any one, but as simply saying that there was want of foresight and that there were errors of judgement. He asked whether any one doubted that this was the absolute truth. He was against the appointment of a new court of inquiry. He saw no ground for imputing to any of the officers such conduct as would justify a court-martial, and as for the civil servants, if the Government thought that any should not remain in the service, the Government had the remedy in its own hands. Lord Curzon, in replying at the close of the discussion, assured the House that the Government had no desire to minimize the gravity of the report nor to condone the errors it revealed. Neither did it desire to condemn any one unheard. The public was anxious that the guilty should not escape, and he earnestly hoped that they would not. But it seemed to him that the demand for victims had almost degenerated into the witch hunting of barbaric times. Lord Curzon added that the things which were the subject of condemnation in the report might have been avoided if they had not been working with a radically unsound and vicious system of administration in India.

THE GOVERNMENT DECISION.

Mr. Bonar Law stated on July 18th that the Government, after further consideration of the action which ought to be taken in regard to individuals whose conduct was criticized in the report, had decided not to proceed further by way of a tribunal set up either under the Act of last year or by a special Act. In coming to this decision it had been influenced by the undesirability of diverting the efforts and energies of the legislature and executive at this critical stage from the prosecution of the war. In regard to soldiers, the Government had decided that they should be dealt with in the ordinary way by the Army Council, whose decision as to the action to be taken by it would be announced as soon as possible. He concluded by stating that the Government had decided not to accept the resignation of Lord Hardinge (Permanent Under Secretary, Foreign Office). A debate raised by Mr. Dillon on the adjournment turned entirely on the position of Lord Hardinge. On a division Mr. Dillon's motion was rejected by 171 to 81.

Army Medical Officers' Pay.—Colonel Gretton asked Mr. Forster whether he was aware of the disparity between the pay of medical officers belonging to the Territorial Force and those who had recently joined the Army Medical Corps, and if he was aware that majors serving

as medical officers in the Territorial Force received the same pay as a recently joined lieutenant of the Army Medical Corps. Mr. Forster replied that the Territorial Force officer was paid at the same rate as the regular R.A.M.C. officer of the same rank and services, except that only embodied service counted for increase of pay in the same rank. The comparison which Colonel Gretton wished to make was probably that between the pay of the Territorial Force officer and of the temporary officer engaged on special contract terms during the war. When allowances and terminable gratuities were taken into account, the major of the Territorial Force received considerably more than the special contract officer.

The Pay of Admiralty Local Surgeons.—Mr. French asked whether local surgeons and agents of the Admiralty were receiving only 2s. 6d. per patient for professional attendance and supplying medicine to the Coastguards and men of the Royal Navy and 1s. per mile one way for locomotion expenses. Dr. Macnamara replied that the rates were, with a few exceptions in which the higher rates were warranted, 2s. 6d. per visit to or consultation with each patient (and not as the question might perhaps imply, 2s. 6d. a case). Only one application for increased remuneration had been received during the year, although there were some 550 surgeons and agents. In the circumstances a case for a general increase had not been established. In answer to another question, Dr. Macnamara gave particulars to show that between 84 and 85 per cent. of the accounts received in April and May were paid within two months of receipt, 70 per cent. being paid within six weeks. Moreover, arrangements were in force by which payments on account amounting to any claim exceeding £10 were made immediately on receipt.

The War Pensions Bill.—The War Pensions Bill was read a second time on July 17th after being amended at the instance of the Minister of Pensions. The bill winds up the Statutory Committee, transfers the powers of that committee to the Ministry of Pensions, authorizes the Ministry to set up a Special Grants Committee, and makes certain provisions with regard to the Royal Patriotic Fund. The Ministry will administer the warrant of March 6th directly, determining whether a person, including widow, dependant, or parent, is entitled to a pension under the terms of the warrant. The Special Grants Committee will have power to supplement pensions deemed to be insufficient in any particular case, and will, in particular, have power to increase the allowance to a parent of 15s. a week or more under the warrant to a maximum of 30s. The money in the hands of the Statutory Committee—about £12,000 or £13,000—received from voluntary subscribers, will be turned over to the Royal Patriotic Fund for use in very hard cases that cannot be met either by the Ministry or its Special Grants Committee.

Army Medical Examination Committee.

At the meeting on July 12th of the House of Commons Committee on Army Medical Examinations, Mr. Mooney presiding, evidence was given by Sir Ryland Adkins, M.P., a member of the Northamptonshire Appeal Tribunal, and formerly chairman of the General Recruiting Committee of Northamptonshire. He was of opinion that the doctors forming the boards were overworked and had to do things too quickly. The medical boards should, in his opinion, have power to call before them any doctor who had given a certificate in respect of a man called up; and the medical man so summoned should have a reasonable allowance for appearing before them. He further suggested that there should be a medical tribunal to which a man could appeal if his category was raised by his commanding officer and medical officer.

Mr. A. Richardson, M.P., Chairman of the Law Society Appeal Tribunal, gave some particulars of cases sent up from this tribunal to the Special Medical Board. Of the 120 cases submitted for re-examination 38 were of men passed for general service by a local medical board. Of these 32 were on re-examination rejected or placed in lower categories. He suggested that where a man had to make an irrevocable decision, such as the sale of a business, the tribunal should have the power to say that he should be finally examined before he took that step. He further suggested that a tribunal to consist of civilian and military members should be set up to inquire into cases on the part of members of medical boards, and with power to suspend any member who was guilty of gross neglect.

The committee adjourned until July 16th.

Evidence was given on July 16th by Colonel Peterkin, Director of Medical Service in the London District. He said that following upon a letter received on September 16th, 1916 (in terms such as had been quoted by previous witnesses), he sent out a circular to the boards in his district, calling their attention to the large number of medical rejections. He mentioned that some of the boards had over 40 per cent. of rejections, and said that they must be brought down to the very lowest proportion.

The Chairman produced returns showing the comparative

number of rejections in the various districts before and after the circular was issued. This was as under:

		Before.	Fortnight After.
		Per cent.	Per cent.
Whitehall	(1)	20.4	4.6
	(2)	28.4	9.9
	(3)	17.3	6.8
White City	(1)	31.4	12.8
	(2)	32.7	15.9
Camberwell	(1)	26.2	23.6
	(2)	21.9	18.2
Stratford	(1)	9.4	4.9
	(2)	17.1	6.5
Shoreditch	... ..	21.5	7.0
Chelsea	... ..	43.6	3.1
Holborn	... ..	28.1	7.7
Battersea	... ..	28.8	9.5
St. Pancras	... ..	38.4	8.9
Woolwich	... ..	28.8	9.8

The witness was subjected to a lengthy examination by Mr. Pringle as to the lessening of the rejections. He accepted the principle that men earning a livelihood in civil life could do some work in the army, but said that the instructions to the medical board had to be read in the light of common sense. Any man with serious heart disease would not be passed into the army. He had no doubt that errors had been made and always would be. It was quite possible that numbers of men who had passed into the army by medical boards had within a few weeks found themselves in hospital; that had happened even in peace times occasionally. Questioned on the terms in the circular he issued, Colonel Peterkin held his suggestion to be chiefly for the retention of men in C 3.

The decisions of the Mill Hill and the Hounslow Medical Boards were criticized at the sitting on July 17th by Mr. E. S. W. Hart, secretary to the Middlesex Appeal Tribunal. Speaking generally of the work of the medical boards which had been reviewed by the Middlesex Appeal Tribunal, he said that examinations began to be most unsatisfactory about the middle of 1916. There had lately been an improvement.

Mr. Donald Maclean, M.P., Chairman of the London Appeal Tribunal, quoted a statement by Mr. Barnes, the Pensions Minister, as showing that there were many thousands of men still in the army who ought never to have been there. This was inferred from the pension cases which came before Mr. Barnes's department. On the point of need for care in passing men, Mr. Maclean said it must be borne in mind that the country was getting "very near the bone" in respect of recruitable men who were fit in any degree of army medical fitness. The public should not lose sight of the fact that the branch of the army concerned with medical examination and classification was more or less a scratch organization, and every allowance should be made for mistakes in the very remarkable work that had to be done; there was still an amount of hasty and ill-considered classification of men for the army, and there was also a good deal of malingering. He considered that appeal tribunals did admirable work in adjusting the mistakes made by medical boards throughout the country; that medical men as well as politicians were liable to make mistakes. Mr. Maclean was not altogether in favour of the appointment of men "at the top of the tree" to compose the special medical boards; there should be one hundred special medical boards all over the country. Doctors could, he believed, be easily found from the large number of fair-minded men who would command the confidence of all sections of the country. They need not be specialists of world-wide eminence, but men of common sense and sympathy, and of sufficiently high medical attainments to say whether from a common-sense point of view a man should render military service or remain in civil life. The witness was asked by the Chairman of what value this arrangement would be if the category of a man after enlistment was liable to be changed by a commanding officer and medical man. Mr. Maclean replied that he was not dealing with that point, but speaking only of his experience of tribunals. He fully agreed that in a number of cases a man's condition might improve after enlistment.

THE British Museum (Natural History), South Kensington, S.W.7, has issued two wall placards, the one on "the fly danger," and the other "the mosquito danger." Both have drawings of the insect, and, in the case of the mosquito, of the larva and pupa as head pieces. Below are printed very clear instructions as to their breeding places, their destruction, and preparations for protecting rooms and individuals. We may quote the sunlight trap for flies: "Close all windows and doors, and darken all windows except one, freely dusting the one light window with Keating's powder." In trying to expel mosquitos, it is advised that a well-lighted window or door should be left open for the insects to escape, and shut half an hour after fumigation with Keating's power or cresol. We hope that both placards will have a wide circulation both in this country and overseas. There is sometimes difficulty in obtaining the publications of the Natural History Museum, but we assume that in this case the placards, the price of which is 4d. each, will be sent on an application, accompanied by a sufficient margin for postage.

THE WAR.

MEDICINE IN THE SPRING OFFENSIVE.

CHANGES.

It is impossible to be at a casualty clearing station at the front without realizing that one is close to a war, and it is impossible to be anywhere near the front without realizing that war is progressive. The front is a world not only of constant movement but of constant change. Divisions come and divisions go, and camps erected to-day are moved to-morrow.

Even when trench warfare had so long persisted that there seemed to be no other form of warfare local changes were constant, and during the past twelve months, when large sections of the British line have advanced considerably, the changes have not only been constant but general. The armies have grown persistently, centres of activity have moved, and arrangements of medical units have been affected correspondingly. Indeed, the extent to which they have been affected has exceeded that of other units. For front line medical units have a way of becoming rapidly very elaborate institutions. Many of the advanced dressing stations, for instance, are very solidly built structures. So, too, are often the rest camps and other annexes of field ambulances, while, as is well known, casualty clearing stations rapidly develop into real hospitals. Nevertheless, at almost a moment's notice the word comes, and off they go; however elaborate and beautiful, their existence is ephemeral. Possibly their habitations are taken over by a unit of the same type; possibly by another branch of the army altogether; possibly they are broken up; possibly our allies get the benefit of them.

At the bases the position is rather different. Here it is possible to have no very acute evidence for weeks together that a war is in progress. Though there are always patients suffering from wounds, the sense of progress and movement is lacking and the general feeling may be one of stagnation. But even here there is no real stagnation. Hospitals are enlarged and hospitals are improved; changes of staff are frequent; new treatments are tried or established, and a hospital which has previously been accustomed to receive one class of case finds that it is called upon to do a new kind of work. This has always been the case, and of late the great increase in the size of the British Forces in France has been made apparent by the springing up of new convalescent camps, and the favourable progress of the war evidenced by the gradual moving up of camps of the same order which are known to have been previously working elsewhere.

But beyond this there is evidence of a change not perhaps perceptible to those who stand too close. There is a tendency to make the front line medical units play a larger and larger part in the general medical arrangements. The proportion of operations undertaken at the front grows steadily larger as the result of a definite policy on the part of the medical authorities, which must undoubtedly be greatly to the advantage of the wounded man; its net effect on the base hospitals, however, must be sooner or later to alter the character of their work. They will be merely resting houses between the hospitals at the front and those at home.

COMPARISON WITH THE SOMME.

The principles that underlie the arrangements for the collection, evacuation, and treatment of casualties during an offensive are the same on all occasions, but their application differs with the precise circumstances. Thus, in the Somme offensive last year the advances were never deep on any one day or during any week, and positions were constantly being lost and won. Consequently there were frequently occasions on which considerable numbers of wounded men could not be brought in forthwith; and as the weather was rainy, though not cold, their condition was often very bad when they were picked up.

Little by little the extent of the advance deepened, and the fighting troops got further and further away from the advanced dressing stations, main dressing stations, and casualty clearing stations that had been organized. The fighting, moreover, took place in a hilly country of woods and loamy fields, and as miles of it had been converted by heavy rain and shell fire into thick mud, the movement of

casualties became increasingly difficult as time went on. The roads, initially very few, were badly cut up and crowded with traffic, so that the progress of ambulances was slow and difficult. For long it was impossible to make new roads or run up tramway lines on which stretcher lorries could be carried.

THE ANCRE.

In the Ancre offensive the advance was rapid and prolonged, so rapid that the fighting troops soon got many miles away from the main dressing stations and the lines of casualty clearing stations behind them. For several of these miles the roads were so cut up that motor ambulances could not traverse them, and there was one particular place in front of the main dressing stations which for some time could not be traversed even by horse ambulances. For a stretch of country immediately behind the fighting troops the roads were good, and from this point to the roads nearer the old British line the patients were conveyed partly by hand carriage, partly by wheeled stretchers, partly by such horse ambulances as had managed to get through. But arrived at the broken ground they all had to be off-loaded and carried for a mile or more by hand and then reloaded on ambulances on the other side. Consequently the time taken in reaching the casualty clearing stations was longer.

VIMY.

In the Vimy fighting the position was again different. The advance was rapid and completely successful from the beginning. Consequently the wounded were not left out owing to positions being taken and retaken. In addition, the depth of advance did not extend for more than a few miles. It is true that these few miles were, as a rule, a sea of mud, and made bearer work exceedingly difficult and profoundly exhausting; but as soon as the old British line was reached there were tram-lines on which stretchers could be carried and decent roads along which ambulances could move to the main dressing stations. But although these roads were initially good and the tram lines were very soon pushed forward over the mile or two of mud, the weather conditions were deplorable. When it was not raining it was snowing, and the snow was often heavy. Movement therefore from the advanced dressing stations to the main dressing stations was often difficult. Furthermore, some of the main dressing stations were necessarily at a rather long distance from the casualty clearing stations serving them; this was particularly true of the upper two-thirds of the line of offensive. The condition was quite inevitable, because the area is one in which military and civil conditions made it impossible to place casualty clearing stations as close to the trenches as elsewhere. The roads, moreover, are hilly and difficult to keep in good repair, and the heavy snow and rain cut them up with great rapidity. Hence the time taken in reaching the casualty clearing stations from the main dressing stations was often long.

MESSINES.

In the Messines offensive the picture was again quite different. The action was, from a medical point of view, more in the nature of a huge trench raid than an offensive. It was short and sharp. The casualties did not exceed expectations and the military programme was successful in every detail. This area has been longer held than any other, and the medical arrangements had been made long in advance, and the military operations having been carried out precisely according to programme, the medical arrangements were likewise successful. In all cases the success of the medical arrangements largely depends on the success with which such matters as the total number of casualties and the points at which they will chiefly occur have been calculated, and that depends on the degree to which the offensive is a military success. The calculation involves, of course, a careful forecast by the medical authorities of the military situation on the day of battle, and this is only possible when the official and personal relations of the D.M.S. of an army with the commander of that army and the rest of the staff, as also those of the principal medical officers on the staffs of the commanders of corps and divisions, are of such a nature as to allow of the closest co-operation.

As already suggested, all the anticipations in regard to the Messines offensive were, in the event, justified to the

full, the result being that the advanced dressing stations and the collecting aid posts for slightly wounded men were found to have been placed exactly where they were required. Furthermore, they had been linked together by tramway lines carrying lorries for the conveyance of wounded men, and all roads along which ambulances were to travel had been carefully determined in advance. Equally careful arrangements had been made close to the field of action for separating the severely wounded from the slightly wounded or walking cases, and for winnowing out from the walking cases the men who were merely exhausted or overstrained. Many men, of course, found their way to the rear on foot, and along the roads which it was known they would probably travel coffee stalls had been placed; when they arrived at certain points they were able to continue their journey by means of a series of char-à-banc cars, which plied continuously between the picking-up point and the formations in the rear for slightly wounded or exhausted men. The net result was that the medical units doing operative work were never overcrowded, no patients reaching them except those who really required attention. They were visited during the course of the offensive both by the Commander-in-Chief and the Director-General, and after the affair was over we hear that the commander of the army concerned issued a general order thanking the medical units for their work, and deputed the Director of Medical Service of the army concerned to visit all the field ambulances which had taken part in the operations and thank them in his name.

MEDICAL CASUALTIES.

It is clear, therefore, that on this, as on so many previous occasions, the medical service thoroughly justified its reputation. The casualty lists that have since appeared indicate that the R.A.M.C. by no means escaped scot-free, but any one who is acquainted with the condition of modern warfare must know that this is practically inevitable. Casualties do and must continue to occur, even though the medical officers are not expected, and are in fact forbidden, to expose themselves more than is absolutely necessary for the performance of their duties. Their right place is now considered to be with the head quarters of the battalions to which they are attached, and it is no longer their duty to hunt under fire for places which may serve as regimental aid posts when battalions are taking part in an advance. Such precautions may no doubt lessen, but cannot prevent, casualties among battalion medical officers in the conditions of modern warfare, and they leave unaffected the dangers to which field ambulance medical officers in charge of stretcher parties are inevitably exposed.

CLEANSING OF WOUNDS.

The view held by the Director-General of Medical Services in France and his staff is that the most important point in the treatment of casualties is the mechanical cleansing of their wounds and the excision of all badly torn tissues, and that so far as possible such treatment should be administered before a patient is evacuated to a base. Casualty clearing stations as a whole have been putting this principle into effect for more than a year so far as ordinary trench warfare is concerned, but it has not been easy for them to do so when large offensives are in progress, or the fighting is for some reason unusually heavy. To meet the difficulty of large offensives special arrangements have been made this year, the principle of operating teams by which the casualty clearing station staffs are reinforced on the occasion of offensives being progressively increased; the net result is that among patients who required operations at all, the proportion of operations undertaken close to the real front was very much larger during the Messines fight than on any previous occasion. The advantages of this increased proportion seem to be amply demonstrated by the reports as to the condition in which the wounded reached base hospitals.

In the fortnight following the attack the mortality seems to have been only 1 per cent. of all cases; there were hardly any cases of secondary haemorrhage, and extremely few amputations. There was also a notable absence of cases of massive gas gangrene; in fact, there was very little gas gangrene at all, and the majority of cases that did occur were among patients who had to be sent an unusually long distance.

SPLINTING AND THE SUPPLY OF SPLINTS.

On all occasions it is the duty of a unit receiving a patient on a stretcher to hand back a stretcher forthwith to representatives of the unit from which the patient arrives, and during the Messines offensive the same principle was applied to Thomas's splints. This is now regarded as the splint for routine use right away down from regimental aid posts.

The Thomas thigh splint is applied at regimental aid posts over the clothes, without removal of the patient's boot. The result of the principle of handing out a splint for every splint received on a patient was that the regimental aid posts never ran short, and no patients were ever sent to the rear until their limbs had been rendered thoroughly steady. The adoption of this plan is considered to have helped materially in the prevention of shock, and to have contributed not a little to the excellent medical results noted in this offensive. It is the practice now to apply splints not only to cases of fractured bone or injured joints, but also to cases which present nothing more than an extensive wound in the soft part.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Accidentally Killed.

The battleship *Vanguard*, 19,250 tons, was blown up by an internal explosion while at anchor on the night of July 9th. She carried a ship's complement of 62 officers, and over 700 lower ratings. Of these, 24 officers and 71 men were on leave ashore at the time; of the rest only two men survived. Among the 38 officers lost were three medical officers, Fleet Surgeon E. Cox, R.N., Staff Surgeon W. G. Barras, R.N.V.R., and Surgeon E. Rayner, R.N.

FLEET SURGEON E. COX, R.N.

Fleet Surgeon Edmund Cox, R.N., was the youngest son of the late Surgeon-General Charles Lindsay Cox, I.M.S., was educated at Cambridge and at the London Hospital, and took the M.R.C.S. and L.R.C.P.Lond. in 1899, also graduating as B.A.Cantab. in 1895, as M.B. and B.C. in 1900. After acting as clinical assistant in the medical out-patient department of the London Hospital, he entered the navy as surgeon, and attained the rank of fleet surgeon on February 11th, 1917.

STAFF SURGEON W. G. BARRAS, R.N.V.R.

Staff Surgeon William George Barras, R.N.V.R., was the only surviving son of Dr. John Barras, who four years ago resigned the position of medical officer of Govan parish, which he had held for fifty years. He was educated at Glasgow and Durham universities, graduating M.B. and C.M.Glas. in 1889, and M.D. in 1892, and also taking the L.S.Sc. at Durham in 1890, and the D.P.H. in 1903. After filling the posts of assistant medical officer of health and bacteriologist to the burgh of Govan, he went into practice at Govan, Glasgow, where he was physician to the Elder Cottage Hospital. He took a commission as surgeon in the R.N.V.R., Clyde Division, on November 10th, 1904, and was promoted to staff surgeon on November 10th, 1912.

SURGEON E. RAYNER, R.N.

Surgeon Edward Rayner, R.N., was educated at Cambridge, where he graduated M.B. and B.C. in 1912. He took a temporary commission as surgeon in the navy on August 6th, 1914. He was the son of the late Edward Rayner, of Beechlands, Wadhurst.

ARMY.

Died of Wounds.

CAPTAIN A. G. PETER, M.C., R.A.M.C.

Captain Alastair Gordon Peter, M.C., R.A.M.C., died of wounds on July 5th. He was the youngest son of the late Mr. John Peter, factor to Lord Lovat, and was educated at King's College, London, and at Aberdeen University, where he graduated as M.A. in 1898, and M.B. and Ch.B. in 1903. He took the M.R.C.S. and L.R.C.P.Lond. in 1907, and the D.P.H. at Cambridge in 1910. After serving as assistant medical superintendent of the St. Pancras Infirmary at Highgate, as assistant medical officer of the Brook and Grove hospitals of the Metropolitan Asylums Board, and as bacteriologist and deputy medical officer

of health to the borough of Croydon, he went into practice at Inverness, till he took a temporary commission in the R.A.M.C.

CAPTAIN H. E. ROSE, R.A.M.C.

Captain Harold Emerson Rose, R.A.M.C., died of wounds on July 7th. He was the son of Mr. J. A. Rose, of 36, Apsley Road, Bristol, and was educated at Cambridge, where he graduated B.A., and at Edinburgh, and took the Scottish triple qualification in 1913. He joined the Special Reserve of the R.A.M.C. as a lieutenant on September 2nd, 1914, and was promoted to captain after a year's service. He was attached to the Coldstream Guards when he met his death.

LIEUTENANT B. COHEN, R.A.M.C.

Lieutenant Bertram Cohen, R.A.M.C., was reported as having died of wounds in the casualty list published on July 13th. He was educated at St. George's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1908, and graduated M.B., B.S. Lond. in 1912. After filling the posts of house-surgeon, house-physician, and resident obstetric assistant at St. George's Hospital; of resident medical officer of King George's Hospital for Officers; and of house-physician of the General Lying-in Hospital, Lambeth, he went into practice at Sidmouth, Devonshire, where he was honorary physician to the Victoria Cottage Hospital. On March 16th, 1914, he took a commission as surgeon in the Royal Naval Volunteer Reserve, and served for some time in the Royal Naval Hospital, Plymouth, but had recently taken a temporary commission in the R.A.M.C.

Died on Service.

LIEUTENANT A. ATKINSON, R.A.M.C.

Lieutenant Ambrose Atkinson, R.A.M.C., died suddenly at Felixstowe on July 7th, aged 57. He was educated at Leeds Medical School, and took the diplomas of M.R.C.S. in 1884, and the L.R.C.P. Edin. in 1892, afterwards acting as house-surgeon of the Leeds General Infirmary. He resided at Harringay, North London, till he recently took a temporary commission in the R.A.M.C., and was in medical charge of the 3rd Battalion Suffolk Regiment at Felixstowe.

Wounded.

Lieut.-Colonel W. H. R. McCarter, R.A.M.C. (temporary).
Captain W. A. Sneath, M.C., R.A.M.C. (temporary).
Lieutenant H. R. Grellet, R.A.M.C. (temporary).
Lieutenant J. A. McIlroy, R.A.M.C. (temporary).

Wounded and Prisoner.

Captain H. Stokes, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Belemore, Raymond A., Captain Connaught Rangers, only son of the late Brigade-Surgeon-Lieut.-Colonel A. J. Belemore, R.A.M.C., of Brighton, killed recently. He got a commission as lieutenant on August 7th, 1914, and had served in Mesopotamia.

Cook, Leonard Nield, Second Lieutenant Royal Lancaster Regiment, youngest son of the late Dr. J. Nield Cook, late Health Officer of Calcutta, killed July 7th, aged 20. He was educated at Bedford Grammar School and at Rugby, and gained a scholarship at Queen's College, Oxford, in October, 1915. He got his commission in December, 1915, went to the front in July, 1916, and gained the Military Cross last October.

Lloyd, John Wathen Eaton, younger son of Dr. Eaton Lloyd, Second Lieutenant Royal Flying Corps, killed June 24th, aged 22. He was educated at Epsom College, and articled to the Shotton Engineering Company, before he enlisted at the beginning of the war.

Rice, Bernard Neville, Captain East Yorkshire Regiment, elder son of Dr. Bernard Rice, of Westrock, Leamington Spa, died on July 10th, aged 22, in the Warneford Hospital, Leamington, of wounds received in France in June, 1916. He had won a classical scholarship at Balliol College, and was about to proceed to Oxford when the war began. He got his first commission on August 29th, 1914.

Stokes, Guy Lennard, Second Lieutenant Royal Field Artillery, second son of Dr. Lennard Stokes, of Blackheath, killed July 5th. He was educated at the Blackheath Proprietary School, and at the Central Technical College, Tunbridge, and was a well known Rugby football player for Blackheath and Kent.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

FOREIGN HONOURS.

A SUPPLEMENT to the *London Gazette*, dated July 14th, contains a further list of decorations and medals awarded by the President of the French Republic for distinguished services rendered during the course of the campaign; the list includes the following medical officers:

Légion d'Honneur.—Croix d'Officier: Lieut.-Colonel W. R. Blackwell, R.A.M.C. Croix de Chevalier: Major E. T. Potts, D.S.O., M.D., R.A.M.C.; Captain (acting Lieut.-Colonel) R. Magill, M.B., R.A.M.C. (S.R.); Captains W. H. P. Hey, M.B., F.R.C.S., R.A.M.C., and F. M. Hughes, R.A.M.C., temporary Captain G. Rankine, M.C., R.A.M.C.

Croix de Guerre.—Major W. H. K. Anderson, C.A.M.C.; Captain J. A. C. Scott, M.C., M.B., R.A.M.C.; temporary Captains T. Meagher, M.C., M.B., R.A.M.C., and C. S. E. Wright, R.A.M.C.

The Croix de Guerre has also been awarded to two non-commissioned officers and five privates of the R.A.M.C.; and two non-commissioned officers and four privates of the R.A.M.C., together with one non-commissioned officer of the C.A.M.C. and one private of the A.A.M.C., received the Médaille Militaire.

England and Wales.

TECHNICAL TRAINING OF DISABLED SAILORS AND SOLDIERS.

At a meeting of the London County Council, on July 17th, a scheme formulated by the Education Committee in conference with certain technical institutions for providing technical training for disabled sailors and soldiers was considered. It provides that all the disabled men shall be interviewed first by a rota of expert advisers from the institutions concerned. The trade panels (which have been or are being appointed by the London War Pensions Committee) will supply the rota with details of the outlets available, and particulars of special training for each type of outlet. The disabled man will then be directed to an institution, where he will be interviewed by the trade panel, and if it be decided that the training asked for is applicable to his case, he will be placed in turn for the starting of the next group in such training or for the next vacancy in an existing group. The committee will watch over the work and progress of the candidate, and at the end of his training will put him in communication with a firm willing to find specific vacancies for men so trained. The scheme came into operation as from July 1st. The London War Pensions Committee is to pay for teachers' salaries or part salaries in respect of this particular instruction.

THE PROPOSED MINISTRY OF HEALTH.

At the annual provincial meeting of the Society of Medical Officers of Health, held at Birmingham on June 30th, a paper was read by Dr. T. W. N. Barlow on "The status of the medical officer of health in relation to the proposed Ministry of Health." He deprecated the system under which seven or eight Government departments dealt with health matters, with the consequent overstaffing and overlapping. There should be centralization locally as well as at the centre. The existing health committees should be the nucleus of the new local bodies, and should have as an adviser the medical officer of health, who already had experience in the organization of tuberculosis work, school medical work, maternity centres, child welfare centres, and routine public health work. The President (Dr. John Robertson) said that the records of results attained in this country justified the claims of the medical officer of health to be the head of the new department, though he feared there was a lack of appreciation of what had been done, directly and indirectly, by medical officers of health. Lieut.-Colonel Herbert Jones urged the importance of medical officers of health having had experience in general practice. Professor Bostock Hill maintained that public health was developing on the lines of medicine rather than on those of pure science, and that the coming together of the general practitioner and the medical officer of health would be to their mutual advantage. Dr. Buchanan considered that the main conception of the Ministry of Public Health should be the care of the individual, and that the advisers of the Ministry should be trained in medicine, and possessed of organizing ability and imagination. Dr. Barwise, Dr. Halliwell, and Dr. Suell also took part in the discussion.

LONDON WATER.

Dr. A. C. Houston, Director of Water Examination, Metropolitan Water Board, in his eleventh annual report, which is much shorter than previous reports, records the results of the chemical and bacteriological examination of the London waters for the twelve months ended March 31st, 1917. During the year, 13,109 routine samples of water were examined, apart from a very large number collected for special purposes. In the twelfth research report,¹ Dr. Houston dealt in detail with the successful results of the chlorination of raw river water as an alternative to storage, and showed that a better water could be provided at much less cost, with consequent saving of coal. The dose of chlorine used varied from 1 in 1 to 1 in 4, but usually was 1 in 2 million parts of water. From June 1st, 1916, to March 31st, 1917, 17,180 million gallons were treated during 252 days (West Middlesex supply) and 224 days (rest of Staines supply) out of a total of 304 days. The net saving was £8,177. The bacteriological results of treatment from June to September, 1916, were very successful, although the water was not always completely sterilized. From October, 1916, to the end of March, 1917, that is, during the flood months of the year, the Hampton results are summarized as follows: 56.1 per cent. of the 100 c.cm. cultures for *B. coli* yielded negative results. This percentage was increased to 77.1 when the samples were kept before examination for an extra twenty-four hours in a bottle so as to simulate more closely the conditions in the West Middlesex reservoirs where the storage may exceed one to two weeks; the Staines stored water standard is 20 per cent. negative. As regards the 10 c.cm. cultures for *B. coli*, 85.4 per cent. gave negative results; the Staines stored water standard is 60 per cent. negative. Hence the treated river water was purer, as judged by the *B. coli* test, than if it had undergone prolonged storage in the Staines reservoirs. The treatment was also uninterruptedly successful in regard to absence of taste. The New River conditions are widely different. The storage is inadequate, and the rate of filtration is about double that practised at the other works of the Metropolitan Water Board. Owing to the New River containing a large proportion of well water the filtered results are on the average good, and, in the best months of the year, beyond reproach. When, however, floods occur in the Lee Valley, the results invariably deteriorate. There seems to be no remedy for this except by providing adequate storage and increasing the filtration area, but the cost would be enormous, as the daily output from the New River works is over thirty million gallons. If, however (says Dr. Houston), the judicious use of sterilizing agents could smooth over, or perhaps wipe out, the effects of flood, a case might be made out for at least deferring the construction of these expensive works. Towards the end of last year an attempt was made, with the co-operation of the engineering department, to achieve this object. The treatment lasted from December 24th, 1916, until January 12th, 1917, when it was stopped because the water had acquired an unpleasant taste. The treatment coincided with a period of intense cold, and, relative to that temperature, experience showed that the dose used was too large to prevent the water from acquiring a disagreeable taste. Despite the complete stoppage of the treatment the taste in the filtered water persisted for some time; this no doubt was due to the ability of the filter sand to "absorb" and "hold in store" taste-imparting materials derived from the previous treatment. This is one of the objections to chlorination before filtration. The bacteriological results during the treatment were very satisfactory. The treatment was tried again later, where much smaller doses were used with complete absence of taste. Experiments with liquid chlorine have been also started with gratifying results. Dr. Houston is convinced that by the exercise of the utmost vigilance and skill a chlorinated but tasteless water which is, relatively speaking, satisfactory bacteriologically can be produced even during floods. The margin between successful sterilization and avoidance of taste is not a wide one, particularly in cold weather and with a short contact.

The concluding part of the report is devoted to practical considerations on algal and other growths in water.

¹ BRITISH MEDICAL JOURNAL, December 9th, 1916, p. 816.

Ireland.

MR. DUKE stated last week that the Midwives (Ireland) Bill had been drafted, and that if he were assured that it would be non-contentious he would consult the Leader of the House as to its introduction.

COUNTY TIPPERARY (S.R.) MEDICAL COMMITTEE.

A complaint was forwarded by the Irish Insurance Commission to the Tipperary (S.R.) Medical Committee in connexion with a medical certificate issued in that area for sickness benefits by a doctor who had made no previous medical examination of the insured person. The doctor against whom the complaint was made having admitted the offence, the committee directed the secretary to inform the Commissioners that the case submitted for its observations showed a grave dereliction of duty on the part of a medical man involving a monetary loss to the aggrieved society, which in its opinion should be borne by the person responsible for that loss. Should the Commission, in the interest of efficient working of the Act, consider it necessary to administer a further correction, it was asked, considering that this was the first case in the area, that it might not be of as severe a nature as the Commission was entitled to enforce, and as the committee would feel compelled to suggest in case of a repetition of such an offence. The doctor referred to had never, to the committee's knowledge, attended meetings of the medical profession in connexion with the Insurance Act, and was therefore not perhaps fully aware of the obligations undertaken, yet he should have avoided committing an error which is deeply regretted by the committee.

DUBLIN UNIVERSITY AND THE WAR.

At a meeting in support of the Dublin University Voluntary Auxiliary Hospital, Miss Rachel Mahaffy, the commandant, submitted a report stating that 77 patients had been received during 1916. A motion by Sir Robert Woods, declaring the hospital worthy of the support of members of the university, was adopted. Professor Dixon, in seconding it, said that about 900 past and present members of the university were in the medical service of the Royal Navy, the R.A.M.C., and the I.M.S. Of 199 Irish and British men who had taken medical degrees in Dublin University, 196 had volunteered for one or the other of the three services, and the number would have been greater but for the fact that 175 medical students had volunteered for active service without waiting to qualify. Of the medical women graduates, seven were employed in the R.A.M.C., and several were taking temporary work to set free medical men for active service abroad. Of the members of Dublin University serving with medical units 135 had been mentioned in dispatches, 47 had been awarded the Military Cross, two had received a bar to that Cross, 31 had received the honour of D.S.O., 11 of C.M.G., 10 of the C.B., one of K.C.B., and one of C.I.E. In addition five had received foreign decorations.

Scotland.

PAISLEY BABY WEEK.

In common with many other towns, Paisley has had a "baby week"; in other words, there was a child welfare exhibition, designed to teach the gospel of health so far as infants were concerned; there were lectures and demonstrations given by members of the medical profession and health visitors, and representatives of the civic authorities made speeches exhorting the people to greater care of child life and commending the various measures which were being taken by the medical officer of health (Dr. G. Clark Trotter) and his assistants. The exhibition was open from July 9th to 14th. The Paisley infantile mortality-rate reached its lowest (92.15 per 1,000 births) in 1912; in 1913 it was 118.00, in 1914 it was 133.00, and for the past two years 106.00 per 1,000.

Sydney.

THE PROFESSION AND THE WAR.

At the annual meeting of the New South Wales Branch of the British Medical Association a resolution, recommending mobilization of the Australian medical profession, moved on behalf of the council by Dr. R. H. Todd and seconded by Dr. R. Gordon Craig, was carried unanimously.¹

It was also resolved that in grateful recognition of the loyal and devoted services rendered at this supremely critical period to King and empire by members of the Association, the names of all members who have already enlisted, or who, before the termination of the war, shall have enlisted for active service in the naval or military forces of the empire, shall be enrolled by the council in a suitable book to be preserved in the library of the Association.

HOSPITAL MAINTENANCE.

During last year a conference, comprising delegates from all the municipal councils in the State, was called by the Local Government Association to discuss the question of hospital maintenance. The committee of this association has prepared a report for submission to the councils, and an official summary of this report sets forth the following recommendations:

1. The existing system is not a complete and satisfactory fulfilment of the duty of the community to care for the sick.
2. We do not think any system can be devised, based on voluntary charity, which will keep pace with the growing needs of the hospitals.
3. We do not favour the complete nationalization of the hospitals.
4. We think it most important that the local government system should be applied to hospitals for the purpose of centring in the hospital local interest and local charity.
5. We believe that the problem will best be met by the grouping of the State into hospital districts, each consisting of a number of municipalities and shires surrounding the hospital centre.
6. We recommend the maintenance of hospitals by (a) patients' fees, (b) donations and bequests, (c) a levy upon the contributing councils, (d) a Government subsidy at the rate of £ for £ on the money raised from rates and £ for £ on the money chargeable against patients.
7. We recommend the constitution of hospital boards on a proper elective system, with one or more Government nominees and two or three co-opted members.
8. We believe that a uniform charge should be made in respect of each patient, such charge not to be enforced against poor patients who are unable to pay.
9. We believe that sectional hospitals which are offering benefits to the general public should receive a recompense from the public funds.
10. All matters of internal administration should be left to the hospital boards to decide.

This report and recommendations contain much of interest and importance to the medical profession, and no doubt the matter will be the subject of criticism and report by the council of the New South Wales Branch of the British Medical Association.

VENEREAL DISEASE.

The problem of venereal disease has occupied a large share of public attention during the past few months. An important conference was convened by the Public Morals Association last year. The following resolutions were carried:

- That in view of the revelations contained in the recent reports of the Federal Commission and the State Select Committee on Venereal Diseases, as to the serious consequences of these diseases on the birth-rate and on the rate of mortality among infants, and taking into consideration the historical evidence of the increase in incidence and severity of venereal disease during and after war, and with the object (1) of fostering infant life, more especially in view of the serious effect upon the marriage and birth rate likely to be occasioned by the unprecedented loss of life at this time; (2) of preventing the spread of these diseases to innocent victims, this conference respectfully urges the Government to introduce legislation requiring that the ceremony of marriage shall be conditional upon the production of a certificate of freedom from venereal disease.
- That all public general hospitals supported by State funds should be compelled to make provision for the treatment of patients suffering from venereal diseases, and that a suitable booklet should be given to each patient being attended either at a hospital or by a private medical practitioner.

That a council for combating venereal disease should be called into existence, to be recognized by the Government as an authoritative body, for the purpose of spreading knowledge in regard to the question of venereal disease in its varied aspects.

That this conference endorses the recommendation of the Royal Commission on Venereal Diseases that instruction in these subjects should be provided in evening continuation schools and in factories and workshops. For this purpose the aid of properly constituted voluntary associations should be enlisted, and the guidance of medical practitioners should be secured.

That this conference urges upon the Government the printing and circulation to every householder throughout the State of suitable literature dealing with the question of venereal disease; also the enactment of more stringent legislation providing for the suppression of advertisements, and of the circulation of all printed matter, dealing with sex complaints and their treatment.

That this conference urges upon the authorities the necessity for the better enforcement of the law to suppress houses of ill fame.

That this conference affirms its conviction that notification will not prove effective in staying the ravages of venereal disease, but, if enacted, is more likely to cause the victims to avoid treatment or to seek the advice of quacks.

A deputation subsequently waited upon the Minister of Health to present to him the above resolutions. In reply the Minister stated that circulars were to be exhibited in public places. The department had also entered into a scheme to supply curative drugs to hospitals throughout the State, and to secure the assistance of all subsidized hospitals. He asked the deputation to put into concrete form its proposals in regard to the formation of a council for combating these diseases, and promised the assistance of the Government in the publicity campaign. He did not pronounce any opinion on the suggested instruction of young persons, though he regarded it as a duty that mothers and fathers could best perform. He advised the deputation to refer the question of the law with regard to prostitution to the Minister for Justice, and the question of sex hygiene to the Minister for Education.

Correspondence.

DR. ADAM'S 'CROONIAN LECTURES.

Sir,—Sir E. Ray Lankester, it appears, falls foul of the term "academic biologist." By labelling a man as "academic" it is in general meant to imply that such a one is more concerned with upholding the teaching and tradition of the Schools than with the advance of his subject. Had I wished to demonstrate to your readers what I meant by this term, I could not possibly have afforded a more perfect instance than, by his letter in your last issue, Sir Ray has himself presented.

Take, for example, his treatment of my use of the term "direct adaptation," ascribed to Spencer, and of my demonstration that this surely exists among the bacteria. Herbert Spencer wrote (*Principles of Biology*, 1898 edition, vol. i, page 528): "There go on in all organisms certain changes of function and structure that are directly consequent on changes in the incident forces—inner changes by which the interchanges are balanced and equilibrium restored. But . . . we see that the modified conditions to which organisms may be adapted by direct equilibration are conditions of certain classes only. Besides direct there must be indirect equilibration." Where is the difference between my "specific modification in response to a specific alteration in environment *within limits to be presently laid down*" (Sir Ray manages to leave out the phrase in italics) and Spencer's "certain changes . . . that are directly consequent," etc.? Later, in the abstract of my second lecture, which was in Sir Ray's hands, it is pointed out that experiments can be so made as to remove all possible question of chance variation and survival of those forms alone which had exhibited variation in a favourable direction (Spencer's indirect equilibration), so "that there was within certain limits direct adaptation in the Spencerian sense, direct equilibration between the organism and its environment." Sir Ray, it will be observed, passes this over in complete silence, and makes no reference to my further

¹ In my fourth lecture. By the closing paragraph of my first, as again by the invitation sent him to be present at the series, Sir Ray was advised that other lectures were to follow in which my theme would be developed, but of this he takes no notice.

demonstration of direct adaptation in the matter of acquirement of pathogenic powers. But by a casuistic mingling of Spencer's statements and his own opinion he implies that I confuse direct and indirect equilibration, and states that I hold the view that mere modification of an organism in response to change of environment is in every case "direct adaptation." This is the method of the academic biologist, not of the seeker after scientific truth.

I freely admit that Sir Ray registers two definite hits. First as to the confusion between "variation" and "variability." The two are distinct, and the use of the latter in the circumstances was inaccurate. It will be observed that the section is headed "The nature of variation." I have before now employed the simile that explosiveness, or explosibility, is one of the properties of nitro-glycerine, but that it requires a force from without to produce an explosion of this body. It would have been more accurate had I written, "whether we deal with an inherent tendency to vary, or a capacity on the part of living matter to be varied." But every fair-minded reader will realize that this was the drift of my argument, and will see that the misuse of the word variability weakened instead of strengthening it. So, also, to those of us who have met Weismann I confess that "vigorously" rather than "violently" would have been the more appropriate adverb. But this again has no bearing on the main argument. His hits are "outers."

As to the other more personal matters in Sir Ray Lankester's letter, these again are all evasions of the main issue, such as a controversialist employs to darken counsel. They turn upon a triangular correspondence between X (an old friend of Sir Ray's), Sir Ray, and myself, in which, at the request of X, I wrote my views upon adaptation to him; X showed my letter to Sir Ray; and Sir Ray's reply, while addressed to me, was forwarded to X to read and send on to me. To quote loyally the sense of a statement is not to "garble" that statement, with what that implies, and I challenge Sir Ray to publish the correspondence in full elsewhere, to show that my reference was not substantially correct, and that I was not justified in my action. My two letters are, and have always been, at his disposal for this purpose.

For myself I desire no German naval victory in which, before the action is fully developed, the fleet returns in triumph to its home port sheltered by a cloud of inky smoke. Nor do hard hits irritate me so long as they are clean. But I do feel most strongly that this matter of adaptation and its mechanism is a matter that is not the possession of zoologists and biologists alone, for them to dream dreams about and hold unseemly parochial wrangles over at meetings of the British Association. It is one in which medical men and the community at large are to-day very immediately concerned, one in which our voice has a right to be heard and our experience to be seriously weighed and considered, instead of being contemptuously spurned as coming from outside the pale; one in which we look for dependable leadership from men of the status of Sir Ray Lankester, and not receiving it must take the lead ourselves. To quote from Herbert Spencer's final words on the subject, "And now I must once more point out that a grave responsibility rests on biologists in respect of the general question (inheritance), since wrong answers lead, among other effects, to wrong beliefs about social affairs and to disastrous social actions. In me this conviction is increasingly strengthened. Though the *Origin of Species* proved to me that the transmission of acquired characters cannot be the sole factor in organic evolution, yet I have never wavered in the belief that it is a factor, and an all-important factor. And I have felt more and more that, since all the higher sciences are dependent on the science of life and must have their conclusions vitiated if a fundamental datum given to them by the teachers of this science is erroneous, it behoves these teachers not to let an erroneous datum pass current."

To understand the full significance of what is here written I would ask my readers to turn to Sir Ray's letter of last week's issue and read it once again.—I am, etc.,

J. G. ADAMI,
Lieut. Colonel, C.A.M.C.

London, W.

* In the Appendix to the last edition of the *Principles of Biology*.

"PRACTICAL METHODS OF ANAESTHESIA."

SIR,—An article by Dr. J. T. Gwathmey¹ contains statements so surprising, and so directly opposed to the conclusions arrived at by me after long experience in the administration of anaesthetics, that I feel constrained to offer some remarks. Dr. Gwathmey says: "Chloroform, anethol, and ethyl chloride are rarely used as the terminal anaesthetic; as the initiatory agent, however, they are most useful." This is true enough of ethyl chloride (I know nothing of "anethol"), but is surely the converse of the truth as regards chloroform. A large number of fatalities under this agent occur in the early stages of anaesthesia; and many of us rightly believe that, whenever possible, it is safer to avoid pure chloroform for the purpose of induction. On the other hand, chloroform is often most useful, almost indispensable, as a "terminal anaesthetic."

"Open drop ether" (presumably open etherization is meant) "is a crude, unscientific method. . . . It is irregular and uneven, and conduces to acidosis and resultant shock, on account of the insufficient supply of oxygen." In reference to these statements, may I ask how an insufficient supply of oxygen can possibly be caused by open ether?

"The gas-ether sequence is an even cruder and more dangerous method. It raises the blood pressure enormously, cyanoses the patient, and is responsible for many deaths." Is this the experience of any anaesthetist familiar with the use of Hewitt's apparatus for the nitrous oxide-ether sequence? To me the whole assertion appears absurdly false. Dr. Gwathmey's next paragraph seems to deal with the same method, which is condemned on account of "automatic suction." What is "automatic suction"? And how does it come into the process? The alternative plan suggested which "removes all the objectionable features" is not explained. Towards the end of the article there is a reference to an undescribed "semi-open method" whereby "the ether-nitrous oxide anaesthetic vapour is warmed, moistened, oxygenated, and deodorized, and the patient neither tastes nor smells the ether at any time." This last result is, of course, obtained by the intelligent use of Hewitt's apparatus.

Dr. Gwathmey throws doubt upon the safety of gas and oxygen, but omits to mention that all the deaths have occurred during or after prolonged administration; for short operations—dental, etc.—for which the method was originally designed, nothing is safer.—I am, etc.,

Eastbourne, April 19th.

H. S. GABBETT, M.D.

A TOO-PUNGENT MOUTH-WASH.

SIR,—Dr. Helen Goodrich's article on "Mouth-washes in health and disease" (*BRITISH MEDICAL JOURNAL*, April 14th, p. 473) calls for a word of caution, inasmuch as she concludes by recommending the daily use in healthy mouths of a saturated aqueous solution of thymol. I venture to predict that if ten people with perfectly healthy and normally sensitive mouths use such a solution of thymol "as often as possible" as Dr. Goodrich suggests, at least eight out of the ten will have marginal gingivitis at the end of three months. In a sensitive mouth it stings like mustard, and is far too pungent for regular daily use. There is little doubt that a large proportion of the many cases of chronic marginal gingivitis (the initial stage of pyorrhoea) is due entirely to the prevalent use of mordant mouth-washes and pastes.

Thymol in saturated solution is an irritant to the oral tissues, and in that strength is not a suitable lotion for habitual use in a healthy mouth.—I am, etc.,

Bournemouth, June 24th.

J. T. HALL, L.D.S.

THE NEED FOR EARLY SANATORIUM TREATMENT.

SIR,—I was in no way astonished on reading Dr. Bardswell's statement in the *BRITISH MEDICAL JOURNAL*, June 9th, that as many as 75 per cent. of cases admitted into the King Edward VII Sanatorium were already in the second or third stage of the disease. I find on looking up our records that our proportion is very similar—about 72 per cent. of cases having passed the first stage.

That Dr. Bardswell is unable to see any improvement

¹ *BRITISH MEDICAL JOURNAL*, March 24th, 1917.

as the years roll by is very disappointing and provides food for thought.

I am of opinion that the following are the chief reasons for this unfortunate state of affairs: (1) The publicity which has been given to the discussion of this disease and the unfortunate terms which have been used, the name "great white plague" is not likely to attract patients in the early stage. (2) The fear of being regarded as infectious deters many from admitting that they are sufferers; thus the means defeats the end. I find it very difficult to persuade some people that a person may suffer from pulmonary tuberculosis and yet not be infectious. (3) The prominence given to after-care schemes destroys in the minds of many the belief that if treated at the proper time after-care, except as indulged in by the patient himself, is unnecessary. (4) Public utterances about the advisability of segregating consumptives by force. This is particularly objectionable at a time when any local authority which is willing to do its duty will find that it has not got sufficient accommodation to segregate the willing. (5) The unwillingness of medical men to explain to patients that they can be cured. It is scarcely worth while to quibble with terms, and to say that pulmonary tuberculosis cannot be cured is only to quibble. Small-pox often leaves scars, but no one says it cannot be cured. If it be remembered that practically all town dwellers have been infected with tuberculosis by the time they reach 20 years of age, it must be clear that cure in the case of such a disease must be rather a question of degree, and it should be our duty to arrange if possible that patients are prevented from reaching that degree of disease which precludes a cure; and patients should certainly not be watched to see whether they will commence to spit tubercle bacilli if they are suffering from the symptoms of active disease.

In order to get patients in a curable stage to go to sanatoriums, as few people as possible should intervene between the patient and his admission. The idea present in the minds of most people is that a sanatorium never cures and therefore a patient is never sent until incurable.

In conclusion, I would suggest that a sanatorium should not be looked upon merely as a means of preventing people from dying, but chiefly as a means of preventing many of the most favourable cases from becoming chronic, by making them discontinue their work for a comparatively short time. At the present time these latter often live for years continuing their work, but often remaining infectious.—I am, etc.,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock,
June 14th.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—I am glad that the question has been raised as to what is going to be done for those medical students who, answering their country's call, gave up their studies and their prospects of early qualification.

My only son, to whom I was looking for relief, accepted a commission in 1914 when in his second year. He has now been on foreign service for over two years, and, providing he is not killed, looks like serving at least two more years. By that time he will be 24 years of age, and will still have four more years before he can qualify, not to speak of the year or two of hospital work before he will be fit to succeed me. Meanwhile those students in his year who, quite as fit as he, but endowed with less patriotic feelings and more concern for their own individual welfare, resisted their country's call, are now enjoying complete immunity from service, together with good hospital appointments as unqualified house-surgeons (at £90 a year), and are within a year of being able to take up practice. One wonders whether patriotism really pays. Still I do not envy them or wish my son had emulated them. I am only anxious to know whether, if my son does ever come back, he will be granted any facilities for shortening the time which he would normally require to complete his course. I scarcely need point to ways by which this could be done, when one remembers the holidays which were the rule in normal times. It only needs some little rearrangement on the part of the university authorities in the matter of these holidays, and the facilities for examination, to reduce the time required by one or even

two years. I trust that we may have an authoritative pronouncement on this matter.—I am, etc.,

July 15th.

J. A. A.

PART-TIME CIVIL SURGEONS.

SIR,—Colonel Galloway's very handsome tribute to the work of part-time civil surgeons employed in the examination of recruits will be much appreciated and might well be extended to those who have undertaken work in military hospitals.

Here, too, the duty undertaken has been purely patriotic and the rate of pay quite inadequate. The part-time civil surgeon is nearly always employed in a subordinate capacity, often the work expected of him cannot, under any conditions, be said to come within the terms of his employment, and he is subjected to those irritating and petty annoyances which are unknown in a civil hospital.—I am, etc.,

Catherham, July 15th.

G. A. CLARKSON, F.R.C.S.

PAYMENT OF MEDICAL OFFICERS TO V.A.D. HOSPITALS.

SIR.—The question of the payment of medical officers to V.A.D. hospitals is to come before the Annual Representative Meeting next week. I opine that few, if any, of the medical officers concerned would wish to receive any payment for their services. But I would suggest that they allow the money to be collected by some central body—for example, the British Medical Association, or the Royal Medical Benevolent Fund, in order to form a fund for the help of the families or dependants of those members of our profession who have lost their lives or health while on active service. Such a fund is likely to prove very useful at the end of the war.—I am, etc.,

Bolton, July 16th.

R. D. MOTHERSOLE.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following candidates have been approved at the examinations indicated:

SECOND B.M.—*Materia Medica and Pharmacology*: T. A. Brown, E. H. Claver, J. C. Dixey, R. Gainsborough, C. F. Krige, J. E. B. Morton, A. E. Thomas. *Pathology*: H. G. Burford, J. C. Dixey, F. B. Dutton, J. E. B. Morton, H. W. Toms, B. Tordoff, K. F. D. Waters. *Forensic Medicine and Public Health*: J. J. Conybeare, G. R. Cowie, E. A. Crook, F. B. Dutton, W. F. Harvey, R. M. Humphreys, R. W. Lush, J. J. Savage, J. P. S. Walker. *Medicine, Surgery and Midwifery*: J. J. Conybeare, G. R. Cowie, E. A. Crook, W. F. Harvey, R. W. Lush, J. P. S. Walker.

UNIVERSITY OF CAMBRIDGE.

THE following medical degrees were conferred at a Congregation on July 13th:

M.D.—G. A. Lilly, N. Mutch.
B.C.—A. R. Jennings.

UNIVERSITY OF LONDON.

At a meeting of the Senate on June 20th Mr. C. H. S. Webb and Mr. W. Sampson Handley were recognized as teachers of surgery at the Middlesex Hospital Medical School, and Dr. Charles Bolton was appointed acting director of the Graham Research Laboratory in the absence on military service of Dr. Boycott.

UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B. (*Part I only*).—Evelyn B. Salter.
D.P.H. (*Part II, completing examination*): I. B. Barclay. (*Part II only*): H. J. Drew-Smythe.

UNIVERSITY OF EDINBURGH.

GRADUATION CEREMONY.

A GRADUATION ceremony in medicine, arts, and science took place in the McEwan Hall of the University on July 11th. The Principal presided, and Dr. W. Russell, professor of clinical medicine and President of the Royal College of Physicians, gave an address on "The need of the future: efficiency based on moral responsibility." The great aim and purpose of undergraduate days, he said, was not to pass examinations, however important as a test they might be, but to be fitted to become true students and observers of the reactions and contests of the human body against injurious domestic influences as well as against obnoxious alien forces. The task of the new graduates was to cultivate the faculty of sound judgement; that truth

was expressed in the phrase, "With all thy getting get understanding" in the Book of Wisdom, and had been embodied by a poet laureate in the words "Knowledge comes, but wisdom lingers." Some of them would at once have to take their places in armed camps; others would have to do the work of men called to those camps, but individually they could best serve their country and the great cause for which the world was suffering and fighting by cultivating personal efficiency. Opportunity came to the man who used well the material about his hands. The mind of men and women were turning anxiously to the contemplation of after-war conditions, but though prevision was given to few it would be safe to prophesy that human nature would not be radically altered. It could hardly be hoped that the false prophet, the facile-tongued charlatan not unknown even in medicine, the narrow specialist, and the faddist who never learnt that truth was a bigger thing than the gnat which filled his eye, could be got rid of. Still some pre-war points of view would be got rid of, and others established. There would be regroupings and rearrangements, a new earnestness, less selfishness, and a widened sense of service for the commonwealth.

Later in the day a commemorative service was held in St. Giles's Cathedral, when the Rev. Dr. Galloway, Principal of St. Mary's College, St. Andrews, preached.

The following are the successful candidates:

- M.D.—F. O. Clarke, W. J. Crow, F. B. Dreyer, P. W. MacLagan, J. G. O. Moses.
M.B., B.S.—G. G. Allan, J. G. Allan, L. G. Allan, R. Andrew, J. S. Bow, Sarah Boyd, W. W. Brown, W. D. Brunton, J. C. Burns, W. E. Canekerate, Ba Than Chain, Fakir Chand, Datta Pares Chandra, T. S. Duncan, H. B. Dykes, P. B. Eaton, W. Everett, N. P. R. Galloway, Aja Singh Garewal, J. B. Kirk, J. L. Lamont, D. McEachran, Annie M. Mackay, W. D. Mackinnon, D. W. McLean, H. R. Mailer, A. R. Matheson, R. A. Nathaniel, J. MacR. S. Nichol, R. D. Osler, A. van der Poel, F. W. Poole, C. B. B. Reid, H. B. Renton, S. S. Rosebery, A. O. Ross, J. H. M. Sandison, J. Schneider, J. M. H. Smellie, G. L. M. Smith, J. O. P. Smith, Janet Smith, J. H. R. Smith, S. L. Smith, A. Strachan, Ying Kwan To, J. M. Tyrrell, L. Walker, W. A. Weatherhead, J. D. White, J. Wolfson, A. T. Woodward.

- * Awarded gold medal for thesis.
† Passed with first class honours.
‡ Passed with second class honours.

The following scholarships and prizes have been awarded: Ettles Scholarship, Beane Prize in Anatomy and Surgery, and the James Scott Scholarship in Midwifery: R. Mailer. Mout Scholarship in the Practice of Physic: L. G. Allan. Conan Doyle Prize: J. E. Hurworth. Scottish Association for Medical Education of Women Prize and the Dorothy Gilfillan Memorial Prize: Susan A. Robertson. Cunningham Memorial Medal and Prize in Anatomy: A. J. C. Hamilton. Whiteside Bruce Bursary: W. M. Robb.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

At a quarterly council meeting on July 12th Sir George Makins, K.C.M.G., C.B., Surgeon-General (temporary) A.M.S., was elected President in succession to Sir W. Watson Cheyne, who had held that office since 1914. Mr. Charters J. Symonds and Mr. William F. Haslam were elected Vice-Presidents.

The President was elected a member of the Committee of Reference under the Military Service Acts.

CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved at the examinations indicated:

FINAL EXAMINATION.—J. F. Campbell, J. H. Brown, F. M. H. Sanderson, W. U. D. Longford, H. E. C. Collins, D. McG. Stewart, Mung Sun Low, A. G. Bee, F. Jones, Eliza J. Stewart, D. C. McNair, C. J. Middleton. (*Medicine*): Indranarayan Borrah, G. P. de Silva, C. R. C. Moon. (*Surgery*): I. Davies. (*Midwifery*): B. M. Lynam, G. P. de Silva. (*Medical Jurisprudence*): I. Davies, J. D. Begley, J. A. A. Duncan, A. H. B. Hudson, A. S. Hughes, Rebecca Goodman, Hassan Amin Madwar, Q. Stewart, C. C. Magee.

CONJOINT BOARD IN IRELAND.

The following candidates have been approved at the examinations indicated:

FINAL EXAMINATION.—H. G. P. Armitage, J. J. Campbell, T. Curran, J. B. Dwyer, P. J. Flood, H. W. Hackett, J. Harvey, J. Hegarty, J. E. Lucas, T. J. Lynch, E. McCarthy, T. P. MacDonnell, F. J. Power, J. F. Seale, D. J. Steele, R. T. Stoney.

The London County Council is establishing a school treatment centre at Balliol House, Whitechapel, for the treatment of 1,540 dental cases and 660 minor ailments cases a year, and a dental and minor ailments centre in Bethnal Green.

The *New York Medical Journal* states that a recent investigation made by the United States Public Health Service in connexion with studies of school children in rural districts showed that 49.3 per cent. of the children examined had defective teeth, 21.1 per cent. had two or more teeth missing, and only 16.9 had had dental treatment. Over 14 per cent. never used a toothbrush, 58.2 per cent. used one occasionally, and only 27.4 per cent. did so daily.

Obituary.

MAJOR WILLIAM GUTHRIE PORTER, R.F.A.(TER),
D.S.O., B.Sc., Ch.B., F.R.C.S.(Ed.),
EDINBURGH.

On June 8th, while going forward to find a suitable position for the battery he commanded, Major Porter was shot by a German sniper.

Porter was well known as a rising specialist. In 1912 he produced an excellent textbook on *Diseases of the Throat, Nose, and Ear*, written with a view to meeting the requirements of the general practitioner. In the same year he and Dr. Logan Turner brought out their joint work on the *Skiagraphy of the Accessory Nasal Sinuses*. In addition, Porter contributed the article on "General therapeutics of diseases of the ear" to Allbutt and Rolleston's *System of Medicine*, and papers on the "Treatment of laryngeal tumours," "Resection of the nasal septum," "On a fold sometimes found in front of the posterior nasal opening," and "Nystagmus of the right vocal cord and soft palate in a case of cerebral disease." At the time of his death he was surgeon to the Eye, Ear, and Throat Infirmary (Edinburgh) and to the Ear and Throat Department of the Royal Hospital for Sick Children, and aurist to the Edinburgh Royal Institution for Education of the Deaf and Dumb.

He was a man of unusual ability, a hard worker, a brilliant operator, and a conscientious observer, so that had he lived a few years longer there can be little doubt that he would have been among the foremost oto-laryngologists of the country.

In early manhood he was a well-known football player, but of late years such holidays as he allowed himself were spent in camp with Territorial artillery, of which he was an enthusiastic officer. When war broke out Porter gave up his medical work and became permanently a combatant. The writer had heard from friends who returned from France on leave how absolutely fearless he was, and letters received after his death from both officers and men testify to his great courage, while the latter also bear witness to his kindness of heart and consideration for others. All these things those of us who were privileged to enjoy his friendship knew—and more. We knew, for instance, his lovable nature, his high code of honour, his unselfishness, and his modesty, for while extremely self-reliant, he never seemed conscious that he possessed unusual ability. That he did more than ordinarily well as an artillery officer is shown by the fact that during the war he rose to the rank of major, was mentioned in dispatches, and received the D.S.O. When Porter died there passed away a distinguished specialist who was at the same time not only a gallant but also a distinguished soldier.

DR. JAMES USHER HUXLEY died at Oxford on his 83rd birthday on June 24th. After serving an apprenticeship under Dr. Bell of Rochester he entered King's College, where he had a distinguished career. He took the diplomas of M.R.C.S. and L.S.A. in 1860, and graduated M.D.Lond. in 1864. He served on the staff of the Exeter Hospital for seven years and then removed to Torquay, where he practised for forty years. He retired from practice on reaching the age of 75. He was a collector of china and works of art. In 1882 he married the eldest daughter of Sir Benjamin Collins Brodie, who, together with five daughters, survive him.

DR. THOMAS SHELDON died at his residence in Powis Square, W., on June 20th, in his 83rd year. He was the eldest son of William Sheldon, J.P., of Stratford-on-Avon. He studied medicine at University College Hospital and the University of Edinburgh, qualifying M.R.C.S. in 1859, and taking his M.D. degree in 1863. He was in the same year at Edinburgh as Joseph Bell and Argyll Robertson. After qualifying he served as resident physician at the Edinburgh Royal Infirmary under Dr. Warburton Begbie. For fifty-four years he practised in Kensington, where he was well known and greatly respected. He was the first medical officer to the Kensington Division of the Post Office, and held this post for thirty years. Dr. Sheldon took great interest in his duties at Justice of the Peace for the County of London. He married Elizabeth Anne,

daughter of Peter Pearse, a well-known city solicitor, and had three sons and two daughters. One son is a fleet surgeon, R.N., and another, who followed his father in practice, is a temporary lieutenant in the R.A.M.C.

DR. CHARLES CARTER SHEPHERD, who died recently at Cardiff, was born at Barbados and received his medical education at St. Bartholomew's Hospital and the University of Aberdeen. He graduated M.B., C.M.Aberd. in 1879, and M.D. in 1890. He had been in practice at Cardiff since 1891, was a member of the Cardiff Division of the British Medical Association and of the Cardiff Medical Society. He leaves a widow and eight children.

The death is announced of Dr. W. AWUNOR RENNER of Freetown, Sierra Leone. He studied at University College, London, and at Liverpool and Brussels. He took the diplomas of M.R.C.S.Eng., L.R.C.P.I. and L.M. in 1880, and the M.D.Brux. in the following year. He became an assistant in midwifery to Professor Briggs of the University of Liverpool, and also assistant in surgery to Professor Rushton Parker, and worked under the late Sir William Mitchell Banks. Dr. Renner was in the Government service of Sierra Leone for over twenty-nine years. After serving at first as assistant colonial surgeon, he, on the formation of the West African Medical Service, became P.M.O., and was commended by the late Mr. Joseph Chamberlain, then Secretary of State for the Colonies, for the manner in which he carried out his duties. Dr. Renner retired from the Government service in 1913 and devoted himself to public affairs. He was appointed a councillor, and in November, 1916, mayor, of Freetown, which position he held at the time of his death.

Medical News.

SIR ROBERT ARMSTRONG-JONES has been placed upon the Commission of the Peace for the County of London.

DR. L. A. TAYLOR, Honorary Secretary of the Dudley Division of the British Medical Association, and Dr. J. Reidy, a member of the Stepney Borough Council, have been appointed to the Commission of the Peace for the County of Stafford and the County of London respectively.

It has been brought to the notice of the Ministry of Pensions that a number of pensioners are appealing to the charitable on the ground of insufficient means. The Local War Pensions Committee, whose address is obtainable from the nearest Post Office, have ample powers for dealing with all deserving cases of this nature from public funds, and the charitable public are therefore urged to refer such applicants to this body.

THE Imperial Nurses Club, 137, Ebury Street, London, S.W.1, was opened last November by Lord French. It forms a resting-place for members of the military and civil nursing profession passing through London. It has been of special value to those proceeding to or from active service abroad. Funds are needed to place the club on a firm footing, and donations may be sent to the honorary secretary.

THE annual meeting of the Medico-Psychological Association of Great Britain and Ireland will be held at 11, Chandos Street, Cavendish Square, London, on Wednesday, July 25th, at 2.45 p.m., under the presidency of Lieut.-Colonel David G. Thomson, M.D., when the usual reports will be presented and the regulations and syllabus for the training and examination of candidates for the certificate of proficiency in nursing and attending on the mentally defective will be considered. A paper by Dr. Mercier on madness and unsoundness of mind will be read for him by Sir Bryan Donkin.

SIR A. GARROD THOMAS, M.D., of Newport, has been elected to represent South Monmouth in the House of Commons by a majority of 6,042, which is the largest on record. Sir Garrod Thomas stood in support of the Government. He is an ex-president of the South Wales and Monmouthshire Branch of the British Medical Association, and was vice-president of the Section of Diseases of Children when the Association held its annual meeting in Swansea in 1903.

THE *Dictionary of National Biography* has been presented to the University of Oxford by the family of the late Mr. George M. Smith, and will in future be published

by the Oxford University Press. Mr. George M. Smith undertook the great work at his sole risk and expense in 1882; during fifteen and a half years, 1885-1900, under the editorship of Sir Leslie Stephen and Sir Sidney Lee, the original promise of quarterly publication was faithfully kept; the sixty-third volume, which completed the *Dictionary*, was published in 1900, and three volumes of supplement, bringing the record down to the death of Queen Victoria, were published in 1901; Mr. George M. Smith died on April 6th in that year. In 1908-9 these sixty-six volumes were reissued in twenty-two volumes, now the current edition. In 1912 Mrs. George M. Smith, to whom the *Dictionary* had been bequeathed, published the second supplement of three volumes, containing the lives of all notable persons who died between January 22nd, 1901, and December 31st, 1911.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

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LETTERS, NOTES, ETC.

A STATE MEDICAL SERVICE.

DR. FERDINAND REES (Wigan) writes: From the article on a State Medical Service in your last issue one must infer that the British Medical Association considers it its duty to tackle the advocates of a State medical service wherever they may venture to appear. The medical profession has always been very Conservative in its ideas, probably because the majority of its wealthy customers have belonged to that political party. The aim of the keen medical shopkeeper has always been never to offend his wealthy customers. The majority of the medical profession have always been the flunkies of the wealthy. The squire, the parson, and the doctor have always run in harness; but the squire has always determined the direction and the pace. Dr. Brackenbury (the champion of the British Medical Association) has an epigram about treating men, women, and children which reminds one of the advice, which the successful medical tradesman is so fond of giving to the young practitioner, "Treat the patient." Keep the patient on your visiting list as long as possible and run up as big a bill as possible. Of course there may be some tradesmen who make big incomes by "small profits and quick returns." Some sixpenny doctors have been most successful from the monetary point of view. The Robin Hood maxim of robbing the rich to give to the poor has been very popular with some practitioners. To be the amuser of fashionable ladies has proved very lucrative to other practitioners. No wonder that Christian Scientists and quacks flourish! Is disease a reality? Is scientific medicine a myth? From the way the Brackenburys talk one would imagine that every one nowadays had free choice of doctor. Why is the specialist so increasingly popular? Is the present method of remuneration essential to the happiness of patient and doctor? Would not the community obtain more efficient doctoring if there were collective action against disease? Why should the doctor be bothered with bills and book-keeping and a study of the arts of trade and advertisement? Let your champion deal with a few of these questions.

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TROPICAL MEDICINE AND HYGIENE.

BY

SIR PATRICK MANSON, G.C.M.G., F.R.S.,

LATE MEDICAL ADVISER TO THE COLONIAL OFFICE.

It has long been recognized that a number of diseases are peculiar to, if not confined to, warm climates. Many hypotheses in explanation of this circumstance have been advanced, but it is only of late years—only since we have been able to recognize the germ causes of many of these diseases, or the media by or in which they are conveyed—that it has become possible to arrive at the true explanation. Almost without exception, tropical diseases—that is to say, those diseases which require for their successful propagation a warm climate—are caused either by a protozoal organism or by a helminth, which, in their turn, in order to pass from one vertebrate host to another, demand either an animal vector peculiar to warm climates, or require a warm medium in which to qualify for such passage. Hence, although tropical disease once acquired can run its usual course even if the person remove to a cold or even frigid climate, that person cannot spread the disease there, nor, under natural conditions, can the disease be acquired there. On the other hand, bacterial diseases may be acquired and spread in any climate, as the germs in their passage from one human host to another do not necessarily demand any special animal intermediary, nor are they destroyed in their passage by ordinary temperatures. In the following summary relating to British contributions to tropical medicine bacterial diseases are therefore not considered. It is true such bacterial diseases as leprosy, cholera, and plague are often referred to as tropical diseases, but a little consideration—a little investigation into their history and geographical range—will show that they have no more claim to be considered tropical diseases than have tuberculosis or syphilis.

MALARIA.

Although a number of contributions of considerable importance in tropical pathology had been made by British as well as by other investigators prior to 1880 there can be no question that it was the discovery by Laveran of the malarial parasite, in the November of that year, that has led to the recent rapid and remarkable development in tropical medicine. It was some time before the value of Laveran's discovery was recognized, or the nature of the organism concerned and the significance of its various phases determined. Golgi made an important advance in these respects by working out the morphological features of the tertian and quartan parasites, and of what is now known as the schizogony or asexual phase. Further advances in our knowledge of this part of the life-cycle of the malarial parasites were also made by other Italian observers; but here, for the time being, progress ceased. It may therefore be said that, except as providing an invaluable guide in diagnosis and treatment, Laveran's discovery for more than a decade remained barren. It gave no clue to prevention; it did not tell us in what way malarial infection was acquired, nor did it explain its peculiar geographical and topical distribution and limitation.

As the development towards sexual maturity—a biological necessity for the malaria parasite as for all animal parasites—had never been traced in the human body, it follows that to effect this necessary development escape from the human body is essential. Neither Laveran nor Golgi's observations had filled in this important gap in the life-history of the parasite.

Golgi, it is true, had made out the significance of certain phases of the parasite as seen in the circulation; he showed in what way the invading organism multiplied after it had obtained entrance into the human body, but neither he, nor any of his co-workers, had grasped the significance of certain additional phases also represented in the blood, and more especially manifested on the microscope slip—that is to say, in blood after its removal from the human body.

Perhaps the most striking feature in connexion with the malarial parasite as observed under the microscope is the so-called "flagellated body." This squirming, wriggling, many-armed organism had long been a puzzle to the naturalist as well as to the pathologist. Some got over the

difficulties of its explanation by pronouncing it to be a moribund or effete form of the parasite in its death agony. It had been observed that this flagellated body shows itself only in blood that had been for some time on the microscope slip—that is to say, after the parasite had been removed from the human body. It had never been seen in quite newly-drawn blood. Its development had been witnessed over and over again from certain intracorporeal forms of the parasite, but only after the blood containing these forms had been in the field of the microscope for a considerable period. This fact of the flagellated body coming into existence as such only when the parasite from which it was evolved had left the human body suggested to the writer that its function lay outside the human body, and, if so, that it was the early extracorporeal phase of the parasite and, if we may use the expression, designed for its passage from one human host to another. But, assuming that such was the case, it remained to explain how an organism, which while still in the body was invariably included in a red blood cell, could spontaneously and by its own efforts escape from the human body. Such a feat on the part of a passive organism was inexplicable. I was driven to the conclusion that if this phase of the malarial parasite were really the first stage in its development outside the human body some extraneous agency must act as liberator. The question then came to be what this extraneous agency might be.

Many years before the writer had shown that in the case of another blood parasite—*Filaria bancrofti* (the *Filaria sanguinis hominis* of Lewis)—the mosquito acted as a liberating and also as a fostering agent. Impressed by the close parallelism, as regards their respective physical conditions and necessities, between the malaria parasite and the filaria—the one being imprisoned in a blood corpuscle and powerless to escape, the other, the sheath-included and equally helpless filaria—as well as their respective biological necessities, he thought that the same, or a similar liberating agency might be operative in both instances. An additional circumstance pointing to such a hypothesis was that both parasites are limited in geographical range to warm climates. On these considerations it was concluded that as the mosquito had been proved to be the liberating agent in the case of the filaria, it might be, and probably was, the liberating agent in the case of the malarial parasite, and therefore that the first phase of the malarial parasite outside the human body had to be passed in this insect. I formulated this hypothesis in the BRITISH MEDICAL JOURNAL of December 8th, 1894. Unfortunately, circumstances made it impossible for me to follow up the fate of the flagellated body in the mosquito, but Sir Ronald Ross, who was then in England, was so impressed with the probability of my hypothesis being correct, that on his return to India in 1895 he set to work to endeavour to establish it. After many years of intense application and in the face of many difficulties, he succeeded in tracing the malarial parasite into the stomach wall of certain "dapple-winged" (*Anopheles*) mosquitoes. In consequence of difficulties in procuring material and suitable human subjects for observation and experiment, he transferred his attention to a malaria-like parasite (*proteosoma*) of birds. In these he succeeded in tracing the development of the parasite in the stomach wall of *Culex* mosquitoes, and thence into the salivary glands and saliva of the insects, and by experiment showed that such insects were capable of conveying the infection to hitherto immune birds. Ross's observations were quickly confirmed by Daniels, Christophers and Stephens, Grassi, and many others. Grassi recognized Ross's "dapple-winged" mosquito as belonging to the *anopheles*-lines, and showed conclusively that certain members of this family of mosquitoes were efficient transmitters of malaria. Ross had not ascertained what exactly happened to the malarial parasite immediately after ingestion by the mosquito, and while still in the lumen of the insect's stomach, which enabled it to pass into the tissues of the stomach wall. An American observer—Macallum—filled in this gap. He showed that the flagellated body of halteridium, another malaria-like parasite of birds, was the male parasite, that the flagella it produced functioned as spermatozoa, that when they broke away in the blood in the stomach of the mosquito they entered a female parasite, inducing therein a development that eventuated, while the female was still in the stomach

of the insect, in the formation of that "travelling vermicle," which penetrated the stomach wall and therein entered on the development Ross had so successfully traced. Thus was completed the history of the life-cycle of the malarial parasite outside the human body, confirming the mosquito-malaria hypothesis.

Although the work of Laveran and Ross was accepted by those best competent to judge, and although the direction in which its principal application should be made was evident to all well-informed tropical sanitarians, the public was by no means convinced of its reliability or of the importance of the mosquito as a diffusing agent of malaria. Experiments on human beings had succeeded in the hands of the Italians in demonstrating that a mosquito fed upon a malarial patient could, after an interval of ten to twelve days, convey malaria to hitherto immune individuals, but the public did not appreciate this, and moreover, as the experiments had been conducted in malarious countries there was always a possibility that some unsuspected fallacy associated with locality had crept in, seeing that other influences which might include the true malaria influence were possibly operative. Accordingly, the British Colonial Office, believing in and recognizing the importance of the discoveries as bearing on the health and prosperity of tropical countries, devised an experiment designed to convert the public to the mosquito-malaria theory and to facilitate in this way practical measures based on that theory. In 1900 it sent to the Roman Campagna an expedition consisting of Drs. Sambon and Low, of the London School of Tropical Medicine (who were subsequently joined by an artist), with instructions to live in a mosquito-protected hut located in a highly malarious district of that highly malarious region during the most malarious season of the year, protected at night only, and by wire gauze covering only, from mosquito attack. Although the people about them were heavily affected with malaria these observers, relying solely on mosquito protection, remained in perfect health. At the same time mosquitos infected in Rome with malarial parasites were sent to London by the same observers, and were there fed on two Englishmen who had never been exposed to malarial influences, or been in malarious countries, with the result that both these men contracted malarial fever and showed malarial parasites in abundance in their blood. This crucial experiment was accepted by the most sceptical as conclusive proof of the mosquito-malaria theory.

It was long before Laveran's discovery was appreciated in England, but it made way by degrees, and its significance and importance became thoroughly apprehended by a few. It may be said that it led more or less directly to the establishment, at the instance of the late Mr. Joseph Chamberlain, of our schools of tropical medicine, wherein large numbers of post-graduate students destined for service in tropical countries were taught haematology and the study of the blood parasites generally. These students, well taught in blood examination with high powers of the microscope, were, as a result of this training, not only more efficient practitioners but before long were instrumental in discovering other pathogenic organisms of importance in tropical pathology. Some of these discoveries may be referred to.

TRYPANOSOMIASIS.

Forde, a former student of the London School of Tropical Medicine, found in the blood of an Englishman living in the Gambia and suffering from an irregular fever an organism the nature of which he failed to recognize. He showed it to Dutton, an emissary of the Liverpool School of Tropical Medicine, who recognized it to be a trypanosome, and named it *Trypanosoma gambiense*. Later, Castellani, also a former student of the London School of Tropical Medicine and at the time a member of the Royal Society's Commission for the study of sleeping sickness in Uganda, found the same parasite in the cerebro-spinal fluid of patients suffering from sleeping sickness. Sir David Bruce, Nabarro, and many others confirmed Castellani's observation, and definitely linked up the trypanosome of Forde and Dutton with sleeping sickness as cause and effect. The parasite having been discovered and its association with sleeping sickness confirmed, it became a matter of importance to ascertain in what way the infection was conveyed. Just as happened in the case of the malarial parasite, some

antecedent observations led to the clearing up of this point. Many years before Forde and Dutton's discovery Lewis described a similar organism (*Trypanosoma lewisi*) as a frequent parasite in the blood of the rat. Apparently this parasite of the rat was non-pathogenic. Not long afterwards Evans found a similar parasite in the blood of equines, bovines, and other domestic animals, in association with, and as the undoubted cause of, the deadly disease known in India as "surra."

In 1894 Sir David Bruce investigated in Zululand the disease known in South Africa as "fly disease," an epizootic extensively prevalent among and fatal to domestic animals in South Africa and other parts of that continent, and therefore of great economic importance. He very soon found a trypanosome (*Trypanosoma brucei*) in the blood of the stricken animals and also in the wild game of the infected districts, and confirmed the popular belief that the disease was conveyed by the bite of the tsetse fly—*Glossina morsitans*—one of several species belonging to a genus of biting flies peculiar to Africa.

In the light of this antecedent knowledge it was not long before Bruce and his colleagues in Uganda were able definitely to link up sleeping sickness and its parasite with another species of tsetse fly, *Glossina palpalis*, very prevalent in the afflicted sleeping sickness areas. Observations on the topical distribution of the fly and of sleeping sickness confirmed the conclusions arrived at by experiment on the lower animals—some of which were found to be susceptible to the infection, and to be harbourers of the parasite even under natural conditions.

Bruce at first supposed that the fly transferred the trypanosome directly and in a mechanical way on its blood-fouled proboscis from the infected to the uninfected, just as the lancet inoculates the vaccine virus; but a German (Kleine) showed that although such might be the case in a small proportion of instances, and for a short time—twenty-four hours—after the fly had bitten, in the majority of cases the parasite was conveyed only after it had undergone developmental changes in the fly—changes which require some eighteen days to complete, and which eventuate in a proportion of flies becoming permanently infective. Miss Muriel Robertson, who had previously made important contributions in the morphology and life-history of the trypanosomes of some of the lower animals, confirmed Kleine's observations, and also considerably expanded them by showing that it was only during a particular period in the recurring cyclical multiplication of the trypanosome in the circulation of the vertebrate host that it could be efficiently conveyed to its intermediary the tsetse fly. Further, this talented protozoologist traced the development of the parasite in this insect through its various phases in its passage from the alimentary canal to the salivary glands and thence to the vertebrate. Concurrently with investigations into the life-history of the trypanosome others were directed to ascertaining the topical distribution and bionomics of *Glossina palpalis*, notably by Hodges and Bagshawe.

For some time it was believed that man was subject to only one of the considerable number of trypanosomes now known to affect the vertebrates, but recent discoveries have shown that he is subject to invasion by at least two other members of the group equally, if not more, dangerous—namely, *Trypanosoma cruzi*, an American species which so far has not been studied specially by British observers, and *Trypanosoma rhodesiense*. The discovery of this latter trypanosome we owe to Stephens and Fautham. It appears to be confined to Rhodesia, particularly, but not entirely, to the north of the Zambesi. Morphologically it resembles *Trypanosoma brucei*, if it be not identical with that trypanosome, and like *Trypanosoma brucei* is transmitted, as shown by Kinghorn and Yorke and others, by *Glossina morsitans*.

Much attention has been given by British workers to the symptomatology and morbid anatomy of sleeping sickness. As regards the latter, the most important observations are those of Mott, who has shown that the nervous symptoms of the disease are the result of an extensive small-cell infiltration of the perivascular connective tissue of the brain, very similar to that occurring in general paralysis of the insane.

TICK FEVER.

Vandyke Carter was the first to describe a spirochaete in association with the relapsing fever of India, a spiro-

chaete possibly identical with the *Spirochaeta recurrentis* of Obermeyer. According to Mackie, it is transmitted in India by the louse. Livingstone and Sir John Kirk had called attention many years ago to a fever prevalent in particular parts of Portuguese East Africa (notably Tele on the Zambesi) which was attributed locally to the bite of the carrapata, a tick having bug-like habits. It was reserved for Milne and Ross in Uganda and Dutton and Todd on the Congo to show that this African carrapata disease is a relapsing fever, and that it is caused by a spirochaete—*Spirochaeta duttoni*—which, in its turn, is transmitted from man to man by the bite of the tick *Ornithodoros moubata*; and, further, that it can be transmitted not only by the tick originally infected but also by the progeny of that particular tick. At first there was some doubt as to whether or not the new spirochaete was identical with that of Obermeyer, but well marked differences in their respective pathological and clinical effects on man, as well as the experimental work of Kinghorn and Breinl, showed that, although morphologically similar, they were specifically distinct. The life-history of the spirochaete in the vertebrate host has been worked out to some extent, particularly by Breinl, of the Liverpool School of Tropical Medicine, and in the tick by Sir William Leishman, R.A.M.C. According to Breinl, the parasites, when they disappear from the blood at the crisis of the characteristic recurring febrile paroxysms, are taken up and destroyed for the most part by the phagocytes; a proportion, however, enter certain cells wherein they coil up and, ultimately, after breaking up into a number of granules, escape as such from the cell and develop in the blood into the spirochaetes which, on maturing, give rise to the succeeding paroxysm of fever. As regards the spirochaetes in the tick, Leishman found that on entering the stomach they also break up into minute granules, which pass into the cells of the Malpighian tubes, and thence into the eggs of the tick, and also into its excreta. Thus the parasite has double opportunity of survival, either in the next generation of ticks or by passing out in the excreta of the tick and so obtaining access to a human or other vertebrate host through contamination of the wound it inflicts when the tick next proceeds to feed. Balfour has made some very interesting observations on the process of granule formation and discharge in the case of a similar spirochaete in Sudanese fowls, which tend to throw light on what occurs in *Spirochaeta duttoni*, both in the tick and in the human body.

YAWS.

Soon after the discovery of the spirochaete of syphilis by Schaudinn, Castellani, then of the Ceylon Medical Service, described a similar though different organism, *Spirochaeta pertenuis* (v. *pallidula*) as the germ cause of yaws. His observations have been confirmed and are now generally accepted. The same observer described another species of spirochaete, *Spirochaeta bronchialis*, as the cause of a form of chronic bronchitis occurring in Ceylon, and probably in Africa.

LEISHMANIASIS.

Medical men in India and elsewhere have long been familiar with a form of chronic irregular fever associated with great enlargement of the spleen and liver. It is a deadly disease. In parts of India—Assam, for example—where it is especially prevalent and is called kala-azar, it is a serious matter, having swept away a large part of the population of some districts, and is, or was, spreading steadily as an epidemic over a large part of the Brahmaputra valley. The disease was generally relegated to the malarial group, although some observers, being struck with the absence in this febrile splenomegaly of the three pathognomonic marks of malaria—namely, tertian or quartan periodicity, amenability to treatment with quinine, and the presence of the malarial parasite or its product, haemozoin, in the blood—refused to acknowledge its malarial nature. Several commissions sent by the Government in India to ascertain the exact nature of the disease completely failed to establish its etiology. Some of us thought that kala-azar might possibly be due to some parasite similar to the trypanosome, at that time recently discovered in association with a chronic irregular fever and sleeping sickness. Sir William Leishman in 1902, and again in 1903, almost simultaneously with Donovan, found in the spleen, in cases of Indian febrile splenomegaly, a minute

oval body possessing two nuclear masses, one spherical or oval and relatively of considerable size, the other linear or bacilliform and very minute. Extended investigations have shown that these oval bodies are present in the spleen, liver, bone marrow, and elsewhere in every case of kala-azar, and that they are characteristic and the cause of this deadly disease, which, as we now know, is by no means confined to India. Attempts at cultivation on bacteriological lines, that is to say in warm media, were unsuccessful. Later, however (in 1904), Sir Leonard Rogers ascertained that if these Leishman-Donovan bodies, as they came to be called, were kept at ordinary tropical atmospheric temperatures, about 22° Centigrade, in a sodium citrate solution, they underwent a remarkable development, first multiplying by division and later on developing into flagellated herpetomonas forms. This discovery indicated that the parasite is capable of living outside the human body, it may be in some cold-blooded animal, such as an insect or other intermediary. From the point of view of prevention, it is extremely important that the life-history of *Leishmania donovani* be completed. In endeavouring to attain this desirable end workers must not allow themselves to be too much obsessed by the fact that in the similar parasites of malaria, of trypanosomiasis, of spirochaetosis, as well as those of yellow fever and of dengue, an arthropod intermediary is essential in their life-history. Possibly *Leishmania* requires such a vector and intermediary; analogy certainly suggests this, but suggestion is not proof. The recent, and to my mind very important, observations of Laveran and Fantham and Porter have shown that similar flagellated organisms—proper to insects, etc.—can be transmitted both by inoculation and by the mouth to warm-blooded vertebrates and flourish in them, such transmission being by no means in every instance a biological necessity for these parasites. It is true that Patton has succeeded in tracing the development of *Leishmania donovani* up to a point in the bed-bug, but so far his observations have not been accepted as conclusive that the bug is the transmitter or a necessary agent in the life-history of *Leishmania*.

Not long after the discovery of the Leishman-Donovan body in kala-azar similar parasites were found by Wright in Oriental sore, of which troublesome form of ulceration they are undoubtedly the germ cause. Still more recently similar bodies have been found in a variety of other ulcerative affections in tropical America and, by Christopherson, in the Sudan, one of them, *Espundia*, being a very grave disease indeed.

YELLOW FEVER AND DENGUE.

There are two fevers peculiar to warm climates which, though differing very much as regards gravity, have in some respects, both etiologically and clinically, many features in common. I refer to yellow fever and dengue. (1) Their respective germs exist in the blood and are ultramicroscopic; (2) their germs are conveyed to man by the same species of mosquito, *Stegomyia calopus*; (3) one attack confers absolute or relative immunity; (4) in both there is a primary fever and generally a secondary fever; (5) in both there is marked flushing of the skin, violent headache, general aching, and a rapidly attained high temperature which is generally associated with a relatively slow pulse; the duration of the primary fever—three, four, or five days—is about the same in both. These etiological and clinical features held in common suggest some kind of relationship as regards the respective germs. Carlos Finlay of Havana was the first to endeavour to prove experimentally that yellow fever was conveyed by mosquito bite, and he distinctly indicated *Stegomyia calopus* as the species concerned. His experiments were neither numerous nor convincing, and the subject was dropped till the American commissioners—Reed, Carroll, Agramonte, and Lazear—took the matter up and definitely established the fact that yellow fever is transmitted by the bite of *Stegomyia calopus* and, in nature, by no other means. The practical application of this discovery, in Havana and on the Panama Canal by Gorgas and his colleagues, and by others elsewhere in tropical America, has led to what must be regarded as one of the greatest triumphs of preventive medicine, whether in the tropics or elsewhere. Any claim for a share in this important achievement that might be advanced for British workers can be at most only an indirect one.

Fortunately the deadly yellow fever has hitherto been confined to tropical America and West Africa, extending to Western Europe and parts of America only at long intervals and only during the hot months of the year, and even then only in circumscribed epidemics. Not so dengue; it occurs in extensive epidemics throughout the entire tropical and subtropical belts, where in certain places it is more or less endemic. Why yellow fever has not a similar distribution is hard to explain, seeing that both diseases are conveyed by the same *Stegomyia* mosquito. It is only quite recently (1916) that *Stegomyia* has been proved to be a vector of dengue. For this important piece of information we are indebted to three Australian physicians—Burton Cleland, Bradley, and McDonald. It is true that previous workers had blamed the mosquito as the vector of the germ of dengue—notably Graham in Syria in 1903, and, later, Ashburn and Craig in Manila, but in neither case were the experiments satisfactory, and it would appear now that the mosquito which they blamed—namely, *Culex fatigans*—is not the only transmitter, if it be a transmitter at all. The Australian physicians referred to, although they failed with *Culex fatigans*, succeeded in communicating dengue, under conditions which completely excluded every possible source of fallacy, by infected *Stegomyia calopus*.

PAPPATACI FEVER.

Pappataci fever—an ephemeral fever of approximately three days' duration and regarded sometimes in tropical countries as a fever of acclimatization—has long been known to tropical practitioners. Shortly before the part played as vector by *Phlebotomus papatasi* was known the clinical characters and specific nature of this fever were described and recognized by James in India and McCarrison in Chitral. Subsequently Birt confirmed the discoveries of Doerr, Franz, and Taussig as regards the part played by *Phlebotomus*, and British naturalists have worked out in a great measure the bionomics of that insect.

UNDIFFERENTIATED FEVERS OF THE TROPICS.

There can be little doubt that in addition to the foregoing there are other fevers of a specific nature peculiar to the tropics, whose germ causes and vectors have hitherto escaped detection. Many attempts have been made by British observers, particularly Crombie and Leonard Rogers, to classify these fevers on a clinical basis, but until the germs or their vectors have been recognized, any arrangement of this nature can be regarded only as a temporary one.

HELMINTHIASES.

Trematodes.

Of late years many additions have been made to the list of trematodes invading tropical mankind, as well as to our knowledge of the pathological effects and life-histories of the more important of them. For much of this we are indebted to British investigators.

I may cite the new West African fluke, *Watsonius watsoni*, discovered by Dr. Watson in 1904, and since found to be not uncommon in certain parts of Nigeria; *Gastrodiscus hominis*, discovered by Lewis and McConnell in India in 1876; *Echinostoma malayanum*, by Drs. Macaulay and Stanton in 1911 in the Malay States; *Clonorchis sinensis*, by McConnell, in 1874; *Opisthorchis novercæ*, by Lewis and Cunningham, in 1872; *Fasciolopsis buskii*, by Busk, in 1843; *Paragonimus westermanii*, for the first time in man, by Ringer in Formosa in 1880, its ova having been recognized previously and independently by Baelz and the writer as a characteristic feature in the sputum of patients suffering from a somewhat serious form of endemic hæmoptysis occurring in Japan, Korea, Formosa, and the Philippines.

Schistosomiasis.

These discoveries, though interesting to the helminthologist, are of comparatively small importance to the pathologist, especially if compared with the most recent discoveries in connexion with that peculiar family of trematodes, the Schistosomidae, including *Schistosoma hæmatobium* (Bilharzia), *Schistosoma mansoni*, and *Schistosoma japonicum*.

Since Bilharz, in Egypt, in 1851, discovered the parasite which bears his name it has been ascertained that this trematode is widely distributed throughout the African

continent, the adjacent islands, and in parts of Asia; that in many districts it is very prevalent—for example, Lower Egypt, where it affects one-third and in some places even 90 per cent. of the fellaheen population; that it is the cause of grave and even fatal disease; and that it has a decidedly deteriorating influence on the general health and therefore on the economic condition of the seriously affected area. Its pathological effect has been fairly exhaustively studied of late years, especially by Madden, Milton, Sandwith, and others, and the morphology of the adult worm and its ova determined, but the important matter of its life-history and the channels by which it enters the human body were until quite recently (1916) either quite unknown or at most mere matters of speculation. Dr. Leiper of the London School of Tropical Medicine, by a series of brilliant observations and successful experiments, has now completely filled in this hiatus in our knowledge, and has thereby placed in the hands of the sanitarians a sure guide in developing methods for the prevention of a disease which hitherto has proved the despair of the therapist. The history of Leiper's discoveries is interesting, not only as regards the subject they concern more particularly, but also as once more showing how what at the time appears to be a discovery with relatively small bearings may, sooner or later, lead to others of vastly greater importance.

A chronic and very fatal disease characterized by enlargement of the liver and spleen, blood and slime in the stools, anaemia, and ultimately ascites, had been recognized for a considerable time as endemic in certain parts of Japan and China. Subsequently the ova of a trematode were found to be a feature in the stools and organs of such cases. Still more recently Katsurada found in the liver of cats from one of the endemic areas numerous schistosomes containing eggs identical to all appearances with those found in the faeces of the human subjects of this disease; and still later, 1905, Catto found the same parasite and eggs in the organs of a Chinaman who died in Singapore. The disease is now known as Katayama's disease. Japanese observers have found that its parasite, *Schistosoma japonicum*, can be communicated to cats simply by immersing them in the water of certain rice fields in the endemic area. It was not essential that the water should be swallowed; simple immersion of part of the body of the cat sufficed. Myari succeeded in infecting animals from a mollusc common in these rice fields. He traced the development of the trematode in the mollusc and concluded that man acquired infection by working in the rice field, a conclusion supported by the experience of Europeans in China, principally sportsmen devoted to snipe shooting, who, it is to be presumed, had acquired the disease in wading through rice fields or swamps. Leiper, impressed by these observations and recognizing their possible bearing on bilharzia disease of Egypt, applied for and obtained permission and facilities from the London School of Tropical Medicine to proceed to the Far East to familiarize himself with and to test Myari's conclusions. The latter, somewhat modified, he confirmed. Returning to England, he placed the matter before the War Office authorities, who, recognizing the importance of bilharzia disease to the large body of troops assembled in Egypt, and acting in concert with the Medical Research Committee, commissioned Leiper to proceed at once to that country to study locally the etiology of bilharziasis and to suggest measures for its prevention and for the protection of the troops. In a very short time Leiper, assisted by Drs. J. G. Thomson and Cockin, ascertained that on emerging from the terminal-spined egg, opportunity serving, the miracidium of *Schistosoma hæmatobium* enters the liver of a fresh-water mollusc, a species of *Bullinus* (*dybowskii*), very common in the irrigation canals of Egypt, and transforms into a sporocyst and daughter sporocysts, wherein vast numbers of cercariae develop. The cercariae ultimately escape into the water, penetrate—opportunity offering—the skin of man or other vertebrate, and, dropping their tails in the passage, find their way into the liver of the vertebrate host, wherein, after six to ten weeks, they attain sexual maturity, becoming adult trematodes, which, passing into the veins of the bladder, produce the characteristic terminal-spined eggs which escape in the urine.

During these investigations Leiper was able to settle another and much disputed point in connexion with bilharziasis. It had long been recognized that there are

two types of bilharzia ova, one terminal-spined and passed principally in the urine and only occasionally in the faeces; the other lateral-spined and, practically, found exclusively in the faeces. Both types of ovum were generally attributed to the same species of trematode, the difference in the position of the spine being variously explained. In 1903 the writer, in examining the faeces of an Englishman from the West Indies, encountered numerous lateral-spined ova. Seeing that the patient had never visited Africa or any other region where bilharziasis was known to be endemic, that the urine contained no terminal-spined ova, and that, although thousands of examinations of the urine must have been made in the West Indies, bilharzia ova had never been reported from that part of the world, he suggested that the schistosoma producing these lateral-spined ova must belong to a species other than that producing terminal-spined ova. Sambon, adding many additional reasons, concurred in this view and paid me the compliment of naming the new species *Schistosoma mansoni*. Looss, who considered that this trematode did not require an intermediary, refused to accept the species. Leiper, however, in the course of the investigations just referred to, found that the miracidium of the lateral-spined ova enters a species of snail, *Planorbis boissyi*, quite distinct from the *Bullinus* favoured by the terminal-spined ova, and that on reaching the vertebrate host developed into a sexually mature schistosoma anatomically quite distinct from that resulting from infection from the miracidium of the terminal-spined ovum. Thus *Schistosoma haematobium* produces only the terminal-spined ova, and *Schistosoma mansoni* only lateral-spined ova, and are distinct species. Quite recently many cases of lateral-spined bilharziasis have been reported from the West Indies and Brazil, but never a case of terminal-spined bilharziasis, so that now there can be no question as to the validity of the new species *Schistosoma mansoni*. In further confirmation of this conclusion Lutz has found that a *Planorbis* is its intermediary host also in Brazil.

Dracontiasis.

Although the anatomical features of the adult guinea-worm and of its larva had been ascertained, little was known of the life-history of this formidable parasite until Fedschenko discovered in 1870—a discovery subsequently confirmed by the writer—that the larva on being passed into water enters the body of a fresh-water cyclops, wherein it undergoes extensive developmental changes. In 1907 Leiper was sent by the London School of Tropical Medicine to West Africa to endeavour to ascertain in what way the parasite after leaving cyclops returns to man. He found that if the infected crustacean were immersed in a weak (0.22 per cent.) solution of hydrochloric acid (in imitation of gastric juice) the cyclops was immediately killed, whilst the included parasites, on the contrary, were stimulated to great activity, and bored their way through the integument of the cyclops. This experiment, he conjectured, indicated the route likely to be followed by the guinea-worm in nature. As confirmatory experiment on man was out of the question, Leiper administered infected cyclops to a monkey, and had the satisfaction, on the death of the monkey several months later in England, of finding three female and two male guinea-worms in an advanced state of development in its tissues. From this we may conclude that the infection is acquired by man from cyclops-infested drinking water fouled by guinea-worm carriers. Efficient preventive measures are clearly indicated by this new knowledge.

Ascaris lumbricoides.

It has been generally accepted that the experiments of Davaine, Grassi, and other Continental workers had proved that the larvae in the ripe eggs of ascaris were hatched out in the human intestinal canal, and therein immediately proceeded to sexual maturity. Quite recently, however, the experimental work of Stewart tends to show that the life-history of this very common parasite may be not quite so simple. Sambon already had pointed out that the papilla or beak, a conspicuous feature in the larval ascaris, indicated that the little organism at an early stage of its existence bores its way into the tissues. Stewart has now shown that if ripe ascaris eggs are fed to a mouse many of the larvae liberated in the intestinal canal pass to the lungs, and, if the dose of eggs is large, may even induce fatal pneumonia. The complete bearing

as regards man—the normal host of *Ascaris lumbricoides*—of this observation is not quite apparent, but it certainly goes a long way to prove Sambon's view that, before attaining sexual maturity, the parasite must enter the tissues of its human host.

Filariasis.

In 1872 Timothy Lewis, in India, ascertained that the larval filaria discovered by Demarquay and Wucherer in pathological fluids was normally a parasite of the circulation. He called it *Filaria sanguinis hominis*. In 1876 Bancroft, in Australia, discovered the parental worm, *Filaria bancrofti*. Subsequently, in 1878, the writer ascertained that a *Culex* mosquito served as its intermediary host, abstracting the microfilaria from the blood and providing it with an opportunity for undergoing important developmental changes, during which it increases in size from a microscopic object to one just visible to the naked eye, and possessing an alimentary canal as well as remarkable powers of locomotion. In 1900 Low at the London School of Tropical Medicine, and subsequently James in India, made the important discovery that at this stage of development the larval worm passes into the labium of the mosquito's proboscis, and gets back into man direct, the old idea of the mosquito dying on the water and the embryos escaping into this medium and so reaching man, being thereby, if not absolutely disproved, rendered improbable. Noè, Grassi, and Fülleborn in the case of the allied parasite (*Filaria immitis*) of the dog, and Bahr in the case of the human parasite, have shown the exact mechanism of how this takes place. Finally, the metamorphosed embryos arrive at the lymphatics, where development is completed and the new generation of embryo filariae born.

When working in China at the life-history of the filaria I stumbled on the phenomenon known as "filarial periodicity." The microfilariae, I found, under normal circumstances come into the general circulation in the evening, increase in number till midnight, and gradually disappear towards morning, being almost entirely absent from the peripheral circulation during the day, when, as I subsequently ascertained, they lie up in the lungs and greater blood vessels. Stephen Mackenzie showed that by inverting the habits of the human host as regards the times of sleep this periodicity was correspondingly inverted, the filariae then coming into the peripheral circulation during the day and disappearing from it at night. For many years it was believed that this type of periodicity was observed by *Filaria bancrofti* embryos in all countries and climates. It certainly applies in most instances to China, India, Africa, and America, but we now know that it does not hold good for the islands of the Pacific—lands in which filariasis is particularly prevalent. Thorpe was the first to notice this, and later Lynch and others, especially Bahr, confirmed his observation in Fiji and elsewhere.

A larval filaria described by Ashburn and Craig in the Philippines in 1906 under the name of *Filaria philippinensis* has recently been proved to be only an example of *F. bancrofti*, adults from such cases being indistinguishable from the latter. Further, Leiper, after careful study, has failed to find any anatomical differences between the adult worms from Fiji and those from Asia and elsewhere. It seems to the writer that Bahr may have supplied the explanation of the discrepancy as regards periodicity between the ordinary and the Pacific microfilaria. This observer has shown that although in Fiji, as elsewhere, the night-feeding *Culex fatigans* is an efficient intermediary for the filaria, it is not the usual or most efficient intermediary in that group of islands. In Fiji the day-feeding mosquito, *Stegomyia pseudo-scutellaris*, is not only a very common insect but in respect of efficiency as an intermediary for the filaria is ahead of *Culex fatigans*, and he concludes that the filaria has partially adapted its habits to those of its favourite intermediary in the Pacific, just as it has adapted itself to the habits of *Culex fatigans* and other nocturnal mosquitoes, its favourite intermediaries in Asia, Africa, and America. It may be suggested that the explanation might lie in some peculiarity of climate or other circumstance peculiar to Fiji and the Pacific islands generally; but the same writer has shown that the microfilaria of coolies imported from India, who, presumably, had brought their parasites with them from their native country, retained the

nocturnal periodicity habit even after years of residence in Fiji, whilst Indians born in Fiji acquired the non-periodic filaria only. The point, however, is not settled, as *Culex fatigans* does exist and can carry the filaria in Fiji.

Although in many instances the filaria appears to be non-pathogenic, nevertheless, seeing that it is apt in a considerable proportion of instances to give rise to serious disease, especially elephantiasis, and that it occurs in a large proportion (5 to 75 per cent.) of the inhabitants of many tropical countries, it is a very important element in tropical pathology.

Many British workers have studied the pathological bearings of this parasite, and have definitely linked it up as the cause of lymphangitis, of chyluria, varicose groin and axillary glands, lymph scrotum, chylocele, various forms of lymphangiectasis and of tropical elephantiasis, and also of fatal septicaemia supervening on suppuration in abdominal and other seats of lymphatic varix. Of interest are the observations of Wise in Demarara, and Bahr in Fiji, on the cretified remains of effete filariae in the lymphatic glands and elsewhere.

Other Microfilariae.

As opportunity presented itself the writer made systematic examination of the blood of the natives of many different tropical countries, and in this way was enabled to discover the blood-haunting larval filariae of three additional and specifically distinct nematodes, namely, *Filaria loa*, *Filaria perstans*, and *Filaria demarquayi*.

The embryos of *Filaria (loa)*, the eye worm of tropical West Africa and its hinterland, and the cause of the peculiar condition known as "Calabar swellings," so common in Europeans in those regions, and so often mistaken for erythema nodosum, resemble very closely those of *Filaria bancrofti*. It differs, however, from the latter in minute anatomical details, and also in observing an exactly opposite periodicity, entering the general circulation during the day and disappearing from it at night. This circumstance led the writer to suggest that its liberating and intermediary host must be a biting fly of corresponding habit, and as the mangrove fly, *Chrysops dimidiata*, was very common and very active during the day in the endemic districts, he suggested that it might be the intermediary host, and therefore responsible for the spread of the parasite. This suggestion has been proved to be correct by Leiper, whose observations have been confirmed quite recently by Kleine in the Cameroons.

Acanthocheilonema perstans.

The larval form of this parasite was found in 1891 in the blood of a Congo negro suffering from sleeping sickness, and subsequently found in many cases of that disease. I concluded that it might be the cause of this condition, but Low and others have shown that this is not so. We now know that it is a very common parasite in West Africa, on the Congo, in Uganda, in British Guiana, and probably elsewhere in the tropics. Daniels was the first to find the adult worm in aboriginal Indians of British Guiana.

Filaria demarquayi.

The larvae of this species I found in the blood of the Caribs of St. Vincent, West Indies, and subsequently in aboriginals of British Guiana and possibly of New Guinea. Low has shown that it occurs also in others of the West Indian Islands—Dominica, Trinidad, and St. Kitts. He experimented with many insects to determine the intermediate host, but failed to find it. The adult form was discovered and described by Daniels in 1898. Whether the two last-mentioned nematodes produce any serious pathological effects has not been absolutely determined. It is unlikely that they do so.

SPRUE.

Sprue is one of the more important diseases of the tropics, particularly as regards Europeans, among whom, especially among the older residents, it is a very common, very intractable, and very deadly disease. It is only of late years that its characters, symptoms, and diagnosis have come to be generally recognized, mainly through the writings of Fayrer, Thin, myself, Carnegie Brown, Begg, Castellani, and Bahr. The histopathology of the disease has been well worked out by British pathologists. There has been much speculation about the assumed specific cause—bacteria, hyphomycetes, and even helminths having

been at different times incriminated; so far nothing definite in this respect has been arrived at. We are therefore still at a loss to indicate a scientific prophylaxis of a disease which amounts to a positive curse in such places as Ceylon, the Malay States, parts of India, of China, and of many other tropical countries.

THE DYSENTERIES.

It is only of late years that anything approaching to a scientific conception has been attained of what is indicated by the term "dysentery." Formerly the word was taken to indicate one definite and distinct disease, but nowadays we must regard it as indicating several forms of colitis brought about by a number of specifically distinct disease germs. Thus we have protozoal dysenteries attributable to such germs as the *Entamoeba histolytica*, the malarial parasite, leishmania, and *Balantidium coli*; helminthic dysenteries resulting from invasion of the walls of the colon by *Schistosoma japonicum* and *Schistosoma mansoni*; bacterial dysenteries produced by the several members of the *Bacillus dysenteriae* group, and probably of other bacteria. Although most of the original discoveries which have enabled us to arrive at this classification of the dysenteries are to be attributed to workers other than British, some of them may be fairly assigned to our fellow-countrymen, especially those having a bearing on the prevention of these diseases, such as the elucidation of the part played by dysentery carriers and their treatment.

BERI-BERI.

How many etiologically distinct forms of tropical multiple peripheral neuritis are included under the term "beri-beri" it is at present difficult to say; probably there are several. If we confine the term to that form of endemic multiple peripheral neuritis occurring in the Malay archipelago, China, and Japan, evidence is rapidly accumulating that, if it be not the only and sole cause of the disease, a dietary deficient in the vitamins essential for healthy nutrition has much to do with it. Although the initial observations which have led to this conclusion are to be credited to a Dutch physician—Eijkman—much has been done by British workers in narrowing the field for observation and in giving precision to conclusions. The observations of Eijkman on beri-beri in the Dutch East Indies distinctly indicated that in some way or other the disease was associated with a particular kind of prepared rice. Later Braddon insisted on this; and although his explanation of the *modus operandi* of the rice factor was not the right one, yet his insistence led to careful and fruitful investigation and experiment by Fraser and Stanton under Government auspices. The last named observers have distinctly shown that a leading element, if not the only element, in the causation of beri-beri, at all events in the Malay States, is absence (owing to excessive milling) of the pericarp and germ of the rice which constitutes the staple food of the Chinese, Indian, and Japanese coolie. And, further, they have shown that the administration of the millings of the decorticated and highly polished rice can arrest the development of a threatened attack of beri-beri, and, if it is not too far advanced, cure the disease. These observations on man are supported by experiment on the lower animals, especially on fowls, in which, as Eijkman and many others have shown, a diet exclusively of the incriminated forms of rice induces a polyneuritis closely resembling, if not identical with, that of beri-beri. The conclusions of Fraser and Stanton have been substantiated by many independent observers in the Philippines, in Japan, and elsewhere, and action based on these conclusions has had most happy results in prisons, asylums, hospitals, and other public institutions, as well as on native labour in plantation and mining camps. Mott, Halliburton, Durham, and Hamilton Wright have made important contributions to the pathology and anatomy of this disease.

SKIN DISEASES.

Mycetoma.—Since Vandyke Carter, in 1859, demonstrated the mycotic nature of the melanoid and ochroid forms of what is variously termed Madura foot, fungus disease of India, and mycetoma, considerable attention has been given to this and allied diseases by British and French pathologists, notably in Britain by H. J. Carter, Kanthack, Boyce, Hewlett, Adami, Kirkpatrick, and many others. Owing to the labour of these observers, it is now known

that mycetoma occurs in many tropical countries besides India, and in a variety of forms, and that the germs are introduced through wounds in the skin.

Ulcerating granuloma of the pudenda was first described in India by McLeod, and in 1896 by Conyers and Daniels in British Guiana, and subsequently by other British workers in Africa, Australia, and elsewhere. Donovan called attention to certain coccoid parasites included singly, or more usually in groups, in the large mononuclear cells obtained by scraping the surface of the characteristic ulcers. Intravenous injections of antimony have lately been used with good effect in the treatment of this disease by workers in Brazil, and Low and Newham have recently published the details of a case in England cured by this method.

The systematic study of the tropical dermatomycoses had been neglected until recent years, and until the adoption of Sabouraud's methods by Castellani and Chalmers had brought about a certain amount of order into this little understood department of tropical dermatology. Other British workers have from time to time contributed to the advancement of the subject, and I may mention Turner and Sir William MacGregor. The tropical practitioner is no longer satisfied with a comprehensive diagnosis of the mycotic skin diseases by the expression "dhotie itch." He now recognizes that there is a great variety of hyphomycetic skin disease both in the native and in Europeans; he distinguishes between erythrasma, tinea cruris, tinea imbricata, pityriasis versicolor, and so forth, and he knows now that these are only a few of the many forms of hyphomycetic skin disease fostered by the heat and moisture of tropical climates and contact with tropical animals.

Vomiting Sickness of Jamaica.—For many years it has been known that a peculiar disease, called "vomiting sickness," occurs from time to time in certain districts in the island of Jamaica. It is an extremely fatal disease, the mortality being anything from 80 to 90 per cent. It occurs particularly in children, although sucklings are exempt. Naturally its etiology has been the subject of much speculation and several commissions have attempted to clear this up. Some have regarded it as a manifestation of yellow fever, others of malaria, but it has been reserved to Dr. H. Harold Scott, Government bacteriologist, Jamaica, to solve the mystery. He has found that the so-called disease is produced by poison liberated in some mysterious way in immature or damaged ackees, the fruit of *Blighia sapida* (a tree very common in Jamaica) and much used by the negroes of that island. Shortly after the consumption of damaged fruit, especially of the soup prepared from the damaged fruit, vomiting sets in; presently this subsides, to be followed three or four hours later by a recurrence and a rapid supervention of convulsions, coma, and death. The average duration of the illness is little over twelve hours. Dr. Scott has proved that certain animals are susceptible to the poison and show *post mortem* a remarkable fatty degeneration of the liver and other tissues, a condition which is also a notable feature in fatal cases of vomiting sickness in man.

TREATMENT OF TROPICAL DISEASES.

Many recent advances in our knowledge of the germ causes of tropical diseases and in our diagnostic methods have led to a more accurate application of certain drugs long recognized as efficacious in particular types of dysentery, and to the introduction of new drugs and methods of treatment in other diseases. I can allude to a few only of these drugs, and such as are justly attributable to British workers. The value of atoxyl in the treatment of trypanosomiasis was first indicated by Thomas, then of the Liverpool School of Tropical Medicine, and the use of salts of antimony in the same disease by Plimmer and Thomson of the Lister Institute.

Sir Leonard Rogers, following up Vedder's work on emetine, introduced this drug to be given hypodermically as a substitute for ipecacuanha in the treatment of amoebic dysentery and amoebic hepatitis. It has recently been demonstrated that this method does not, in many instances, sterilize the individual of his amoebae, and that many of these cases become chronic carriers. Quite recently, Dale, Low, and Dobell have used a new compound, emetine bismuth iodide, by the mouth in such cases, and have found its sterilizing effect on the amoebae to be much greater than that of emetine given by hypo-

dermic injection. It is quite likely, therefore, that the oral administration will supplant the hypodermic method in the treatment of the disease in the future. Donovan and other British physicians have proposed radiotherapy in the treatment of granuloma of the pudenda, and many British practitioners in Africa and the West Indies have demonstrated the value of the intravenous injection of salvarsan and other arsenicals in tick fever and yaws.

INDIA AND MEDICAL PROGRESS.

BY

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To what extent has India contributed to the advancement of medical science?

In providing an answer to this question it is necessary to indicate that Western medicine, even at the present day, is represented in India by only about 1,000 British medical men, the major part of whom form the Indian Medical Service. One thousand British doctors in a land of over 300 million people! In a land where plague, pestilence, and famine are the crude problems of everyday life. In a land where tropical heat and torrential rains sap the vitality of the strongest frame and the resolve of the strongest will. In a land where strange diseases lurk in unsuspected places and death comes in a moment to even the most watchful.

To the teeming millions of such a land this small service has, since the earliest days of the East India Company, brought the benefits of Western medical science, carried into its waste places and most desolate outposts the standard of medical progress, and evolved sanitary order out of pestilential chaos. It has established medical schools and training colleges, and has brought into being an army of Indian-born and Indian-taught medical men. It has provided the professorial staff for the medical colleges, and has taught as well as practised the science and art of medicine and surgery. It has instituted a sanitary service, and has laid the foundations on which the science of tropical sanitation is built. It has established hospitals and dispensaries in every city and town in every district from Ceylon to the Pamirs, and has made it possible for twenty-eight and a half millions of India's people to receive the benefits of Western medical and surgical treatment in a single year. It has organized medical research and established research institutions where problems peculiar to India are studied by competent experts recruited from its own ranks. It has founded Pasteur Institutes for the treatment of rabies and the manufacture on a large scale of prophylactic vaccines and serums. It has ministered to the needs of India's army in peace, and tended to the sick and wounded in her frequent campaigns. It has organized the jail system of India, and taught her convicts trades. It has established tropical schools of medicine in Calcutta and Bombay, which bid fair to hold premier rank amongst such institutions in the world. All this the Indian Medical Service has done in the ordinary discharge of its duty, and what more?

Our knowledge of the natural sciences—botany, zoology, and geology—has been enriched by its aid. It has sifted from amongst the mass of tropical fevers a number of definite disease entities, described their etiology and symptomatology, and elucidated their cause or their mode of spread. It has made important contributions to our knowledge of other diseases of more universal distribution, discovered the means of cure of some of the tropics' most deadly maladies; and, finally, it has made striking additions to forensic medicine and to the art of surgery. It is with these, since they represent additions to the sum total of medical knowledge, that it is necessary to deal, emphasizing the fact, however, that they have been made during the performance of a task which in itself was colossal.

Let us consider, then, these contributions of India to the medical knowledge of the world.

Malaria.

The discovery by Ross that the plasmodium of malaria is conveyed to man by anopheline mosquitos (Fig. 1) ranks



FIG. 1.—*Anopheles maculipennis*, a carrier of malarial fever in Europe.



FIG. 2.—*Culex fatigans*, the chief carrier of elephantiasis.

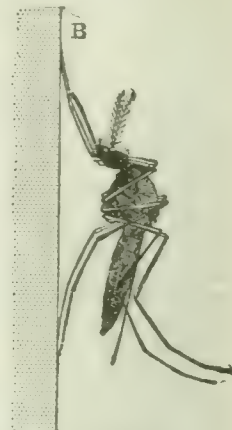


FIG. 3.—Sitting postures adopted by mosquitos. A, *Anopheles*; B, *Culex*.

These figures are reproduced by permission from *Mosquitos and Their Relation to Disease* (British Museum—Natural History Series, No. 4), price 1d.

not only as the greatest of India's medical triumphs, but as one of the greatest discoveries of modern times. As a result of this discovery it is now possible to control the spread of this disease, whereby an inestimable benefit has been conferred upon mankind. Through it a great light was shed upon the mode of spread by suctorial insects of other protozoal diseases, by which light the problems of the propagation of dengue, yellow fever, sleeping sickness, and other diseases of the tropics have reached, or are gradually reaching, solution. Truly Ross's achievement was epoch-making, and laid the foundation on which the science of tropical hygiene is built. By its aid some of the earth's most pestilent places have been made habitable. Witness its triumphs in the Panama Canal zone, in India, in East and West Africa, and in Greece, Italy, and Egypt—triumphs which Ross's discovery alone made possible.

Ross, whose services to humanity have received the highest recognition of almost every country in the world, including the award of the Nobel Prize, has been followed in India by others whose researches have brought to light the important truth that different species of anopheles are responsible for the spread of malaria in different localities, as, for example, *Noccellia stephensi* in Bombay and *Pseudomyzomyia ludlowi* in the Andaman Islands. Accurate studies of the habits and breeding places of different species of anopheles have enabled tropical sanitarians to conserve their energies to the destruction of the responsible mosquito in each locality.

In the treatment of this disease by quinine the pioneer work of Edward Hare, and in more recent years of MacGillchrist, must not be forgotten—the former, by introducing, in 1847, the practice of giving quinine without waiting for remission, was instrumental in saving many lives and in putting to an end the pernicious, and then universal, system of bleeding in this disease; the latter, by his careful researches on the value of different products of quinine, has added greatly to our knowledge of its treatment and to the treatment of blackwater fever.

Kala-azar.

To the patient researches of Donovan, of the Indian Medical Service, the world owes the discovery of the causal agent of this malady, and the recognition of *Leishmania* as disease-producing agencies. More recently Patton and Mackie, of the same service, have brought forward experimental and other evidence which goes far towards elucidating many of the complex problems connected with its spread. Younger members of the service have also added greatly to our knowledge of the epidemiology of this deadly malady.

Other Tropical Fevers.

It was Vandyke Carter who in India worked out the origin and development of the disease known as famine

fever, relapsing fever, or spirillum fever; and Mackie who, in more recent years, discovered that *Pediculus vestimentorum* was its carrier.

To this service is also due the credit of having separated three-day fever of Chitral—now known as sandfly fever—and seven-day fever of Calcutta, from amongst the mass of the unclassified fevers of the tropics, and of indicating the sandfly as the probable source of spread of the former malady, an indication which later researches in other countries proved to be fully justified.

Plague.

It is to India that the world owes its knowledge of the rôle played by the rat and by the rat-flea (Fig. 4) in the propagation and spread of bubonic plague—discoveries which were placed upon the statute book of medical progress by Liston and Bannerman of the Indian Service and by the Indian Plague Commission. As a result of these

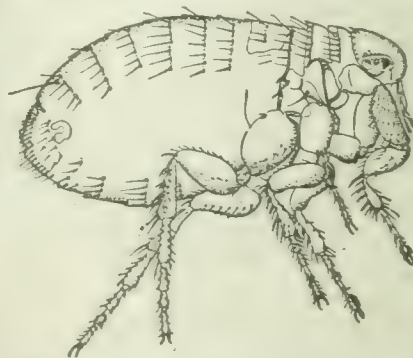


FIG. 4.—The rat-flea (*Xenopsylla cheopis*), a carrier of plague.

discoveries, it has been possible to prevent the spread of plague in countries whence it has been carried in ships and merchandise from India. Furthermore, protection is afforded to the individual in plague-stricken countries by the method of prophylactic inoculation with killed cultures of the bacillus—a method which was introduced at Bombay in the year 1897 by Haffkine of the Indian Service.

Cholera.

It is to India that the world owes a great part of its knowledge of cholera, and the whole of its knowledge of the treatment and mode of spread of this deadly malady. Leonard Rogers, amongst his other monumental contributions to tropical medicine, has, by his hypertonic saline treatment of cholera, robbed it of half its terrors, and reduced its mortality from 70 to 23 per cent. Greig, by demonstrating the cholera vibrio in the lungs, the liver, and other tissues, as well as in the urine, has within the last few years provided a wealth of information

in regard to the human factor in its dissemination. He has shown that cholera can no longer be regarded as solely water-borne, and that the human subject is the reservoir and the carrier of its infective agent (Fig. 5).

To India also belongs the honour of having perfected, through Haffkine, as early as 1893, a method of anti-choleraic inoculation the protective value of which has proved of the highest value.

Dysenteries.

For the major part of its knowledge of the treatment of the dysenteries the medical profession of all lands is indebted to India. Buchanan's introduction of the saline treatment of bacillary dysentery provided a weapon of wonderful effect against this form of the disease; and even now that serum-therapy affords a specific means of cure the saline treatment remains such a reliable addition to our armamentarium as can ill afford to be dispensed with.

Few discoveries in the field of therapeutics have been of such signal service to mankind as that of the specific action of emetine hydrochloride when administered hypodermically in amoebic dysentery—a discovery for which we are indebted to Leonard Rogers of the Indian Medical Service. The simplicity of this method of treatment and the certainty of its action when properly administered has reduced the mortality of this disease to an enormous extent. It has provided an effective prophylactic measure against the occurrence of those dangerous complications of amoebic infections of the bowel, *hepatitis* and *liver abscess*, and an efficient means of their cure, while it has greatly reduced the necessity for operation in amoebic infection of the liver, simplified our operative procedures, and reduced their risk.

Rabies.

India also, through its British medical men, has added greatly to our knowledge of the Pasteur treatment of rabies, and has improved upon that of Pasteur himself. In one of India's Pasteur Institutes alone as many cases are treated in a single year by these improved methods as in the whole of the rest of the world put together.

Leprosy.

India has within recent years made notable advances in the treatment of her lepers—advances which hold out the confident hope of the early evolution of a means of cure of this unclean and fatal malady. (Figs. 6 and 7.)

Goitre and Cretinism.

In the elucidation of the mystery which from the time of Hippocrates has surrounded the origin of these diseases of the thyroid and parathyroid glands, India has, within the last ten years, been able to play a notable part. Research has shown that intestinal organisms are the agencies mainly responsible for their production. (Figs. 8, 9, 10, and 11.)

The Natural Sciences.

In the field of botanical research the work of Hill and Prain, to mention only two of India's botanists, has added greatly to our knowledge of the flora of the tropics, while Bose, an Indian-born subject, has gained for himself a pre-eminent place in connexion with his studies of plant physiology.

In the domain of zoology the Indian Medical Service has provided such authorities as Day, Alcock, and Wall, who have greatly enriched our knowledge by the study of deep sea fauna and of reptilia, to mention but two fields of their activities. Modern Indian investigators also have done much to classify and describe many new species of malaria-bearing and other mosquitoes; while such geologists as Falconer and MacClelland have rendered the greatest services in contributing to our knowledge of the earth's crust.

Hypnotism.

And let it not be forgotten that even before British medical science had given to the world the incalculable blessing of anaesthesia James Esdaile, of the Indian Medical Service, had demonstrated the miraculous utility of mesmeric anaesthesia, under which he performed painlessly hundreds of operations of great gravity. The use of ether and chloroform has overshadowed Esdaile's brilliant discoveries, but these will find their place again in the armamentarium of the scientific physician and surgeon of the future, and their application in the relief of human suffering will go far to extract from the chaff of Christian Science and faith healing the full ears of wheat which lie buried in them.

Surgery.

Finally, in general surgery the members of the Indian Medical Service and their pupils have conferred such benefits on the people of India as to leave one awestruck at the magnitude of their operative work. No less than 1,050,000 of India's people received the benefits of surgical treatment in a single year. India's surgeons have never departed from the teachings of the father of all modern surgery—Lord Lister; they have continued to recognize the value and the place of antiseptic, as opposed to aseptic methods, in the treatment of surgical conditions in the

tropics, where wounds are so subject to soil infection. To them the surgical lessons of the present war have come as no surprise, while they have long recognized and practised the prophylactic use of antitetanic serum in such conditions as compound fractures and other infected wounds. So much so is this the case that deaths from tetanus in Indian hospitals, which were formerly frequent, have been reduced to a minimum.

But there are three departments of surgical practice in which Indian surgeons have led the world, and in which their supremacy is indisputable—litholapaxy, ophthalmology, and rhinoplasty. With the perfection of

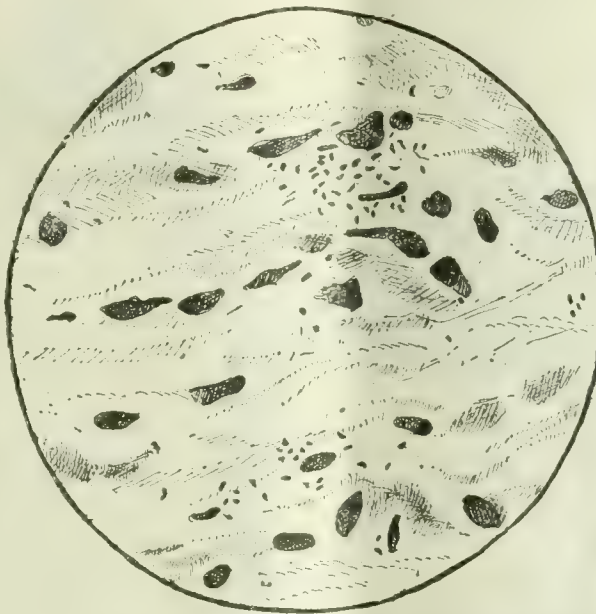


Fig. 5.—Section of wall of urinary bladder showing the cholera vibrio in the submucosa. The round cells infiltrating the submucosa are also shown. (Greig.)



Fig. 6.

The treatment of leprosy by vaccines (Rost). Fig. 6, Before treatment. Fig. 7, After treatment.



Fig. 7.

the first for the cure of vesical calculus, the names of Keegan and Freyer must be associated for all time. This procedure has led to the abandonment of the practice of cutting for stone, and has added to the art of surgery a method of treatment of the highest value.

The methods of ophthalmological practice, especially in regard to the treatment of cataract and glaucoma, which the world owes to such men as Maynard, Herbert, Elliot and Smith, have brought to India's shores students from all lands, and conferred inestimable benefits upon mankind.

Plastic surgery of the face also owes much to the unrivalled experience of Indian surgeons, and the methods of technique evolved by them are now largely employed by modern military surgeons in the present war. Keegan's writings on rhinoplasty are amongst the most important contributions to this subject to be found in the literature of modern surgery.

The Present War.

And in this conflict of nations, to what extent have India's contributions to medical science aided in lessening its terrors and alleviating its pains? Witness the ravages of bacillary and amoebic dysentery in the armies of all belligerents, and the blessings which the Indian treatment by salines and by emetine have proved themselves to be. It is not too much to say that thousands of lives have been saved by these means. It is to the emetine treatment of amoebic dysentery also that the rarity of its dreaded sequel—liver

inoculation is a striking example of the far-reaching effect of scientific methods which had their origin in India. Witness also the important part which their knowledge of the human factor in the spread of cholera has enabled Indian medical officers to play in the prevention of

outbreaks of cholera in Mesopotamia, and in the cutting short of others amongst those who had not received the benefits of protective inoculation. And witness the great reduction in the usual high rates of mortality of cholera amongst those who developed the disease which Rogers's hypertonic saline treatment alone made possible. Relapsing fever, also, which made its appearance amongst the troops in the Eastern Mediterranean, was early exterminated owing to our knowledge of its mode of spread by the body louse—a knowledge which India has been instrumental in providing. And, in a lesser degree, it has been possible to afford the troops protection against sandfly fever, which, although a non-fatal malady, is capable of materially reducing the numbers of effectives

in a susceptible community and of predisposing to maladies of greater gravity.

These are amongst the benefits which India may proudly claim to have made available for friends and foes alike in the present war. Truly her medical service has triumphantly borne into the pestilential places of the earth the standard of medical progress, and has emblazoned on its folds such victories over disease as no other



FIG. 8.—Experimentally produced congenital goitre in kid (McCarrison).

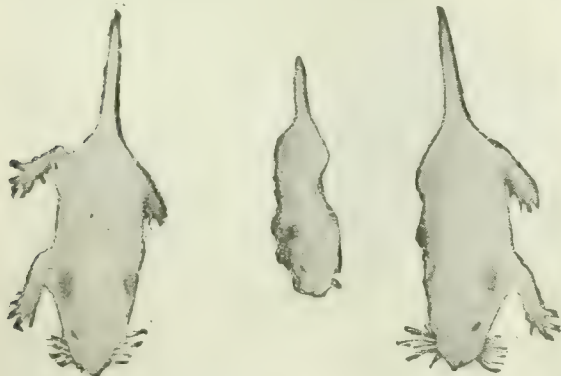


FIG. 9.—Experimentally produced cretinism (McCarrison). A litter of three young rats aged 20 days; the animal in the centre is a cretin.



FIG. 10.

FIG. 11.

The treatment of goitre by autogenous vaccines prepared from intestinal bacteria (McCarrison). FIG. 10, Before treatment. FIG. 11, After treatment.

abscess—is to be attributed. Witness also the check which protective inoculation by vaccines has placed upon the spread of plague and of cholera in Gallipoli—a method of protection which was inaugurated in India. The results achieved by this means are all the more remarkable when it is remembered that plague and cholera were prevalent amongst the Turks in the near neighbourhood of the allied troops during the Gallipoli campaign. It is due to Indian medical research to emphasize the fact that it was Haffkine's work in the years 1893-7 which preceded and inspired research on the prophylactic use of vaccines against bacterial diseases. The success which has crowned the use of antityphoid

country's medical service can boast. Malaria, tropical fevers, plague, cholera, dysentery, liver abscess—these are amongst its conquests; while across the art of general surgery and of ophthalmology the service has written its name in imperishable letters.

A NATIONAL INSTITUTE has been founded in Milan for the care and education of children suffering from mental weakness, anomalies of speech, disorders of hearing, and nervous troubles. Attached to the institute are a psychopaedagogic laboratory under Professor Agostino Gemelli, an ear department under Dr. Ugo Ambrosini, and sections of "orthophreny" and "orthophony" under the direction of Professors P. Parisé and A. Hecker.

THE TREATMENT OF SCABIES BY CHLORINE GAS.

BY

G. HERBERT CLARK, TEMP. CAPTAIN R.A.M.C.,

AND

H. S. RAPER, TEMP. CAPTAIN R.A.M.C.

WHILST one of us was carrying out the training of troops in the use of anti-gas measures involving exposure of the men to chlorine gas, the officer commanding one of the battalions made the remark that, "If the gas had done nothing else, it had cleared the camp of scabies." Subsequent interrogations of the medical officer confirmed the observation to a great extent.

Scabies being a parasitic disease, it did not seem unreasonable to suppose that the "gassing" to which the men had been subjected had proved fatal to the acarus. It might reasonably be expected, however, that cases of scabies in the camp would not be very severe or they would have been sent into hospital. Also other common parasitic conditions, such as pediculosis, might easily have been confused with scabies in the observations mentioned above.

At any rate, a careful investigation appeared to be worth while, in which the concentration of the gas to which the patients were exposed and the duration of the exposures were carefully controlled. Cases of indubitable scabies were therefore used in the investigation.

Through the kindness of the D.D.M.S., London District, about sixty cases of scabies in non-commissioned officers and men and fourteen cases in officers have been treated by exposure to chlorine. The details of the treatment differed in the two cases.

The non-commissioned officers and men were exposed to a concentration of one to two parts of chlorine per thousand of air (by volume), the service gas helmet being worn as a protection. The exposures were of five minutes' duration and occurred on successive days. Usually four exposures were given, but in some instances this number was exceeded.

The patients had a hot bath before their first treatment and wore ordinary hospital clothing. At the first exposure the bedding was placed in the "gassing" chamber. The officers wore a box respirator as protector, and were exposed to a concentration of between two and three parts of chlorine per thousand of air. The exposure lasted twenty minutes.

A bath was taken on the morning of the first day of treatment and not again, except in one case, until the day after the last exposure of gas. The number of exposures given and the intervals between them were varied in order to find out the best conditions of treatment.

A few of the cases were given four exposures on successive days, and then, after two days' interval, two more exposures on successive days. Others received two exposures on the first two days, then, after two days' interval, two further exposures on successive days. Three of the officers were given two exposures on the first two days, and then, after three days' interval, one more exposure only. On the first day of treatment the officers' underclothing, sleeping garments, and gloves were exposed to the gas, and clean bed linen was ordered the same night. The clothing was exposed for twenty minutes. The treatment of both officers and men was carried out in rooms with about a thousand cubic feet of air space. Chlorine was delivered into this from a cylinder, and it was found, after very little practice, that an approximation to the concentration desired could easily be obtained. The concentration in all cases was determined more exactly by drawing with a siphon a measured volume of the air through 5 per cent. sodium iodide solution, and titrating the iodine liberated with sodium thiosulphate.

If 1,100 c.cm. of air are drawn through the iodide solution, and decinormal sodium thiosulphate be used in the titration, then each cubic centimetre of thiosulphate used is equal to one volume of chlorine per 1,000 volumes of air.

The point of the delivery tube of the burette was pushed through the cork of the wash-bottle containing the sodium iodide, so that the titration could be carried out in the gas chamber. If the iodine is not over-titrated, then several determinations of the concentration can be made by refilling the siphon bottle and again drawing through the wash-bottle a known volume of air.

Results of the Treatment.

Non-commissioned Officers and Men.—Nearly sixty non-commissioned officers and men were treated under somewhat unsatisfactory conditions at a military hospital in the London district, the mode of treatment being that described above. Of the whole number, the medical officer of the hospital reported not more than 25 per cent. as cured. Many of the cases not definitely cured showed much improvement.

In view of the much more favourable results obtained in the treatment of officers, which will be referred to presently, the comparative failure of the treatment of the non-commissioned officers and men may be ascribed to the exposure to chlorine being of too short a duration, and also to the fact that the concentration of the gas used was on the average not more than one per thousand of air.

Officers.—Of the fourteen officers treated, eleven were cured and three much improved. Eleven of the officers received four or more exposures, and of these nine were cured. The two who still had apparently active lesions had received six exposures. Two officers were given four exposures on six days, the two middle days forming an interval. Both were cured; one, however, was a mild case. Three officers received three exposures only, one on each of the first two days, and the third on the sixth day. Of these, two were cured, and the third was almost free of scabies a week after the last exposure.

These figures make it appear that usually four exposures are sufficient when given on the first, second, fifth, and sixth days.

One feature of the treatment which was noted in officers, non-commissioned officers, and men was the production of a very irritable condition of the skin, especially about the scrotum and axillae, in some of the cases. It was most marked in cases which may be termed chronic, and which had been treated by sulphur in one form or another for varying periods without cure, and also more noticeable in the cases which were given more than four exposures. We have noted the same condition in ourselves whilst working in chlorine gas for various purposes. It passes away completely as a rule in the course of one or two weeks and is relieved to some extent by adding a little washing soda to the daily bath.

Details of the officers' cases are given below:

Case 1.—Severe scabies on wrists, thighs, and neck; fourteen days' history. Had been treated by sulphur baths and ointment, but made only slow progress. Was treated by chlorine gas on October 13th, 14th, and 18th, 1916. On October 18th the patient was free of scabies. Wrote a month later to say he was still free.

Case 2.—Legs and arms chiefly affected. Patient had had three months' previous treatment with sulphur in various media. He received nine treatments by chlorine gas in November, 1916—namely, on the 10th, 13th, 17th, 18th, 19th, 20th, 27th, 28th, and 29th. On the 30th he was cured.

Case 3.—Arms chiefly affected; one week's history. The disease was accompanied by dermatitis of obscure origin. Treated by chlorine gas on November 10th, 13th, 17th, 18th, 19th, and 20th, 1916. On the 23rd the condition was very much improved, but not quite cured.

Case 4.—Patient had suffered from scabies and eczema for three months, the feet, hands, arms, and back being affected. Had been treated previously with sulphur. Was treated by exposure to chlorine gas on November 14th, 16th, 20th, 21st, and 22nd, 1916. On December 1st he was free of scabies.

Case 5.—Patient's second attack during the year; one month's history. Had had no treatment. Exposed to chlorine gas on November 16th, 20th, 21st, 22nd, 23rd, 28th, and 29th, 1916; and was free of the disease on December 1st.

Case 6.—Patient's hands, arms, trunk, and legs were affected; six weeks' history. No previous treatment. Received five treatments by chlorine gas—November 16th, 18th, 20th, 21st, and 22nd, 1916—and on December 1st was cured.

Case 7.—Patient had a two months' history of scabies and furunculosis; he had undergone no special treatment for scabies. Treated by chlorine gas on November 16th, 20th, 21st, 22nd, and 23rd. Was free of the disease on December 13th.

Case 8.—Groin and thighs chiefly affected; ten days' history. Had had sulphur treatment for three days. Was treated by chlorine gas on November 18th, 1916, and three following days, and again on the 25th and 26th. Free of scabies on November 30th. Wrote from France on December 27th to say that he was still free.

Case 9.—Patient had five months' history of the disease, and had received many treatments with calcium sulphide, without effect. Treated by chlorine gas on November 20th, 21st, 22nd, 23rd, 28th, and 29th, 1916. When seen on December 14th was cured.

Case 10.—Patient had ten weeks' history of scabies. Was treated by chlorine gas on November 23rd, 24th, 25th, 29th, and 30th, 1916, and when seen on December 14th was apparently cured; later, however (December 19th), scabies had recurred.

Case 11.—A moderately severe case; three weeks' history. No previous treatment. Exposed to chlorine gas on November 25th, 26th, 29th, and 30th, 1916. Cured on December 13th.

Case 12.—A mild case, with six weeks' history. Sulphur bath treatment for two weeks. Treated by chlorine gas on November 28th and 29th, 1916, and again on December 2nd and 3rd. Cured on December 7th. Wrote on December 21st saying he was still free of disease.

Case 13.—Hands, arms, trunk, and legs affected. One week's history with rapid spread of the infection. Treated by chlorine gas on December 7th, 8th, and 12th. On December 16th the patient was free of scabies.

Case 14.—Hands, arms, trunk, and legs affected. Ten weeks' history. No previous treatment. Treated by chlorine gas in December, 1916. On December 27th there was no irritation, but apparently scabies lesions were still present.

It is only possible to surmise as to the active agent in the cure. The toxic properties of chlorine are well known, and no doubt the acarus is affected by the gas diffusing into the burrows.

It seems possible, however, that the action may be prolonged by the combination of the chlorine with the outer layer of the skin and its gradual liberation as hydrochloric acid, since it is well known that proteins form such unstable compounds. In addition to the chlorine the hydrochloric acid may thus play a part in killing the acarus or its eggs.

It is generally held that the efficacy of the sulphur bath treatment is due to the formation of sulphuric acid and by oxidation of the sulphur; and this view would be in accord with the above supposition.

The treatment is perhaps a little too difficult to carry out in civilian life without special apparatus and a "gassing" room. For army purposes, however, where respirators are supplied which protect against the concentration of chlorine used it may be valuable because it is ambulatory, no special hospital accommodation being required as in the treatment of sulphur ointment.

We should like to express our thanks to Major J. S. Morrow, R.A.M.C., of the Queen Alexandra Military Hospital, for making an independent examination of the officers, and to Drs. Shelswell and Harrison, of Holborn Military Hospital, Mitcham, for examining and reporting on the non-commissioned officers and men.

Since writing the above, our attention has been drawn to a striking instance showing the efficacy of the method for preventing the spread of scabies in a unit. Numerous cases of scabies were occurring in a mounted section which was sleeping in temporary barracks. They were all passed through a considerable concentration of gas in a state of nudity, helmets being fastened round their necks with towels. The gassing was carried out in their sleeping quarters, all their clothes and bedding being treated at the same time. The medical officer has reported that no further case of scabies occurred for more than two months thereafter.

ANAPHYLACTIC SHOCK AFTER INJECTION OF SERUM INTRAVENOUSLY.

By C. ADAM PATRICK, M.D.,
TEMPORARY CAPTAIN R.A.M.C.

THE intravenous method of injecting serum causes the patient so much less discomfort than injection into the subcutaneous tissues, and has so many other advantages, that the record of three cases in which anaphylactic shock occurred may be of interest. After a rabbit or a guinea-pig has been sensitized by an injection of serum, it is sometimes possible to kill it within a few minutes by giving it a second subcutaneous dose. In man, however, the anaphylactic symptoms which may follow a second injection of serum under the skin are rarely dangerous, and consist usually in an accelerated and exaggerated attack of serum sickness; but intravenous injection may have alarming consequences. The following are notes of three such in a series of cases of dysentery.

CASE I.

W. P., aged 24. Admitted to hospital on July 24th, 1916, with symptoms of dysentery—frequent stools of blood and mucus. Temperature 100°–102° F. *B. dysenteriae* (Shiga) was grown from faeces on the day of admission. He did not improve on the treatment he was receiving, so antidysentery serum was injected intravenously as follows: On July 30th, 25 c.cm.; on July 31st, 20 c.cm. (patient rather better); on August 1st, 20 c.cm.; on August 2nd, 20 c.cm. (patient considerably improved); on August 5th, 20 c.cm.

About one and a half minutes after the last injection the patient experienced sudden pain over the heart, went pale, and felt faint. This gave him a great fright, but he felt all right again within a few minutes. A serum rash was out all over the body by the following day. His convalescence was rapid.

CASE II.

A. D. J., aged 25. Admitted to hospital on September 15th, 1916, and died on September 17th. The patient was very ill and thin. His illness had begun on August 14th, and in the course of treatment he had received one injection of antidysentery serum on August 22nd. Diarrhoea had rather diminished before admission, but became severe again on the 16th, when the stools consisted chiefly of mucus. Bacteriological examination was negative. As he was very ill indeed on the night of the 16th, it was decided to give him intravenous saline, and the opportunity was taken to give serum along with it. The sequence of events is here tabulated:

11.20 p.m. Injection of normal saline begun.

11.25. Antidysentery serum 25 c.cm. added to saline in container after about 250 c.cm. of normal saline had been run in. The injection meanwhile was going on.

11.28. Patient complained of pain across the front of the chest, then became restless, stretched out his arms, and had wide-staring eyes. He probably lost consciousness for a few seconds. The heart sounds remained steady, and there was no sign of cardiac dilatation. Injection stopped.

11.33. The whole condition had passed off. Injection of saline containing serum resumed.

11.40. An urticarial rash began to appear on the arm, apparently along the line of the vein into which the fluid was being injected. Within a few minutes urticarial patches had appeared also on the forearms, hands, and the upper part of the trunk. They were not observed elsewhere.

11.55. Injection stopped, the patient having had 1,200 c.cm., and being distinctly improved.

12 midnight. All traces of urticaria had disappeared.

The improvement was temporary. The patient vomited a good deal during the night, and died the next day.

Post mortem, there was found acute dysenteric inflammation of the great intestine, with much thickening, and haemorrhage into the mucous membrane. Only two inconsiderable ulcers were present. The stomach was much distended, and contained a large amount of greenish-brown fluid. There was great dilatation of the duodenum, which had a diameter equal to that of a normal stomach.

CASE III.

B. G., aged 28. Admitted to hospital on September 23rd, 1916, with gunshot wounds of the right thigh and a deep gunshot wound of the right ankle. The notes of his case had been lost in transit. After admission he was found to be suffering also from dysenteric symptoms, and *B. dysenteriae* (Shiga) was grown from a stool on September 25th. The temperature was high (103°), and he had very frequent motions. Within the next few days he became very thin, had a dry brown tongue, and spoke with difficulty. The condition of his wounds was unsatisfactory. On September 3rd intravenous saline was given at 2 p.m.; 50 c.cm. of antidysentery serum was put in the container along with the saline before the injection was begun. When not more than 50 c.cm. of the mixed fluid had been run into the vein the patient suddenly became very ill, with eyes staring and arms stretched out. His face was pale, and he had become unconscious. Breathing stopped for about thirty seconds. Within a few minutes he looked quieter, but he remained unconscious for about two hours, with a rapid pulse. In the evening he improved, and was able to answer questions. No rash was seen. He had a restless night, but was rather better in the morning. At 11 a.m. 1,100 c.cm. of saline solution, without serum, was given, without abnormal symptoms. There was a transient improvement, but he died next morning. *Post mortem*, there was a well marked dysenteric condition of the colon, with a few shallow ulcers.

These three were the only cases to show unusual symptoms among a large number, not all cases of dysentery, in which either serum, or saline solution, or both together, were injected intravenously. The possibility of the entrance of air along with the fluid can be excluded. In Case I no serum injections had ever been given previously, and though it is unusual for sensitization to occur while the injections are being continued, and especially within six days of the first, I do not see how the symptoms can be explained otherwise than as due to anaphylactic shock, especially in view of the two other cases. In Case II antidysentery serum had been given subcutaneously twenty-six days before. The rapid appearance and disappearance of urticaria is of interest, and especially its appearing first near the site of injection. This corresponds to what is found in cases of serum sickness, where frequently the rash is first seen round the site of puncture. The absence of further symptoms when the injection was resumed is what one would have expected. The dilatation of stomach and duodenum was probably not due to anaphylaxis. In Case III there can be no doubt that the patient

had received a routine injection of antitetanus serum after being wounded, though this was overlooked at the time.

The most striking points about the cases are the rapidity with which the phenomena followed the injection of serum and the occurrence of severe pain in the chest as one of the first symptoms. Overfilling of the right side of the heart, such as might be caused by the too rapid injection of fluid into a vein, will produce precordial discomfort rather than pain. In Cases II and III the injection was not unduly rapid, and in Case I, from a mechanical point of view, the amount of fluid which entered the vein was negligible.

GRAVE DIABETES MELLITUS WITH PULMONARY TUBERCULOSIS FOLLOWING MUMPS.

BY

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As few cases of this sequence of events appear to be on record, the publication of these notes is perhaps justified.

The patient was a boy in the Royal Navy, aged 16½, undergoing training in a harbour ship. In May, 1916, he had an attack of mumps without any testicular or abdominal symptoms. On the third or fourth day of the disease the other boys in the ward started to tease him on account of his thirst (and remonstrated with him for drinking their lemonade). This drew his attention to the quantity of fluid he was drinking, but, independently of this, he noticed that he was passing urine three or four times during the night, which he had never done before. When first seen in Plymouth Hospital he had well marked symptoms of diabetes mellitus, with physical signs pointing to implication of both lungs with tuberculosis. On a dietary consisting of four ounces of bread and including green vegetables, but no other carbohydrate, ninety ounces of urine were being passed daily, with a total glucose output of seven ounces. The ferric chloride test for diacetic acid was markedly positive. On an initial starvation diet, with subsequent addition of carbohydrates to his fare, the patient's diabetic symptoms disappeared, except for the occasional appearance of slight quantities of sugar in the urine; calcium oxalate crystals could always be found. The disappearance of the glycosuria may be correlated with the presence of rapidly advancing tuberculosis of both lungs and with persistent evening rise of temperature to 101.5° to 102° F. The patient died five months after the attack of mumps.

NOTES BY H. S. HOLDEN, M.Sc.

Post-mortem Examination.

The left lung showed old extensive adhesions. The right was similar and, in addition, firmly adherent to the diaphragm. Both were very collapsed and showed massive lobar caseation, with breaking down at the apices. The mesenteric glands exhibited extensive tuberculosis, parts of the mesentery resembling bunches of grapes. There were a few tuberculous ulcers in the stomach, one about the size of a pea on the anterior surface of the pyloric end. The intestines showed a certain amount of tuberculous ulceration in all portions, this being most marked towards the lower end of the ileum. The liver showed slight fatty change.

Heart, kidneys, spleen, and brain were normal.

The pancreas was normal in appearance and weight (80 grams), but slightly soft in consistency. No anatomical peculiarity was found in the relations of its ducts.

Microscopic Examination of the Pancreas.—Sections were prepared from the head, body, and the tail of the gland, but those from the first two of these revealed little abnormality apart from a relatively slight round-celled infiltration in the more superficial portions. The sections from the tail, however, were of considerable interest, as, in addition to the infiltration, some of the islands of Langerhans showed evident hyaline degeneration, first described by Opie.¹ The affected islands were relatively scanty, although some of the remainder appeared to show slight signs of a similar condition.

REMARKS.

Abdominal symptoms have been but rarely described in mumps. In the course of an epidemic of thirty-three cases of mumps described by Edgecombe,² five of the subjects were affected by symptoms pointing very definitely to an implication of the pancreas in the disorder. Other writers have noticed the same train of symptoms occurring in the course of epidemics, and Morley Fletcher,³ summing up their evidence, states that severe abdominal pain starts within a week of the onset of mumps—usually the fourth

or fifth day—and is accompanied by vomiting and diarrhoea. The pain is usually epigastric, and tenderness above the umbilicus, with the presence of swelling or a diffuse resistance, can often be made out. The temperature hardly ever rises above 102° F., and the pulse-rate is not generally increased, and is frequently slowed. The immediate prognosis is good, and the patient is usually free from abdominal symptoms within the week. The same writer goes on to say, "some cases of diabetes may date their origin from inflammatory changes brought about in the pancreas by an attack." In favour of this cautious new opinion he quotes Barbieri's case of transient glycosuria in a boy of 6 years of age, in which the glycosuria followed mumps, but sugar disappeared from the urine in twenty-five days. Harris⁴ reported the onset of diabetes with acetoneuria in a man aged 42 years, the symptoms being noticed one month after mumps.

When it is remembered that the islands of Langerhans are found in relatively small numbers in the head and body of the gland as compared with the tail, it seems probable that the disturbance of the islands in the tail, described above, is enough to prove this to be a case of diabetes of pancreatic origin. In several recorded fatal cases of diabetes in which hyaline degeneration was present the number of islands affected was small and no other lesion which could have accounted for the symptoms was found. Very little evidence of previous inflammatory mischief was found in the gland in this case, which fits in with the clinical history, where no abdominal symptoms were noted. I can find no evidence in the literature of similar coincident changes occurring in the pancreas during an attack of mumps, as the clinical histories and *post-mortem* findings always pointed to an acute or subacute inflammation of the organ having taken place.

Owing to the severe nervous strain imposed by war it might naturally have been expected that diabetes, which has been experimentally shown to be associated with hyperactivity of the chromaffin system, would have become more frequent. From a careful analysis of the numbers of cases of diabetes treated at the Royal Naval Hospital, Plymouth, from 1911 to June, 1916, this expectation is justified. Out of 9,127 cases admitted to this hospital during 1911, 1912, and 1913 there were 5 cases of diabetes, or 0.05 per cent.; whereas out of 7,968 cases admitted during 1914, 1915, and up to June, 1916, there were 22 cases of diabetes, or 0.27 per cent. Assuming that the navy increased from 150,000 men in peace time to 350,000 in June, 1916, and has thus increased slightly more than twofold, the number of cases of diabetes admitted to Plymouth has increased fivefold.

I have to thank Fleet Surgeon R. St. G. Bond, Royal Navy, for his permission to publish this case, which occurred in one of his wards.

REFERENCES.

- ¹ Opie, *Disease of the Pancreas*, second edition, p. 312. ² Edgecombe, *Practitioner*, 1908, lxxx, p. 194. ³ H. Morley Fletcher, in Garrod, Batten, and Thursfield's *Diseases of Children*, p. 1056. ⁴ H. F. Harris, *Boston Medical and Surgical Journal*, 1899, cxi, pp. 465-469.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE TREATMENT OF DYSENTERY, WOUNDS, ETC., BY A COMBINATION OF INTERNAL ANTISEPTICS.

MAY I to bring to notice a mode of treatment the result of twenty-five years' experience in the Persian Gulf and India, where dysentery is endemic during certain seasons of the year? The patient is given a rectal injection of powdered ipecacuanha gr. xxx with m xx to xxx of tincture of opium every morning, and is placed on a mixture of carbolic acid and quinine. The nauseating and depressing effects of ipecacuanha given by the mouth are thus avoided, and the combination of carbolic acid and quinine, with its intensive bactericidal action, circulating through the site of ulceration, soon produces a development of new capillaries (as shown by the appearance of streaks of bright blood in the ejecta), together with the throwing off of the old sloughs. This beginning of improvement appears about the tenth day of treatment, and proceeds to the entire healing of the lesion. It is as

effective in chronic as in recent cases of the disease, and I have found it successful in a case of two years' standing. Of late years, however, I have discarded the injections, and have obtained as good results from the internal administration of carbolic acid with quinine alone.

The prescription for an average case is as follows:

R Acid. carbol. liq. (B.P.)	...	...	...	...	...	℥xl
Quininae sulph.	...	...	...	...	...	gr. xxxij
Acid. sulph. dil.	...	...	...	...	...	℥ij
Glycerini	...	...	...	...	...	℥j
Aq.	...	...	...	...	...	ad ℥viij

Half an ounce thrice a day in water, or every four hours, for a time, if the case be severe. The mixture is as clear as water if made up as follows: Pour the glycerin into the bottle, then half fill the bottle with water; add the carbolic acid, and shake well together. Dissolve separately the quinine with the dilute sulphuric acid in about two ounces of water, and add this to the previous solution in the bottle, shake again, and fill up the bottle. The glycerin is not absolutely necessary, but is useful.

The amount of carbolic acid may be increased usefully and safely to 4 minims and the quinine to 4 grains in each dose in severe or chronic cases. I have not seen any ill effects nor any carboloria, though I have put myself on the mixture for long periods as a test. Apart from its germicidal action, the tonic property of the quinine is invaluable.

The combination was used and highly spoken of in the great plague of Hong Kong in 1894. In three subsequent severe epidemics in India, in which I used the maximum doses mentioned above, plus soakage of the glands in carbolic oil (1 in 30), it was possible to give to the Plague Commission figures of a convalescence of 75 per cent. The curative action of this combination was found to be the same in typhoid as in dysentery. Long ago my attention was called to the efficacy of this combination for malarial fever by the late Dr. T. Holmsted, I.M.S., and I was led to investigate through many years the results of increasing the strength of the dosage in the various germ diseases of the East. He used it in doses of one minim of carbolic acid with one grain of quinine. The efficacy of the combination can be easily demonstrated by treating two similar cases side by side, the one with quinine alone, and the other with the combination. There would appear to be some interaction between the two drugs resulting in an intensive effect.

Equally satisfactory results have been obtained in cases of septicaemia, erysipelas, puerperal fever, and carbuncles. Lastly, the way in which wounds heal when the patient is on an internal course of this combination is very remarkable. With wounds so severe and numerous as in the present war, when the great desideratum is a sufficiently powerful bactericidal antiseptic, which, while thoroughly permeating the deepest wound, will in no wise damage the ordinary vital processes of repair, I would earnestly plead with the profession for a trial of this internal medication by a combination of quinine and carbolic acid, simultaneously with the usual protective antiseptic dressings externally.

Stroud. L. W. SEYMOUR, M.R.C.S., L.R.C.P.

PITUITARY EXTRACT IN CONCEALED ACCIDENTAL HAEMORRHAGE.

JELLETT has stated that concealed accidental haemorrhage is the most serious accident that can happen to a pregnant woman, with the single exception of acute puerperal sepsis. The following case seems worthy of note because of its severity and of the fact that the patient undoubtedly owed her life to the administration of pituitary extract. The preparation used was pituitrin, manufactured by Parke, Davis and Co., and put up in ampoules of 1 c.cm. each.

The patient was a fairly healthy multipara, aged 40, nearly eight months advanced in pregnancy. Three days before I was summoned she received a severe kick on the abdomen from a child she was nursing; during the three succeeding days she complained of abdominal pain and gradually increasing faintness, but there was no external haemorrhage.

I found her lying in bed, semiconscious, in a state of extreme collapse, her face blanched, pulse scarcely perceptible, respiration sighing. There were no labour pains. The cervix was softened and the os admitted a finger tip. There was a slight sanious discharge. The abdomen was merely tense and tender, but from the history and condition I diagnosed concealed accidental haemorrhage. I sent for pituitrin, and gave a large saline enema and a hypodermic of strychnine. Two ampoules

of pituitrin were then injected intramuscularly. In less than ten minutes there was marked improvement of the pulse, and in twenty minutes labour pains began. Every thirty minutes from the first injection I gave another ampoule, and the pains became gradually stronger and lasted longer.

The membranes were ruptured when the os was fully dilated, and three hours after the first injection a living child was born. The placenta was readily expressed and with it large masses of blood clot. The uterus contracted firmly and there was no post-partum haemorrhage. The mother made a slow but uneventful recovery. The child did not thrive and only survived a fortnight.

In all, 8 c.cm. of pituitrin were given; it had no galactagogue effect in this case, doubtless owing to the excessive loss of blood. Had delivery been effected by accouchement forcé or by supravaginal amputation of the uterus by Porro's method, I feel sure that, considering her desperate condition, her chance of recovery would have been very poor.

Birkenhead.

WM. ARTHUR KIDD, M.B., Ch.B., L.S.A.

A CASE OF SARCOMA TREATED WITH COLLOIDAL COPPER.

ALTHOUGH this is a recent case, the result up to date has encouraged me to publish it.

In September, 1913, a lady, aged 72, discovered a small, pedunculated, freely bleeding growth on the posterior vaginal wall, about two inches from the margin of the skin. This was removed, a good sized raw surface being left to granulate. The pathological report said, "Mixed spindle and round celled sarcoma."

In the summer of 1914 there was a suspicion of enlargement in the perineum in the mid-line at the junction of the vaginal mucous membrane with the skin. For some four to six weeks there was doubt, then in a week there was rapid enlargement, and a globular subcutaneous lump the size of a large walnut was obvious. This was removed, and the pathological report was as before. Everything went well until the early summer of 1915, when there was a suspicion of swelling in the right inguinal region. After several weeks of doubt a rapid enlargement showed clearly that a number of the inguinal glands were affected. These were removed with as much of the surrounding tissues as was possible. The pathological report was the same as before.

In February, 1916, after a longish period of doubt, it was clear that the most external inguinal gland was affected, and it was removed; the pathological report was once more as before. In July, 1916, a swelling appeared in the right ischio-rectal fossa; after the same period of doubt as in the other recurrences this was removed with all the surrounding tissues, and proved to consist of two lymphatic glands. As the naked-eye appearances were the same as in the two former sets of glands no specimen was sent for examination.

In February, 1916, a slight irregularity was noticed at the margin of the liver in the anterior axillary line. It felt like a small dent, such as might occur from the pressure of corsets, and this it was considered to be. In July, 1916, examination under an anaesthetic showed that it had not altered since February, and the same view was taken as to its nature. The patient went on satisfactorily until the middle of November, when suspicions arose that the liver was enlarging, and the former dent now seemed to be a prominence. After a few weeks the doubtful prominence in the liver had become a large knobby lump. Within a week the margin of the liver was below a horizontal line joining the two anterior iliac spines and acute pressure pain began in the region of the seventh to the tenth ribs behind. As the patient had only a moderately full abdomen it was easy to see the outline of the liver and knob when she lay back.

She was given injections of cuprase every six days, a whole ampoule in the gluteal muscles. She also took liquor violae glucosidi (Gadd) during the course of injections. After two injections the pressure pain abated, and after four was gone. She was given eight injections, the last in mid-February, by which time it was clear that the liver was much smaller. Since then it has diminished in size steadily up to date, and the liver has caused no anxiety, although it acts badly at times, and she has had two slight attacks of jaundice. In May, 1917, there was a definitely enlarged inguinal gland, the innermost of the inguinal chain, which, after the usual period of suspicion, showed itself fairly suddenly and unmistakably. This subsided after four injections of colossal copper (Oppenheimer) into the adjacent adductor muscles.

It appears to me that, apart from the manifest improvement following a course of colloidal copper, there are several points of interest in this case which warrant the rather full account given of it.

Sherborne.

T. MACCARTHY, M.R.C.S., L.R.C.P.

A BILL providing that marriage licences shall not be issued in the State of New York unless the contracting parties are able to furnish sworn statements that they are free from insidious diseases was signed by the Governor of the State on May 16th, and immediately became effective.

Reviews.

MALINGERING.

THE work on *Malingering*¹ by two experienced authorities, Drs. BASSETT JONES and L. J. LLEWELLYN, will be especially welcome to the medical profession at the present time, for, as the authors state in the preface, malingering in the eye of the laity bids fair to become not only the *crux* but the *opprobrium medicorum*. Not only is this subject of national importance in respect to recent legislative innovations, but even more so in connexion with exemption from military service and the granting of pensions for war disablement. The war has made it one of the principal duties of the medical man to discriminate between organic diseases and functional disorders and to detect simulation of disease and exaggeration of symptoms.

The work is practical and very comprehensive, nevertheless we are rather surprised to note how little reference is made to the experiences gained in this war, in spite of the fact that the authors, on page 53, state that "our own experience of soldiers in the present war leads us to the conclusion that pure malingering is uncommon." The differentiation of true "shell shock" from "shell shy" is of very great importance at the front, and to a less degree in the military hospitals at home. On looking up the index, neither the word "amnesia" nor its English synonym "loss of memory" occurs; yet a consideration of the effects on memory in relation to malingering and head injury is of extreme importance. In a discussion on the relation of head injury to nervous and mental disease, opened by Dr. Mott at the Neurological Section of the British Medical Association at Birmingham in August, 1911, he pointed out, and cited cases showing, that commotio cerebri produces a retrograde as well as an anterograde amnesia; he emphasized also the importance of this in connexion with simulation and exaggeration in regard to compensation under the Employer's Liability Act. Experience in this war has shown that if a man describes with much minuteness of detail how the shell burst and what happened, it is highly probable he did not suffer concussion. In cases of true "shell shock," even without visible signs of injury, the patient, on account of the commotio cerebri, has a variable degree of retrograde amnesia, extending, it may be, from a brief period of time prior to the shock to the whole time he has been in France, or even his whole previous life. We fail to find any mention of amnesia in the discussion of the subject of concussion in relation to simulation of symptoms. That loss of power of recollection is of great importance is shown by the fact that it is a not infrequent happening for soldiers to be admitted to clearing stations and military hospitals simulating complete loss of memory, and consequently supposed to be suffering from effects of "shell shock." Some of these soldiers admitted to military hospitals at home were subsequently found never to have been out of the country; they were undoubtedly malingering. On the other hand, cases of genuine "shell shock" have been found wandering, and have been taken to a hospital unable to recollect anything or give any account of themselves.

The chapter on malingering in relation to the special sense organs should prove very useful in detecting simulated deafness and blindness. We observe that the reference to labyrinthine concussion in soldiers (*Journal de médecine de Bordeaux*, April, 1916) occurs in a footnote, and presume, therefore, that the book was completed before that date; this may explain the absence of references to simulation of "shell shock" and war neuroses, although the book has only recently been published.

To the busy practitioner, Chapters V and VI, dealing respectively with the diagnosis of malingering and the formation of a decision, will be found of especial value on account of the clear, precise, and practical manner in which the subjects are discussed. As the authors state, the special pitfall of the malingeringer is his tendency to overact the part. The advice given as to the manner of approaching and examining the case denotes the wisdom

of experience. The authors point out the necessity of approaching the case without any preconceived notion and of making a thorough examination; for undoubtedly more mistakes are made from not looking than not knowing. "A mistaken diagnosis of malingering may entail lamentable effects, for the moral character is unjustly aspersed and insult is added to injury." "The doctor must therefore take heed that his suspicion of malingering is not founded on incomplete examination, imperfect observation, or hasty inference." We agree that when a doctor is unable to arrive at a definite conclusion it is better frankly to own that a decision either way is impossible; we should then see less of the cross-swearing in the courts of law so derogatory to the reputation of the profession. When the medical man is convinced that he is dealing with a malingeringer it is wise, as the authors state, to let him down gently; in the case of soldiers it is better to examine the patient in a room by himself. Excellent advice is given as to the writing of the medical report, for it is necessary to exercise great caution in the conclusions expressed and the wording. When giving evidence, the witness should make his statements definite and, as far as possible, unqualified. He should avoid the use of ambiguous expressions and choose words that are in common parlance rather than technical terms which the jury would fail to understand. To exact questions he should return exact answers and should avoid any sign of bias.

Section 2, dealing with malingering in relation to the nervous system, will be found of great service, in view of the large numbers suffering from war neuroses, which in no essentials differ from hysteria or neurasthenia. We do not find any reference to the second sign of Babinski; with this slight exception the section is a very full and comprehensive account of simulation in relation to functional and organic disease of the nervous system.

A considerable amount of space is very properly given to malingering in relation to epilepsy and insanity. Simulation of epilepsy, especially anomalous varieties, in which automatism is the essential manifestation of the disease, is not an uncommon form of malingering to obtain exemption from service, discharge from the army, or to avoid punishment for absconding, desertion, or other crimes. The detection of this form of malingering is not always easy; some officers at the front have found hypnotism useful. In the chapter on insanity in relation to malingering, we observe, on pp. 295 and 296, several quotations from *Hamlet* which might lead the reader to think the authors believed Hamlet was mad, whereas Maudsley in his essay on *Hamlet*, "Body and Mind," says: "Let it not escape attention that the deliberate feigning of insanity was an act in strict conformity with Hamlet's character"; consequently we should rather have expected the melancholy Dane to have been cited as a typical example of simulation of insanity to attain an end by a highly intellectual but irresolute, self-introspective character.

Malingering in relation to accident and bodily diseases is next fully considered. The last chapter is devoted to measures for the restriction of malingering. But space prevents further allusion to these important subjects; it must suffice to state that they are very adequately dealt with. In conclusion we may say that the authors are to be congratulated on the production of a very comprehensive, interesting, and well-written book, which has been made more attractive to the reader by many quotations from the great authors, notably from that greatest of all delineators of human character, Shakespeare, thereby showing that the authors, from their experience, recognize that in the study and detection of malingering one of the principal aims must be, in the words of Bacon, "the scientific and accurate dissection of minds and characters and the secret dispositions of men."

A large number of English and foreign medical authorities are quoted, and since we believe this will come to be regarded as a standard medico-legal textbook on the subject of malingering, we trust that in the next edition a bibliography of the various authors whose writings are cited will be included.

The first edition of Sir JOHN COLLIE'S *Malingering and Feigned Sickness*² was very favourably reviewed in this

¹ *Malingering, or the Simulation of Disease*. By A. Bassett Jones, M.B. Lond., and L. J. Llewellyn, M.B. Lond. With a chapter on Malingering in Relation to the Eye, by W. M. Beaumont. London: William Heinemann, 1917. (Roy. 8vo, pp. xxii + 708; 5 plates. 25s. net.)

² *Malingering and Feigned Sickness*. With Notes on the Workmen's Compensation Act, 1906, and Compensation for Injury, including the leading cases thereon. Second edition, revised and enlarged. By Sir John Collie, M.D., J.P. London: Edward Arnold, 1917. (Demy 8vo, pp. 664 + xvi; 78 figures. 16s. net.)

JOURNAL in April, 1913; it is therefore unnecessary to do more than allude to fresh matter which has been incorporated in this, the second edition.

Sir John Collie, from a large experience of neurasthenia gained during the war, now recognizes that the subject was not dealt with as fully as its importance deserves. No doubt previously he had had to deal with many cases of malingering or of conscious exaggeration masquerading as sufferers from traumatic neurasthenia; possibly he now sees the disease from a somewhat different point of view. He states that "neurasthenia, or 'nervous exhaustion,' is essentially a mental state, but has always some bodily disorder associated with and underlying it." But is not this statement somewhat misleading? We agree with Dejerine, who holds that the mind is primarily affected, and that if the body is not healthy it is in consequence of the affection of the mind. The author, in discussing the various systems affected—cerebro-spinal, cardiac, gastric—omits to mention one of the most important, the sexual.

We entirely agree with him that a purely symptomatic therapy leads to the fixation in the mind of an idea of a localized affection of the organ about which the patient complains, and is to be avoided, whether it be in a soldier or civilian who is suffering with neurasthenia. We note that he commences his chapter on hysteria by remarking that it is "a most fascinating disease," and undoubtedly it is a fascination to discover that a patient believed to be suffering with serious organic disease merely requires strong personal suggestion to effect a speedy cure. He points out that hysteria has much in common with neurasthenia on the one hand and with malingering on the other. "All these, when associated with traumatism, have this in common, that they are more or less curable by settlement of the claim, legal or otherwise." Doubtless Sir John has also found how frequently soldiers suffering with war neuroses rapidly improve with the tonic influence of an assurance that they will never be fit for the front again. In both instances a "judgement of value" influences the mind in action and conduct.

Although a good deal is said about the complement reaction of the blood in syphilis, we are surprised to find no mention made of the value of lumbar puncture and examination of the cerebro-spinal fluid as an important aid in differential diagnosis of organic from functional nervous disease. We may remind the author that this examination is especially valuable in differentiating incipient general paralysis following head injury from traumatic neurasthenia; an examination of the blood cannot do this, for a neurasthenic may give a positive reaction of the blood, though organic disease of the brain is not present. In fact, the complement reaction of the blood does not do much more than show that the man has had syphilis. A positive reaction of the cerebro-spinal fluid is a grave sign of disease, and does not disappear even after energetic treatment.

We confess to being rather disappointed with the chapter on military malingering for Sir John Collie must have had exceptional opportunities of studying "war neurosis" as President of the Special Board for Neurasthenia. Neither in this chapter nor in that on epilepsy do we find anomalous forms of epilepsy—"masked epilepsy" and malingering—discussed. Yet this is what the medical practitioner and army officer would look for and hope to find. Comparison of the signs and symptoms of the *grand mal* and simulation is given, and undoubtedly is useful, but the differential diagnosis is generally well known to medical men of experience. But even to the experienced and competent practitioner a difficulty exists in differentiating from malingering certain cases of "automatism" in which the question of criminal responsibility arises. The law, civil or military, requires evidence as to whether a person charged with a criminal offence was conscious of the quality of his acts, and it is a matter of frequent occurrence for soldiers to desert their posts, to abscond, or to be found wandering at large, who when questioned assert they have no recollection of what has happened for a certain time. Some of these are genuine cases of anomalous epilepsy, others are malingerers, who assert falsely that they have no recollection of what happened for a certain period of time in order to escape punishment. We venture to think that if Sir John Collie were called to give evidence at a court-martial he would not adhere strictly to the following dictum: "Personally, I never investigate the previous

history of a patient who is sent for medico-legal examination." Without an inquiry into the previous history, we should be liable to do grave injustice; but it must be borne in mind that a simulator knows that he can escape punishment for desertion by describing fits or attacks of *petit mal* "faints," especially when supported by a history of epilepsy in the family.

The author in many places emphasizes the fact that the simulator can usually be led on to exaggerate his symptoms, making the whole of his statement, if not absolutely untrustworthy, open to grave suspicion.

The second edition of this book can be cordially recommended for its medico-legal comprehensiveness, practical common sense, and robust diagnosis and treatment of malingering and feigned sickness. It is written in an interesting way, and the subject matter is largely based upon a varied and extensive personal experience in the detection of malingerers. But we are inclined to wonder whether the author is invariably as clever as the reading of the cases suggests. Is he infallible in diagnosis, and not mistaken sometimes regarding the mental attitude and feelings of "his friend the British workman," to whom in the dedication he says he owes so much?

PHYSIOLOGY: KIRKES—HALLIBURTON.

A NEW edition of Professor HALLIBURTON's excellent and popular *Handbook of Physiology*³ would not by itself call for extended notice in these columns, as the work is too well known to need further description or comment; but the original book out of which this has grown has now passed through twenty-five editions, and the publication of the twenty-sixth edition of *Kirkes' Physiology*—to give it its old name—has tempted the publisher, Mr. John Murray, to tell something of its history in a prefatory note. The book first appeared in 1848. Its author was Dr. W. S. Kirkes, whose name is still honoured at St. Bartholomew's Hospital by a gold medal and scholarship. On the title-page of his *Handbook* Kirkes acknowledged his indebtedness to James Paget, and it was an open secret that the work was largely based upon the notes from which Paget's masterly lectures on physiology at St. Bartholomew's were delivered; its great popularity with students was no doubt due to the fact that it carried Paget's teaching far beyond his own lecture theatre. The fourth edition, in 1860, had William Savory's name as editor on the title page. Seven years later Morrant Baker became joint editor. In 1869 the book, which had hitherto been published by the predecessors of Messrs. H. K. Lewis, passed into the hands of Mr. Murray. By this time constant changes and revision had left little of the original matter untouched. Further extensive improvements took place in 1876, when Dr. Klein became associated in the work of revision. From the tenth to the thirteenth editions Mr. Morrant Baker and Dr. Vincent Harris periodically revised the work. Thus for the first fifty-eight years of its prosperity *Kirkes' Physiology* was intimately and uninterruptedly connected with the medical school of St. Bartholomew's Hospital. In 1896 the death of Mr. Baker and the retirement of Dr. Harris forced the publisher to seek a new editor, and at the suggestion of Sir William Gowers, Professor Halliburton was offered, and accepted, the post. Thenceforward the book took on new characteristics, and within a little while of its entry upon a new era of popularity it became known as *Halliburton's Physiology*, the name of "Kirkes" being preserved only in small type on the title-page. This was justifiable since the new editor had made the book his own. These biographical details are not out of place in a notice of the twenty-sixth edition of a textbook which has been a favourite with generations of students for nearly seventy years. In preparing the latest edition the author has found the usual difficulty with the Basle nomenclature, a subject with which Professor Keith deals in a trenchant letter published in this issue. In order to meet the needs of students Professor Halliburton, with some reluctance, has inserted after the old names the new ones within square brackets, and refrains from criticizing the B.N.A. terminology.

³ *Handbook of Physiology*. By W. D. Halliburton, M.D., LL.D., F.R.C.P., F.R.S. Thirteenth edition (being the twenty-sixth edition of *Kirkes' Physiology*). London: J. Murray. 1917. (Demy 8vo, pp. 959; 3 plates, 581 figures. 16s. net.)

NOTES ON BOOKS.

MR. LOWES DICKINSON'S latest work, *The Choice Before Us*,⁴ is a destructive criticism of war as an instrument of policy; it is the antithesis of Bernhardt's detestable doctrines. The argument is that war proceeds from wrong ideas and wrong policies, in which all nations have participated; and that this war will have been fought in vain unless it leads to a change of attitude in all governments and in all peoples. The author holds that the renunciation of militarism, while most needed in Germany and most difficult to effect there, can only be brought about by complete and radical reform in which every nation takes its share. Militarism is caused by the menace of war, and grows with every added preparation for war. The remedy is deliberate preparation for a durable peace.

Dr. E. O. JORDAN contributes a small volume on *Food Poisoning*⁵ to the University of Chicago Science Series. After considering the poisonous plants and animals most frequently met with in America, the author passes to a brief account of the mineral and organic poisons commonly added to food. He next considers—at some length for so small a volume—the principal food-borne pathogenic micro-organisms, their products and effects. Dr. Jordan notes that English investigators regard infections with *B. paratyphosus* B as distinct from the "true" food poisoning by *B. enteritidis* and *B. suis*, but he scarcely does justice to the large amount of work on paratyphoid infections carried out during the war. Speaking generally on bacterial food poisoning he makes the sound observation that in any given case the exact source of infection is often largely conjectural.

MEDICAL AND SURGICAL APPLIANCES.

An Apparatus for the Intravenous Injection of Salvarsan.

DR. M. J. ROWLANDS (Pathologist, Mile End and Bethnal Green Military Hospital, late Pathologist, Royal Victoria Hospital, Netley) writes: The apparatus I now use is a modification of Professor Welchmann's, with which I became familiar whilst working at the Virchow Institute, Berlin. Upon my return to England further experience in the use of that apparatus disclosed several weak points which it has proved possible to remedy, and Messrs. Allen and Hanburys, of Wigmore Street, W., have now made for me an instrument which I have found very satisfactory in practice.

The essential parts of this simple apparatus are the two-ball valves, the seating of which must be perfect. The function of the upper valve is to prevent blood being drawn from the vein when the piston of the syringe is withdrawn, whilst the lower valve prevents the return of the solution to the receptacle which contains it. The syringe is filled with solution once or twice until all air is expelled. The tube, which has a metal male portion, is next inserted into the socket of the needle. The piston of the syringe is then drawn in and out until the required quantity of solution has been injected into the vein. The apparatus is easily sterilized by boiling, and it can be carried in an ordinary



inside coat pocket. In the figure a glass cylinder is shown, but any kind of receptacle can be employed, such as a tumbler. The quantity of fluid to be injected can be nicely gauged within wide limits. For instance, if 600 c.cm. of salvarsan solution is prepared in a large glass flask, 100 c.cm. can be injected into six patients by simply changing the needle each time. The needle is so constructed that after insertion into any vein it will rest on the arm parallel with the surface. When working alone, the instrument can be easily manipulated, one hand being kept on the needle whilst the other works the syringe by means of the ring in the piston rod. I have found this form of needle preferable to any other pattern, both for entering the vein and for remaining in position after insertion.

⁴ *The Choice Before Us*. By G. Lowes Dickinson. London: G. Allen and Unwin, Ltd. 1917. (Demy 8vo, pp. 274. 6s. net.)

⁵ *Food Poisoning*. By E. O. Jordan. Chicago: The University of Chicago Press. London: The Cambridge University Press. 1917. (Cr. 8vo, pp. 125; 11 figures. 4s. 6d.)

A Dish for the Irrigation Treatment of Gonorrhoea.

MR. DUDLEY KENNARD, F.R.C.S. Edin. (London, W.C.), writes that he has been using for the last six years a small dish which greatly facilitates the irrigation treatment of gonorrhoea. It consists simply of a shallow oblong dish with a vent pipe at one end to which rubber tubing is applied and carried thence to a receptacle on the floor. The dish is placed between the thighs as the patient is lying on the couch, and all the fluid used is led to the receptacle. This obviates the emptying which has to be done several times during the operation if three or four pints of lotion are used; it is nearly impossible for any of the fluid to be spilled, and it also ensures the irrigation being done whilst the patient is on his back, the best position for this treatment. The dish has been made by Mr. J. H. Montague, 69, New Bond Street, W.

HEALTH OF MUNITION WORKERS.

(Concluded from p. 85.)

INDUSTRIAL POISONS.

THE handling of trinitrotoluol may produce unusual drowsiness, frontal headache, eczema, and loss of appetite. Generally the symptoms are at first slight, and, if exposure ceases, quickly disappear; but if the exposure is continued they tend to become more severe and are associated with cyanosis (ashen grey and livid colour of the lips), which may be accompanied by dyspnoea, palpitation, rapid weak pulse, constipation, vomiting, anaemia, pains in the limbs, jaundice, and bile-stained urine. In a few instances death preceded by profound jaundice has resulted. The production of dust and the escape of fumes into the air of workplaces should be prevented, overalls and gloves worn by all, and head-coverings by women. The employer is responsible for these working costumes being washed at least once a week, kept in repair, and hung apart from the clothes of other workers, and for providing adequate washing accommodation, soap and towels. Every explosive factory is required to have a canteen where hot meals can be obtained, and every worker must be supplied daily at the expense of the employer with one pint of milk, or cocoa with milk. A medical officer must be appointed to examine every worker once in every fortnight, and a woman welfare supervisor at all factories where women are employed. No person must be allowed to be in any workplace where exploder bags are filled or blocks are pressed for more than a fortnight without a corresponding period in work not involving contact with trinitrotoluol.

In an investigation of trinitrotoluol poisoning made for the Medical Research Committee, Dr. Benjamin Moore proved that the poison does not enter by the digestive tract, for quite large doses are tolerated when swallowed; nor as dust inhaled, but by the skin. The susceptible individuals are those in whom skin absorption is free. It is probable that the poison is fixed by the skin; it cannot be removed by washing with soap and water, but only by solvents such as ether and acetone. When combined in the skin its absorption into the blood continues after the worker is removed from the factory, and may lead to a fatal degeneration of the liver. In the case of any worker showing signs of poisoning the poison should be washed out of the skin (hands, etc.) by the solvents mentioned. The workers affected can be picked out before serious symptoms occur, by observing the dusky livid hue of the face and lips. The medical officer, therefore, should go daily among the operatives and remove any cases showing this symptom. It is difficult by the wearing of overalls and gloves to prevent absorption, because the workers soil their hands in taking these off and on, and get the dust within the gloves. It has been the custom to soil the surfaces of the shells in filling them and then cleanse them by rubbing with paraffin, etc. The shells become coated with a film of dissolved trinitrotoluol, which soils the hands, and it is the workers who clean up the spilt trinitrotoluol who especially suffer; the whole trouble thus arises from careless and uneconomic methods. Automatic filling should replace handwork wherever possible.

Tetryl (tetra-nitro-methyl-anilin) stains the skin and hair, and in susceptible individuals may cause troublesome eczema. Garments can be worn to prevent this, but susceptible individuals are put on other work. A mixture of two parts of castor oil and one of lanoline rubbed into the skin after washing helps to prevent eczema. Tetrachloro-ethane, an ingredient of the "dope" varnish applied

to the canvas coverings and tapes of aeroplane wings, being heavy, sinks to the floor. It produces drowsiness, loss of appetite, constipation, and pains in the stomach, and, in serious cases, jaundice, liver destruction, coma, and death. An efficient varnish has now been found which does not contain this ingredient.

WASHING FACILITIES AND BATHS.

While it is advisable that facilities for washing and baths should be provided in every factory, such provision is imperative where poisonous substances are manipulated, or where heat, dust, or dirt are present to an unusual degree. Much good work has been done in this direction in France and Belgium, and experience in England shows that where such facilities are provided the workers make good use of them. Hand-washing places should be strong and durable and simple. Where separate basins are used one should be provided for each five persons. If the trough system is adopted there should be a constant supply of water from taps or jets above, set at an interval of not more than five feet, at the rate of two to every five persons. Soap of the consistency of butter or jelly is supplied in small boxes about four inches square, fixed in convenient positions above the trough and kept locked. The soap is obtained by inserting the finger into a round hole at the bottom of the box. If the soap be strongly alkaline, as is necessary to cleanse hands soiled with oil in engineering works, some ointment should be used after washing. Separate towels should be provided for each worker, partly because each thus obtains a dry towel, and partly to diminish the danger of infection. The towels should be at least five square feet in area. The simplest bath for men is the shower or douche, the stimulating effect on the skin of the falling water being greater than that obtained by total immersion. For women who have difficulty in keeping their hair dry, or drying it after bathing, a horizontal spray fixed at the level of the shoulders, or obtained from a movable nozzle or ring on a flexible tube, is desirable. Hot as well as cold water should be laid on to baths and washhouses where men work in great heat; hot baths may prove an effective antidote to muscular rheumatism. Arrangements should also be made for drying clothes; this is usually not difficult when the building is heated by hot-water pipes. Washhouses and baths should be in charge of a person appointed to see to their cleanliness, under the direction of the welfare supervisor.

WELFARE SUPERVISION.

The Ministry of Munitions, acting on the advice of the Health of Munition Workers Committee, has set up a special welfare department. The success of welfare work in any factory depends on the personality of the supervisor. Persons possessing the necessary character and qualities are rare, and until recently no facilities for obtaining instruction were available. The right qualifications cannot perhaps be imparted by a university education, but, other things being equal, a refined educated woman is most likely to command the respect and sympathy of working girls. The choice of the right kind of supervisor for boys presents great difficulties. He must not be too old, and must have a temperament enabling him to enter into the troubles, ambitions, and fun of boyhood.

A welfare supervisor is required—

1. To be in close touch with the engagement of new labour, or when desired to engage the labour.
2. To keep a register of available houses and lodgings; to inform the management when housing accommodation is inadequate, and to render assistance to workers seeking accommodation.
3. To ascertain the means of transit and the length of time spent in travelling, to indicate the need of increased train, tram or motor service, or to suggest modification of factory hours to suit existing means of transit.
4. To advise and assist workers in regard to feeding arrangements, to investigate the need for the provision or improvement of canteens and to supervise their administration.
5. To investigate records of sickness and broken time arising therefrom, and in cases of sickness to visit, where desired, the homes of workers.
6. To investigate, and advise in, cases of slow and inefficient work or incapacity arising from conditions of health, fatigue, or physical strain.
7. To consider, particularly for delicate and young workers, all questions affecting health and physical efficiency, and to supervise the conditions of night work, Sunday work, long hours, and overtime.

8. To advise on means of recreation and educational work.
9. To investigate complaints and assist in the maintenance of proper discipline and general order.
10. To keep in touch with responsible organizations having for their object the promotion of the welfare of the worker.

The Factory Acts enforce a minimum standard of healthful workshop conditions. The aim of welfare supervision is to realize a maximum. The humanizing of industry will surely tend to increase a workman's self-respect and enlarge his capacity for independent thinking. Thus will come about that realization of the chivalry of labour for which Carlyle pleaded. High wages do not necessarily mean high cost of production, and long hours of labour do not always bring a corresponding increase of output.

The need of the country having made it necessary to require women and girls to leave their homes for work in certain defined areas, it has become the duty of the country to provide suitable housing for them, and to safeguard the health and morals of the exported workers. Before a woman or girl is taken from her home she should undergo a preliminary examination by a nurse, with reference to a doctor if necessary. Mothers of infants or families of young children should not be moved, and the farming out of children while the mother goes to work in a factory must be discouraged. Before the woman or girl is moved it must be seen that she has sufficient clothing and money—provided, if necessary, from a special fund—to meet the initial expenses. Loans can be refunded out of wages. The travellers should be seen off and met at the railway station, and a reception or clearing house should be provided for them until lodgings are secured. The clearing house should provide baths and a washhouse, afford good plain appetizing food, and a cheery welcome.

When the works are in towns, the residents are asked to respond to the call of patriotism by receiving munition workers. A register containing complete information of lodgings is needed, just as in the case of army billeting, and a standard of accommodation, food, service, and rates of pay must be laid down. A housing superintendent and assistants make the agreement, pay the rent of the employee, receive complaints, and remove difficulties. A register of all the lodgings occupied, and of the lodgers, is kept, and any change of lodging and any illness involving more than one day's absence from work notified. Hostels have been established in certain districts. It has been found advisable to provide separate self-contained cubicles and a sufficient number of small sitting-rooms in addition to the public rooms, since the girls soon tire of organized recreation and crave for rest and quiet. Freedom compatible with good order must be allowed, and much depends on the wisdom of the lady superintendent and her assistants. A sick-room in hostels or the establishment of a cottage hospital may be required. Special provision must be made for maternity cases, for many of the women may be unwilling to return home. A local committee is required to deal with them—get them into hostels (of the Church Army, Salvation Army, etc.), and to reform the workhouse lying-in ward.

Opportunities for wholesome amusement, refreshment, and recreation should be provided. Winter gardens and cafés are needed, and the use of public halls in winter, and parks and open spaces in summer should be obtained. Small clubs should be opened for the workers by societies, and hospitality offered by well-to-do residents on Saturdays and Sundays.

The national experience of Great Britain in modern industry is longer than that of any other people. It has shown clearly enough that false ideas of economic gain, blind to physiological law, must lead, as they led through the nineteenth century, to vast national loss and suffering. Industrial life in the future must be guided by the application of physiological science to the details of its management.

It will be seen that for the Ministry of Munitions and its Health Committee and Welfare Department the health of the worker means something more than freedom from disease; it means, among other things, the avoidance of the weariness which makes labour a pain. The labour of munition workers may be made to contain all the three great sources of pleasure in work—physical exertion short of weariness, interest in doing well work which it is not easy to do well, and the inspiration of a great cause.

British Medical Journal.

SATURDAY, JULY 28TH, 1917.

ANATOMICAL TERMINOLOGY.

WE publish elsewhere a letter from Dr. Arthur Keith which discusses a matter having a very direct interest for every medical man—the reform of anatomical nomenclature. It appears that much confusion has arisen in examination rooms and hospital wards from the introduction of a new system of naming the parts of the human body—a system known by the letters B.N.A. (*Basle Nomina Anatomica*). The system, as Dr. Keith points out, is German in origin, but we should be the last to offer that as a reason for considering the system unfavourably, or even of reviewing it in any captious spirit. The system, which has now been introduced in our most widely circulated manuals of anatomy, must be judged on its merits and demerits.

In any scheme of reform certain defects of a minor order are inevitable. We notice, for instance, that the suprascapular notch becomes the “scapular notch”; the artery related to the notch, formerly known as the “suprascapular,” is now named the “transverse scapular”; the nerve, however, retains its ancient name, suprascapular. The nerve to the rhomboids has been renamed the “dorsal scapular” nerve, while the dorsal scapular artery becomes the “circumflex scapular.” It is difficult to understand how such a confusion has been permitted to occur, much less to have been approved and adopted by a section of our anatomists.

The instances we have cited are not solitary; we could reproduce scores of them. The reformers, quite rightly in our opinion, wished to restrict the use of the word *maxilla* to the upper jaw and to speak of the lower as the *mandible*. The salivary gland lying under the mandible, which in this new system we should expect to be called “submandibular,” is still called the *submaxillary*!

The reformers would seem to have had a particular prejudice against everything relating to the teeth. We have been accustomed to regard the teeth as important structures, but the reformers are of a different opinion; they apparently regard the tooth-sockets as more important than the teeth themselves, for all the dental nerves are now named “alveolar.” The important nerve we were in the habit of naming inferior dental enters the dental canal at the dental foramen, accompanied by the inferior dental artery; we find that the nerve and artery are now named “inferior alveolar,” and that they enter at the “mandibular” foramen and course forwards in the “mandibular” canal.

It may be thought that such criticisms can be levelled only at the attempts to rename minor structures, but when we turn to important organs, such as the heart, we find the new nomenclatures equally inapt. “Auricle” and “ventricle” we have been in the habit of naming the pulsatile chambers of the heart; the French use corresponding terms. The Germans use *Vorhof* as the designation of auricle; hence in the B.N.A. *Vorhof* receives the latinized form of “atrium.” We have therefore to speak now of the auricle as the atrium of the heart and name what we called its appendix—*auricle*! We have always

supposed that the grooves in front of and behind the heart were happily named anterior and posterior interventricular. The B.N.A. reformers substitute anterior and posterior “longitudinal sulcus.” The auriculo-ventricular groove, about which there could be no doubt, now receives the ambiguous name of “coronary sulcus.” Our old friend, the septum ovale, becomes the “pars membranacea septi atriorum,” and the annulus ovalis becomes the “limbus ovalis.” The tubercle which Lower observed in the calf’s heart, but which has really no existence in the human heart, is named the “tuberculum intervenosum,” while a muscular column in the right ventricle is described as the “supraventricular crest”! One might as well speak of the eminence on the arm caused by the biceps muscle as the “crista bicipitalis.” The auriculo-ventricular orifices become the “ostia venosa,” although they have nothing to do with veins and only one of them with venous blood. Owing to a misunderstanding of the just use of the term, “conus arteriosus” has been applied to the infundibulum of the right ventricle.

If we turn to the new names for the diaphragm we find that we can only use them if we completely misunderstand the structure, action, and development of this important muscle. Indeed, the new system of naming is so bad that in his carefully and sympathetically written book on *The Basle Anatomical Nomenclature*,¹ Dr. E. B. Jamieson makes the following note when giving the equivalents for the crura of the diaphragm: “B.N.A. too detailed.” We also see from Dr. Jamieson’s introduction that he is fully aware of the defects in the B.N.A. system. In our opinion the defects are very numerous, for whichever part or region of the body we select we find that the demerits exceed the advantages offered to us by the new system. An ear surgeon recognizes six walls in the tympanic cavity, and has named them quite naturally and accurately, roof, floor, inner, outer, posterior, and anterior walls. It is his duty, if he accepts the system advocated by the supporters of the B.N.A. terminology, to name them “tegmental wall,” “jugular wall,” “labyrinthine wall,” “membranous wall,” “mastoid wall,” and “carotid wall.” Yet it is claimed that the new system demands less from the students’ memory than the old system!

In the region of the limbs a number of changes have been made which reasonable men can only regard as changes for the worse. We shall cite only one or two examples. No one had difficulty in using the terms internal and external ligaments of the elbow-joint or knee-joint. Why, then, should we now rename them with the clumsy titles “ulnar collateral” and “radial collateral,” “tibial collateral” and “fibular collateral”? Applied anatomy has been more developed in English-speaking countries than in any other. The only possible exception is France. In our practice we found it convenient to name the great nerve which perforates and supplies the triceps in the upper arm the musculo-spiral; its two terminal divisions we termed radial and posterior interosseous because of their relations in the forearm. We are now asked by B.N.A. enthusiasts to adopt the German manner of naming this great nerve trunk and to call it “radial” from the shoulder to the hand. In an equally arbitrary and unreasonable manner it is proposed to change the naming of the great sciatic nerve and its ramifications.

We do not hold a brief for our present anatomical nomenclature; it has many defects, and is without doubt capable of being greatly improved. We are not

¹ *The Basle Anatomical Nomenclature*. By E. B. Jamieson, M.D., Ch.B. (Edin.), Lecturer on Anatomy, University of Edinburgh. W. Green and Son, 1916. (6s. net.)

at all convinced that it would be a wise measure to remove all proper names from anatomical literature, although that course is being advocated by Dr. Keith. But we are quite certain that whatever changes are made should receive the approval of an authority duly representative not only of anatomists but also of all medical men, and that this authority should embrace representatives both of the home and overseas peoples. It would be a particularly happy event if anatomists representative of all English-speaking countries could devise such alterations as are agreeable and necessary. We cannot afford to allow the nomenclature of a basal medical subject to be subject to the caprice of a handful of enthusiasts. In the meantime, and until public affairs are in a more settled state, we would counsel British physicians and surgeons not to accept the B.N.A. as either a standard or British anatomical terminology.

PENSIONS AND GRANTS FOR DISABLED OFFICERS AND RELATIVES OF DECEASED OFFICERS.

EARLY in the war it was announced in the House of Commons that medical officers of the Territorial Force and Special Reserve, and those holding temporary commissions, their widows and orphans, would be entitled to gratuities and pensions on the scale and conditions then applicable to regular officers. A select committee was appointed at the end of 1914 to consider and report on pensions and grants for officers and men. Its third report, issued in September, 1915, dealt with disabled officers and officers' widows, orphans, and dependants. The committee held that the existing regulations were too rigid, and should be relaxed; that the rates of disability pension for junior officers should be increased; and that the scales of pension differing according to the circumstances under which the officer met his death should be made more elastic. The recommendations generally were in favour of greater liberality and greater flexibility. The committee recognized that officers not belonging to the regular forces would not in most cases have sufficient length of service to qualify for disability pensions, and they recommended that such officers if invalided for medical unfitness caused by military service should be graded according to the impairment of their earning capacity, and awarded pensions at the minimum rate for regular officers. The proposed modifications in the method of classification of disabilities and in the estimation of pensions and gratuities related "primarily to officers holding combatant commissions in the navy and army"; but the committee added that "the cases of other officers should be reviewed departmentally where necessary on similar lines." Royal Warrants dated November 26th and December 10th, 1915, amended the regulations for officers' retired pay, wound pensions and gratuities, widows' pensions, and allowances to the relatives of deceased officers in respect of casualties during the present war, but applied only to combatant officers, and it was stated that regulations for the retired pay, etc., of disabled medical, veterinary, and other officers would be made known at a later date.

The Ministry of Pensions has now issued the draft of a Royal Warrant¹ for the retired pay of officers disabled, and for the pensions of the families and relatives of officers deceased, and for the pensions of nurses disabled, in consequence of the present war.

The warrant consolidates and amends existing provisions for this purpose, in accordance with the Ministry of Pensions Act, 1916. The Minister of Pensions is appointed sole administrator and interpreter of the warrant, and is empowered to issue the necessary detailed instructions. The warrant applies to all officers, and their relatives, whose claims to retired pay, or grants, arise out of the present war, and it will have effect from April 1st, 1917. Claims which were dealt with, or arose, under previous warrants, if the terms of the new warrant are more favourable to the beneficiaries, will be reassessed retrospectively, and no grant will be reassessed to the disadvantage of an officer, or his dependants. Retired pay for disabled officers will be granted according to a schedule, in correspondence with the degree of disablement. The conditions under which grants and allowances will be paid are set out in Part I of the warrant. Part II deals similarly with pensions and gratuities to widows and children and other relatives of deceased officers. Such provision, it is noted, shall not be claimed as a right, but shall be given as a reward for the officers' services, and shall be conditional upon the worthiness of the relatives. Part III deals with pensions and grants to disabled nurses. Part IV defines certain terms used throughout the warrant. The word "officer" means a commissioned officer holding a permanent, temporary, or local commission in the Regular, Reserve, or Territorial Forces, who has served and been in receipt of military pay as such, during some period of the present war, but does not include an officer of the Indian Army or of the Dominion, Colonial, or Protectorate Forces, unless the terms of his service have been made to include the pension rights of the regular army.

The case of the R.A.M.C. officer appears to be covered, and since no specific reference is made to him in the warrant, it is to be assumed that he is on exactly the same footing as combatant officers in every respect. That this is intended seems proved by a footnote to the schedule of pensions, etc., to officers' widows and children, which states that "colonel" means a colonel "who has been employed as a substantive colonel if a combatant officer, or in the rank of colonel if a medical, veterinary, or departmental officer." For all disabled officers and nurses there are eight degrees of disablement, and the amount of retired pay, or additional pension, is on a descending scale according to the degree of disablement, and to the rank held. The rate of retired pay, or pension, or gratuity granted may be determined according to the temporary or acting rank held by the officer at the time he was killed, wounded, injured, or removed from duty in consequence of disablement. Temporary or acting rank is to reckon in cases of disease no less than in cases of wounds or injuries. Pensions and retired pay are the same for captains and lieutenants, but there is a difference of £110 in the widows' gratuity. Except as modified by the new warrant, the general conditions laid down in the Royal Warrant of December 1st, 1914, remain in force, and apply to grants made under the new warrant. The warrant follows to a large extent the general recommendations of the Select Committee, although the scales of payment are not identical. Retired pay of a temporary, Special Reserve, and Territorial officer, instead of being granted according to four degrees of impairment of earning capacity, will be assessed according to the degree of physical impairment on a scale of tenths. The two schedules to the warrant setting out the rates of retired pay to disabled officers, and of pensions, gratuities, and

¹ Cd. 3631. London: H.M. Stationery Office; to be purchased through any bookseller, price 2d.

allowances to officers' widows and children are reproduced with explanatory notes in the SUPPLEMENT (p. 19). The rates for the highest degree of disablement are more favourable than the present rates in all ranks. If the officer is killed in action, or suffers a violent death due directly and wholly to war service, or dies within seven years from wounds or injuries so received, his widow will receive a gratuity in addition to her pension, and an increased allowance for each child. Disabled officers of small means, and the widows of deceased officers, may be granted education allowances for children, while the case of the invalid and the motherless child also is provided for.

An important provision lays down that, in future, pensions to disabled officers will be the same whether the disability was caused by service, or only aggravated by it, while provision is also made for officers becoming disabled after the war by service in the war. Half his retired pay may be withheld from an officer who declines to undergo treatment certified to be necessary in his interests. An officer certified to need special medical treatment in a sanatorium, hospital, etc., may receive retired pay at the rate for the highest degree of disablement, and actual necessary medical expenses may be paid for him. Officers invalidated out of the army for medical unfitness not attributable to nor aggravated by military service may be granted a gratuity, which in special cases may reach £300. Finally, it is to be noted that the regulations for relatives other than the widow and children of a deceased officer are considerably extended and relaxed. So far as can be judged from a preliminary study of the warrant the grants and conditions generally are as liberal and elastic as could have been expected. Medical officers are placed on the same footing as other officers.

PROMOTION OF ARMY OFFICERS.

THE committee on promotion of officers in the Special Reserve, new armies, and Territorial Force, has issued a report containing recommendations affecting combatant officers of the three branches and also ex-regular officers of the reserve of officers or on the retired list, but stating that the question of promotion in the Royal Army Medical Corps, Territorial Force, requires further consideration, and will be the subject of a separate report at a later date. The reason given for the postponement of this matter is the urgency of the measures recommended with regard to the promotion of combatant officers. It should be noted that the report of this committee, although published last week, is dated May 9th, 1917, and it was not until June 13th, 1917, that the witnesses nominated by the British Medical Association were called to give oral evidence before the committee. On March 17th, 1917, a memorandum concerning the promotion of majors R.A.M.C. (T.F.) was forwarded by the Association to the committee, and a further memorandum dealing generally with the position, pay, and promotion of Territorial medical officers was forwarded early in May. In the second memorandum attention was drawn to the widespread feeling that these officers did not receive the sympathetic treatment they deserved; and a series of specific suggestions were made. The representatives of the Association who appeared before the committee in support of these memorandums, on June 13th, were given a sympathetic hearing, and were led to understand that the points submitted by them would receive careful consideration. We hope that the committee will issue its report on this matter without delay; and we trust that the case of officers of the R.A.M.C. Special Reserve will also receive sympathetic treatment, for we know from many communications received that there are anomalies and hardships in their terms and conditions of service which are a real source of grievance.

AUXILIARY MILITARY HOSPITALS.

THE report presented to the War Office by the Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem for the year ending December 31st, 1916, has been issued. It embodies a detailed statement of expenditure at each hospital, arranged under the counties, and an actuarial report by Mr. Basil E. Mayhew, F.C.A. At a meeting of county directors, held in London on September 19th, 1916, under the presidency of Sir Alfred Keogh, questions relating to the working of auxiliary hospitals, the position of the Joint Committee to them, and the relation of the county directors both to the hospitals and to the military authorities were discussed. Sir Alfred Keogh urged on county directors the necessity of combining economy in establishment and expenditure with efficiency. He submitted figures showing the varying costs at auxiliary hospitals, taken from the accounts for 1915, and by way of illustration stated that in comparable hospitals the cost of food varied from 1s. 8d. to 2s. 11d. a day, and that of drugs from 3½d. to 1s. 4d. a day. In December the Army Council agreed to institute a grant of 6d. a day per unoccupied bed, in addition to the capitation grant which is made on the recommendation of the Joint War Committee of the British Red Cross and Order of St. John. To the date of the report 85 applications for increased capitation grants and 424 for unoccupied bed grants were considered and dealt with. On January 9th, 1917, "all auxiliary hospitals drawing capitation grants, except permanent civil hospitals and auxiliary hospitals administered by boards of guardians and a few special hospitals," were placed officially under the county directors. This increased the cost of the county directors' offices, and the Joint Committee made a grant-in-aid to meet this, and at the same time offered financial assistance towards the transport of wounded in the county. When, later on, the War Office demanded an all-round increase in the accommodation at the auxiliary hospitals, the Joint Committee enlarged the scope of its original offer so as to include, on certain conditions, the cost of the extensions. In some counties, it is said, full advantage was not taken of the powers conferred upon county directors by the War Office, and in some instances the supervision exercised by them left much to be desired. The inspection of the hospitals by the county directors also varied considerably, and it is recommended that in all counties a travelling quartermaster should be appointed to advise on prices, accounts, and organization, if experienced men can be found to undertake the work. The total number of auxiliary hospitals submitting accounts in 1916 was 1,038, as compared with 815 in the previous year, and some particulars of the accounts of all the 1,038 hospitals are given, but Mr. Mayhew's analysis is limited to 960, of which 953 are in England and Wales, and 7 in Ireland. The total cost of maintenance was £1,997,404, but to this has to be added £165,002 for building and equipment, and £42,678 for administration, rent, rates, etc., making a total of £2,205,084. The capitation grants received from the War Office towards maintenance amounted to £1,530,144, the difference (£674,940) being made up by voluntary contributions. The War Office contribution represents 76 per cent. of the total cost of maintenance and 69 per cent. of the total cost of the hospitals. Mr. Mayhew gives an abstract of the cost of maintenance in the various hospitals classified in three groups—the first, hospitals with not more than 25 established beds; the second, with more than 25 but not more than 50, and the third with more than 50 established beds. He finds, as was to be expected, that the larger the hospital the more economically it can be run, the one important exception being in the case of surgery and dispensary, mainly expenses due to the fact that the larger hospitals take the more serious cases. The economy, he says, is not only in expenditure, but also in the number of staff employed, in transport, and

in many other ways not apparent from the figures. The difference in money is not very great, the average cost per day being in the smallest hospitals 3s. 7.20d., in the second group 3s. 6.66d., and in the group of largest hospitals 3s. 5.98d., the average for the whole 960 hospitals being 3s. 6.36d. The cost at different hospitals varies through a very wide range, and Mr. Mayhew calls attention to the case of Derbyshire as an illustration of how the average working cost of a county may be upset by the uneconomical management of one hospital. The average cost for the county, before including an expensively-run hospital, was 3s. 5d. a patient a day; including this hospital it became 4s. 1d. a day. Certain private hospitals and hospitals for officers are not included in Mr. Mayhew's general analysis. The average total cost of a patient a day in the private hospitals, which are for the most part small, is 7s. 4d.; but this average is very much affected by the fact that the cost at the largest hospital—the American Women's War Hospital at Paignton, Devonshire, with 233 beds—reached 10s. 10½d. a day. The average total cost of a patient a day in the hospitals for officers is 9s. 5d., but ranges from 7s. 5d. to 21s. 8d. Mr. Mayhew states that at certain hospitals a few beds have been set aside for the accommodation of officers, but considers that on grounds of financial economy this practice is not to be commended.

PRECAUTIONS FOR FLYING MEN.

THE *Journal of the Royal Naval Medical Service* for July contains an interesting note by Mr. H. Graeme Anderson (temporary surgeon R.N., attached to the Royal Flying Corps Service), based on a lecture delivered to pupils at air stations. Flying, he says, is a question of an active, well-balanced, decisive mind, and a series of sound and quick reflexes, visual, auditory, tactile, muscular, and balancing. The most important is the visual, the normal time for which he puts at twenty-hundredths of a second. The time for the auditory and tactile reflexes he puts at fourteen-hundredths of a second. He points out that the reflexes are slowed down or disturbed if the pilot is physically or temperamentally unfit, or is suffering from any illness, worry, fatigue, or from the after effect of excesses in alcohol. He recommends flying men to avoid alcohol and to be careful about smoking, a habit in which he says most aviators indulge too much. He considers that their diet should be generous and nourishing, and that flying when hungry should be avoided. Goggles should be fitted with non-splintering glass, and the hands covered with loose-gauntleted gloves lined with lamb's wool; the field boot, which should be of soft leather, ought to be lined with the same material. The face, when there is a risk of frostbite, should be smeared with a thin layer of vaseline, which prevents loss of heat from the skin. A curious point noted is that as most aviators fly with the mouth slightly open they should see that teeth and gums are in a healthy state, for any local disease may be increased by the cold and rush of air. He describes two forms of air sickness, one akin to sea sickness, due to the rolling and pitching of the aeroplane in "bumpy" weather. It is very rare, although a pilot by doing steep spirals and "switchbacks" may produce it in a passenger. The other form of sickness occurs at heights of 10,000 ft. and over, and is caused by the rarefied atmosphere and lack of oxygen. After passing 10,000 ft. the cold is extreme, and slight buzzing in the ears, difficulty in hearing, headache, fatigue, and torpor occur. The headache continues for some time after landing, and sleepiness is very marked. On a rapid descent the deafness and buzzing in the ears become more acute, and severe earache may come on. To guard against this "altitude sickness" oxygen should be carried and inhaled slowly as a preventive when going to great heights, especially for any length of time.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.

THE Oxford Ophthalmological Congress held its eighth annual meeting at Oxford on July 12th and 13th. Members assembled on the evening of July 11th at Keble College, where, as in former years, accommodation had been kindly provided by the college authorities. The congress was again indebted to Professor Arthur Thomson for permission to conduct its proceedings in the Department of Human Anatomy in the University Museum. The meeting, which was well attended, was opened with a short address of welcome by the Master, Mr. Sydney Stephenson. The subject chosen for discussion, "The correction of errors of refraction," was opened by Lieut.-Colonel Robert H. Elliot and Mr. Ernest Clarke. Dr. George M. Gould (Atlantic City, N.J., U.S.A.), who had accepted the invitation of the council to open the discussion, was unavoidably prevented from attending owing to the serious illness of Mrs. Gould, but the manuscript of his address was read. The morning of the second day was devoted to papers and demonstrations. A paper by Dr. Edridge-Green (London) on the relationship of the theory of vision to ophthalmology was discussed by Lieut.-Colonel Elliot, Mr. Harrison Butler, Dr. Stewart Barrie, Mr. Traquair, and Mr. Hern. Dr. George Young gave an interesting demonstration of his method of testing the colour threshold and its diagnostic value, and Mr. W. W. Sinclair described his experience of the test with especial reference to renal retinitis. Lieut.-Colonel Elliot showed lantern slides illustrating the direction in which the cataract may be dislocated by the coucher during the Indian operation. Dr. D. V. Giri read a paper on ring infiltration of the cornea in a case of purpura and made some general observations on the different forms of corneal infiltration. Captain Adams spoke on retrobulbar neuritis with especial reference to prognosis. In the afternoon some extremely interesting cases, which were afterwards fully discussed by the meeting, were shown at the Eye Hospital by Captain Adams; Dr. Giri and Mr. Cridland also showed cases. Mr. Johnson Taylor read a paper on local anaesthesia, and Captain R. J. Coulter reported a case of bilateral interstitial keratitis following injury to one eye, with especial reference to its medico-legal aspect. At the close of the discussion on July 12th Professor Sir William and Lady Osler entertained the members and their friends to tea, and the official dinner was held on the same evening at 8.15 in the hall of Keble College, when the Vice-Chancellor, the Very Rev. T. B. Strong, D.D., Dean of Christ Church, was in the chair.

CLOTHING, VENTILATION, AND TRENCH FEET.

IN a lecture delivered some time ago before the Royal Institution on the science of clothing and ventilation and the prevention of trench feet, Professor Leonard Hill began by contrasting our well clad and housed people with the Terra del Fuegians described by Darwin as enduring naked a climate worse than ours. "Nature, by making habit omnipotent and its effects hereditary," had fitted the Fuegians to the climate. Our people nowadays generally over-clothed themselves and weakened the defensive mechanism of the body against cold by over-coddling. The Channel swimmer, robust and well lined with the natural coat of cutaneous fat, and thickly smeared with grease to prevent maceration of the skin, had endured the sea-water as long as twenty-three hours, and yet water had 240 times the conductivity of air and over 3,000 times its capacity for taking up heat. The adaptability of body habit, on the one hand to exposure, on the other to over-clothing and hot atmospheres, was enormous. The vastly improved health, vigour, and manhood of recruits taken from desk, shop, or factory and put to hard exercise in the open air, showed how much ill health and deficient vigour arose from sedentary confined occupations. No less striking was the effect on children of open-air

schools; these should be made universal. Cerebro-spinal fever and similar respiratory infections (common colds, etc.) were spread by close contact of the carriers of disease with others in confined places. Those living an open-air life with great exposure to cold did not suffer from these epidemics. Exposure to cool moving air toned up the body through the cutaneous nerves, and led to the taking of muscular exercise to keep up the body heat. Thus metabolism was maintained at a high level, appetite and digestion kept vigorous, the breathing deepened, the circulation of the blood invigorated, and the abdominal organs massaged by the deep breathing and the muscular exercise. The sedentary confined worker, housed in tenements, suffered the atrophy of disuse, and missed the enjoyment of life that came from perfect physical health, and with appetite impaired was a prey to minor alimentary disturbances. With regard to ventilation, he said that the two things that mattered most were bacterial purity—that is to say, the prevention of the spread of infection by saliva spray from carriers of disease—and the maintenance of a proper and not monotonous rate of cooling of the skin. The freedom of the air from dust and irritating and unpleasant products of combustion, smoke, petrol fumes, and smells that depress the feelings, was also of importance, but of minor importance. Indoors, what was wanted was a source of radiant heat and cool air, gently wafted first this way and then that, to prevent monotony or unpleasant draught. The open coal fire or the modern gas fire gave radiant heat, and reversing fans could be used to give changing wafts of air. The hot-air plenum system gave entirely wrong conditions. With the kata-thermometer, described in the section of the article on the health of munition workers, published last week, p. 84, Professor Hill demonstrated the enormously greater rate of cooling in cold water as compared with that in air of the same temperature, and showed the influence of a woollen glove containing entangled air compared with that of a glove wet and containing no air and that of a waterproof glove. Trench feet occurred in soldiers immersed in cold water for many hours. Bacterial decomposition of the skin secretions took place if boots and stockings were worn continually for days, and the skin was macerated by the ammoniacal products. Water soaked into the macerated skin and caused local destruction of the tissues. Prolonged immersion in sea-water was endured by fishermen with impunity because of the salt, which prevented maceration of the skin—a question of difference of osmotic pressure. It was not, therefore, merely the prolonged chilling, but the soaking of water into the skin which helped to do the damage. Ointments made with antiseptics, such as salicylic acids and essential oils, had been used by the Italian soldiers, spread on cotton cloths and wrapped round the feet. Prophylactic discipline, directed towards changing the stockings, and drying and cleaning the feet, was of the greatest importance. The continuous pressure of the boot on certain parts helped to produce the injury. The provision of waterproof waders, and trenches properly built with planked pathways and water channels beneath, had prevented the suffering which British troops endured in the first winter of the war.

NASAL ANTISEPSIS.

THE discovery of an effective nasal antiseptic is a matter of interest to every one who is liable to the common infectious cold, but its importance has been greatly increased since it has been shown to be, at the least, highly probable that the infection of cerebro-spinal fever dwells in the nose and may be imparted by the nasal secretions, and, moreover, that the infection may be carried by persons who have recovered from the disease and others who have never developed any of its symptoms. In a paper published in our columns of June 30th last Dunham and Dakin described an antiseptic, dichloramine-T, and the preparation from it of an oily solution for spraying

the nasal cavities. These observers stated that they had not then been able to treat carriers of cerebro-spinal fever, although they had made encouraging observations on carriers of pneumococci and diphtheria bacilli. We learn that the test in the case of cerebro-spinal fever carriers has now been applied with success. Before using the oily solution the nose is cleansed with salt solution or with 0.25 per cent. aqueous chloramine-T solution either by spraying or irrigation. When the increased nasal secretion which this causes has subsided, the oily solution of dichloramine-T is applied with an oil atomizer, an endeavour being made to reach all parts of the nasal cavities with an abundant supply of oil. As it is not certain that the oil introduced in this way continues active for more than two hours, it must, if the treatment is to be intensive, be repeated at the end of that interval, and in any case at least four times a day at about equal intervals of time.

SIMULATION OF DISEASE.

WE publish this week two reviews of British works on malingering, and have brought together in the *EPILOGUE* a number of abstracts from articles in foreign medical journals which describe in detail some of the varied and devious ways of the malingerer in the Continental armies of to-day. To malingering is defined by Murray as "to pretend illness, or to produce, or protract disease in order to escape duty." The term has been in military use in this country for several centuries, but shamming sickness or injury is as old as the human race, and has long been noted among domestic animals. We have all laughed at the dog limping miserably on three legs in order to excite pity or shirk a winter's walk, and some of us have been annoyed by the pony dead beat after a mile or two on the outward journey but ambitious to do ten miles an hour so soon as his head is turned home. In the civil life of this country the Workmen's Compensation Act, and the legal liability of employers and railway companies for accidents, have elevated the feigning of injury and its consequences into a topic of special medical study; but until the second year of this war, when compulsory service was introduced, the military aspects of malingering received scanty notice. In countries, however, where a conscript army is an old institution, the simulation of disease, in order to evade military service or dangerous duty, has been closely studied for many years, and the war has only served to increase medical interest in the subject. The experience of recruiting boards, as revealed in the evidence before the Select Committee of the House of Commons, and recent prosecutions for the attempted production of arthritis by the injection of irritants, and of tachycardia by the administration of a well-known drug, have made it plain that practices which have been brought to a fine art on the continent must now be reckoned with in this country. It is the duty of the medical practitioner, therefore, to make himself familiar with what is already known on this subject, since pitfalls abound for the unwary.

RECRUITING.

THE alacrity with which the War Office accepted the suggestion that the work of recruiting should be handed over to a civilian body to find the men and ascertain whether they could be spared from their civil employment, and whether they were fit for any of the various categories of service the army required, is perhaps a measure of the difficulty of the problem in its present stage. It has been stated officially that it was not anticipated that more than about ten per cent. of the men coming under the Review of Exceptions Act would turn out to be fit for service in any capacity. Whether the Act was well drafted or not is now beside the question; it is on the statute book and must be carried out unless and until Parliament decides otherwise. The question as to the civilian body to which the work should be turned over does not seem to have been

decided. The work to be done has two aspects: the one is the calling up of men for medical examination, and the other is the organization of the best method of medical examination, which must mean some primary classification. In the French system, which has been suggested as a model, the first question to be decided is whether a man is physically and mentally suitable for any kind of military duty whatever, or whether he must be altogether rejected, either permanently or temporarily. The question what kind of military duty he is suitable for is decided later. The Local Government Board possesses no machinery for the calling up or for the medical examination of recruits; either such machinery would have to be created or the recruiting department of the War Office taken over. It has also been suggested that a suitable civilian body would be the National Service Department, which possesses local committees, and claims to be able to deal in the best possible way with large demands for labour in any vitally essential industry; but its local committees consist only of employers and employed, and its work is mainly concerned with substitution. Neither the Local Government Board nor the National Service Department possesses any organization for the medical examination of recruits, and the profession will read with satisfaction the decision, reported in the SUPPLEMENT, of the joint meeting of the Committee of Reference of the Royal Colleges of Physicians and Surgeons in England and the Central Medical War Committee on July 25th to point out to the Government that in any re-organization of the recruiting machinery it is absolutely necessary that, as regards the medical examination of men, the selection of doctors should not be left wholly in any local hands, but should be supervised by a central body, and also that the two bodies are preparing a scheme, for the carrying out of this selection under their auspices, which they will shortly submit to the Government.

SUPPLY OF COCAINE.

THE Defence of the Realm Regulations relating to the supply of cocaine have recently been amended. Prescriptions containing cocaine must in future be retained by the chemist for inspection if required, and must be marked "not to be repeated." In order to avoid friction between dispenser and patient as to the ownership of such prescriptions, prescribers should inform their private patients of these requirements. But prescriptions given for national insurance purposes on official forms provided by Insurance Committees are exempted by the regulations from this provision. It will also no longer be necessary for national insurance prescriptions on the official forms to indicate the practitioner's address and qualifications.

THE WAR COLLECTION AT THE ROYAL COLLEGE OF SURGEONS.

WE ventured to draw attention last week to the inadequate manner in which the interesting war collection of pathological specimens at the Royal College of Surgeons of England is displayed. We understand that it is now recognized that the collection has grown too large for the small room in which it is at present being exhibited, and that it has been determined to rearrange it in a larger room; but whether it will be considered desirable to risk its destruction by a bomb by placing it in one of the large museum rooms is a matter which will be decided by the College authorities. A number of additional specimens are now ready for display, and by October it is hoped to have a comprehensive collection on view, including not only actual specimens of wounds of all parts of the body and of the diseases and consequences of military wounds, but also of missiles, of the various means of treatment adopted by military surgeons, and the results obtained, so far as they can be accurately represented by drawings, photographs, casts, and models.

Medical Notes in Parliament.

Army Medical Examination Committee.

WAR OFFICE PROPOSAL FOR A CIVILIAN RECRUITING AUTHORITY.

WHEN the Committee resumed its sitting on July 23rd Earl Derby attended. Before his evidence was taken, the Chairman (Mr. Shortt, K.C.) read the following resolution which had been passed at a private sitting of the Committee on July 19th:

That the Chairman be authorized to inform the Prime Minister that the Committee are of opinion, in view of the evidence already taken, that a change of system should be made at once, and recommend that the whole organization of recruiting medical boards and of the medical examinations and re-examinations should be transferred from the War Office to the Local Government Board.

That the Committee are of opinion that, in order to restore public confidence, this change should be made at the earliest possible moment, and be not delayed until the Committee present their full report in accordance with their terms of reference.

The Chairman stated that after this resolution was passed he saw the Prime Minister, and then had interviews with General Geddes (Director-General of Recruiting) at the desire of the Prime Minister, and next with General Geddes and the Prime Minister together.

Lord Derby explained that he had had a brief talk with Mr. Lloyd George when the latter was passing from a car to enter a train. Lord Derby went on to say that he accepted the resolution, absolutely with both hands, and would desire the committee to go further in its recommendation, even if in so doing it went beyond the terms of their reference. He asked it to recommend that the whole of the recruiting should be taken out of the hands of the War Office and of the military authorities and entrusted to a civilian department. That he knew would be making a very big step, and he must be excused if he did not say that it should go to the Local Government Board or to any particular body or advise that it should be placed in the hands of a body formed *ad hoc*. He recognized absolutely that there were certain things that must be remedied. The resolution of the committee would to a certain extent, if carried out, remedy them, but would not, in his opinion, heal the whole of the wound. It should be a condition that a civilian body should find the men, and until the men had gone through various processes to ascertain whether they could be spared from their civilian employment, and whether they were fit for the various categories of service the army required, they should not come under the authority of the military. This was not a new opinion on his part. When he became Director-General of Recruiting in October, 1915, he did so really as a civilian, holding that it was the duty of a civilian organization to put what was known as "the Derby scheme" into force. That the idea he was now submitting was not new was shown by the fact that Sir Neville Macready, Adjutant-General, had put forward such a proposal some time ago. The matter had been talked over many times since, and some weeks ago he had discussed it with General Geddes, who told him it would be quite possible to change the whole recruiting from a military to a civilian basis. Lord Derby added that he did not say that under the new conditions there would not be needed some of the men now employed on the military recruiting machine, but if the transfer of these men was to be made from the military to the civilian side they must be lent, and must go as civilians. They must take off the khaki and put on black coats and become purely civilian. For a few weeks the recruiting department had been nominally attached to the National Service Department. Though the Committee, unless it obtained from Parliament larger terms of reference, could not recommend his full scheme, it might make a suggestion which would meet the circumstances. The witness was asked by the Chairman whether the Prime Minister approved of this proposal, and he replied that Mr. Lloyd George on the necessarily hurried statement of the scheme said "All right." Lord Derby added, in reply to a further question as to whether he submitted a proposal in his capacity as War Secretary, that he did and that he was supported by the two principal officers most concerned. He believed, therefore, that the proposal would carry weight with the Cabinet. Asked as to the time that would be taken for bringing it into operation, he said he thought that although it would be a big business it could be done within two months. Particularizing a date earlier mentioned Lord

Derby said that his conversation with the Adjutant-General on this subject took place at the beginning of April. In answer to the Chairman the witness expressed his willingness to send out an instruction pending a change to make absolutely clear that the civilian doctors on medical boards were not to be over-ridden by the military presidents. The Chairman thought that it was undesirable for the Committee to go further into the question of the scheme at that moment as Lord Derby promised to submit it, and said that while in his view it would be for the army to lay down categories for military service it would be for the civilian authorities to give instructions to determine the definition of those categories.

In the House of Commons on July 25th Mr. Shaw asked Mr. Macpherson whether, in view of Lord Derby's statement on the previous day, instructions would be given to military representatives on tribunals to adjourn pending appeals with regard to men classified B 3 and C 3 until the new policy was announced. Mr. Macpherson replied he had received notice of the question only a few minutes, and had not had time to consult Lord Derby. In any case it would not be for him to give instructions to the appeal tribunals; but he would consult the President of the Local Government Board. Mr. Hogge asked if Mr. Macpherson would see that no men were recalled and re-examined under the Review of Exceptions Act until the new authority had been set up. Mr. Macpherson said he would consider that.

In the course of the debate on the vote of credit, Mr. Macpherson referred to the new scheme of recruiting, and expressed pleasure that what Lord Derby had said had been well received—so far as he could gather—in the country. It should be realized, however, that it might be necessary to arm the new body with powers which no civil body had at present. The question of discipline was bound to come up, and it was not easy to take a power out of the hands of the military and give it to a civil body which had not by its nature been accustomed to matters of that sort.

EVIDENCE.

Lieutenant-General Sir James Wolfe Murray, General Officer Commanding-in-Chief of the Eastern Command since May, 1916, gave evidence on July 19th. The usual questions were asked, but the witness had not much direct knowledge touching the controversy as to circulars and instructions. The principal fresh feature of his testimony depended on a letter dated August 22nd, sent to him by one of the Under Secretaries for War. In this communication it was said that in the Eastern Command there had been over 800 cases in seven or eight months of men being discharged as unfit after they had been passed by the medical boards. The letter asked him to draw the attention of the medical boards to the matter, with a view to examinations being more thoroughly carried out. He replied, on September 14th, 1916, that as far as men invalided out of the army for heart troubles were concerned the matter had already attracted his attention. With regard to the 800 men, he pointed out that they represented only 0.5 per cent. of the recruits examined in the command between January 30th and August 31st—namely, 161,450. That, he said, put the matter in a somewhat different light, especially when it was taken into consideration that the necessity of obtaining a sufficiency of recruits had been impressed on all medical boards.

In reference to the Mill Hill Board, Sir James said that on the press complaints inquiry was made, and the investigating officers came to the opinion that the board was doing its work particularly well, in that it was exercising more discretion than, possibly, some of the other boards. While allegations were being made in the press that the board was accepting every man that came along, the Eastern Command were complaining that it was rejecting too many. The President of the Board explained that this was due to the men being unfit. The board had struck a bad stream of recruits.

Sir James Mackenzie, who gave evidence on July 23rd, referred to the difficulty in which medical boards were placed. Before the war military doctors dealt with men who were fit and who wanted to join the army. That was an easy matter. The State now required that individuals of impaired health should be recruited. Army medical men had not been trained to deal with men of that description, and the general practitioner, especially in industrial centres, had more experience in deciding whether a man was fit for certain work. He said that mistakes and differences of opinion were bound to occur. He spoke of the advance made in knowledge of heart murmurs; some doctors ignored this advance, and that was how it happened that sometimes a man who had been rejected was passed into Class A by a doctor who recognized that the

murmur in his case was of no importance. He would have no hesitation in passing a man into Class A if an innocent murmur was his only trouble. He had seen a lad of 18 rejected on account of heart murmur who was the leading athlete of his school, and the day after his rejection won a prize for running the longest race in record time. A man with a serious murmur would never get into the fighting line, as he would break down in training. A man who complained of shortness of breath, palpitations, etc., would not be put into Class A. The witness agreed that matters wanted clearing up. He thought there should be an inquiry by competent medical men to see where the mischief lay, so that they themselves could take steps to correct it. Asked as to the instruction that men should be passed not for the category for which they were then fitted, but for that for which they were likely to be fit in four months, Sir James said that no medical man would make such a classification—it was really impossible.

Dr. Albert Bentham, F.R.C.S., a member of the Mill Hill Medical Board, stated that the highest number of men examined in a day was 390. At the beginning the usual number was 300; the figure was reduced to 250, and in May of this year a second board was constituted, and the number of examinations limited to 150 a day. At Mill Hill the members of the board had been overworked, and that probably accounted for the mistakes.

Dr. James Hayward of Liverpool stated that on the board on which he acted the president sat in a room by himself, and the civilian doctors did not know what happened to the men. The witness said he had criticized medical boards because civilian doctors had allowed themselves to be misrepresented to the public by being parties to decisions given by the medical president. Heart examinations, he held, should take place in a separate room, and not in the same room as the one in which weighing, talking, and exercises were going on.

Surgeon-General Julian, who recently became D.D.M.S. of the Western Command, afterwards gave evidence, but had not much information to give. In reply to a question as to those men passed who had proved unfit, he said he did not blame the medical board. The men were placed in low categories, and with the present category there was a difference between the soldier and a man fit for the army. It did not follow that a man fit for the army was fit for a soldier.

Specially Skilled Medical Officers.—Mr. Watt asked whether there were not eminent medical men, some of whom had special recommendations for surgery by the Scottish War Emergency Committee, stationed at Salonica in convalescent dépôts, and other such places in Greece, where their skill was unutilized and where medical men of one or two years' standing could satisfactorily accomplish the work. Mr. Macpherson replied that the authorities were always informed of any special qualifications possessed by medical officers proceeding abroad. It rested with the General Officer Commanding to employ them where and how the authorities might consider them of most benefit to the service. It was necessary to have such men as were referred to in the question available in a theatre of war, where at any moment serious fighting might break out with severe casualties as the result.

Treatment of Sufferers from Shell Shock.—Mr. Stewart asked Mr. Barnes whether his attention had been drawn to an appeal for money issued on behalf of recuperation hostels for sailors and soldiers invalided from His Majesty's services with nerve strain, and signed "Frederick Milner," in which it was stated that men had been, and were being, invalided out of the service in large numbers, with no prospect before them but the workhouse or asylum, or a miserable existence as a burden to themselves and their relations; and whether this statement represented the position of these men. Mr. Barnes replied that he was aware of the appeal, but had ascertained that it had not been seen by Sir Frederick Milner. The terms of the appeal did not accurately represent the facts with regard to men invalided out of the service on account of nerve strain. Recognizing the special difficulties presented by neurasthenia and shell shock, a special medical board had been constituted to deal with all such cases and award pensions or gratuities to them. This board had set up branch boards in Scotland and Ireland, and members of it had been visiting at intervals some fourteen towns for the purpose of examining men reported to them. Cases of neurasthenia and shell shock invalided out of the service before the special board was instituted were entitled to be re-examined by the board at all times, and Local War Pensions Committees had been specially instructed to report to the board, with a view to re-examination, any case which in their opinion was not being suitably treated. All cases of men invalided from shell shock were granted either pensions or gratuities, but in either event they were entitled to treatment or training under Article VI of the Royal Warrant.

Provision had been made for their treatment in an institution with 105 beds at Golden's Green, and its accommodation was about to be increased by 50 beds; other suitable accommodation was being sought in the neighbourhood of London. On July 21st a hospital for 50 of these cases was opened near Belfast. At Leeds 100 beds were being provided, and at Leicester another 100. Men were also being sent on the recommendation of the special board to recuperative work on farms in Essex. He hoped by these institutions, increased to any extent that might prove necessary, to carry out with State funds the objects of the appeal to private charity referred to in the question. If there were any mental cases or any insane men as the result of shell shock or any other cause, they were suitably provided for. These institutions might happen to be lunatic asylums provided out of public funds, but these cases were not treated as pauper patients, but as private patients without taint of pauperism. They were paid for at special rates by the Government. Allowances were made to wives and children on the widow and children scale.

The Medical Board of the India Office.—Sir William Collins asked the Secretary of State for India what were the powers and duties and who were the members of the Medical Board of the India Office. Mr. Montagu replied: The duties of the India Office Medical Board are to report on the medical fitness or unfitness of such members of the Indian services or candidates for appointment to Indian services as the Secretary of State required to come before the board for examination. The board was at present composed of Surgeon-General Sir Havelock Charles, G.C.V.O., I.M.S. (ret.) (President), and Lieut.-Colonel J. Anderson, C.I.E., I.M.S. (ret.).

Pay for Men Medically Re-examined.—In the House of Commons on July 20th Mr. Macpherson, replying to Mr. Watt, said that men called up for medical re-examination received a whole day's pay and ration allowances, amounting to 2s. 9d. in all. Special instructions were issued on July 5th calling attention to the fact that all men were to receive this allowance, irrespective of the date on which they were called up. Mr. Wing asked whether when men were called up by the examination form on one day and had to go on a second they would have pay for both. Mr. Macpherson thought that a very reasonable request and promised to convey it.

THE WAR.

TREATMENT OF GUNSHOT WOUNDS OF THE KNEE.

SPECIALARZT FÜR CHIRURGIE DR. HADDAEUS, in describing the results of treatment in seventy cases of gunshot injury of the knee-joint, stated that it had been necessary to discard the aseptic methods of civil practice. Since all gunshot injuries were to be regarded as infected a return to the older antiseptic method was inevitable. Haddaeus at first used a 3 per cent. solution of carbolic acid for injection into the joint; in some cases no suppuration took place but in others this treatment failed. In several cases, moreover, considerable quantities of carbolic solution remained in the joint owing to the small size of the trocar opening. To meet this difficulty, after injection of the joint he made an incision through the trocar opening and thoroughly irrigated the joint. These cases almost always healed rapidly and without any inflammatory reaction. He accordingly adopted this as his regular method in severe cases. In slighter cases he used puncture without incision, using a large trocar and washing out the joint energetically. He had never seen any case of poisoning following the use of carbolic acid. From the intense hyperaemia set up within the joint by this method Haddaeus was inclined to attribute the antiseptic effect less to the bactericidal action of the solution than to the hyperaemia. He therefore attempted to increase the hyperaemic action by the addition of other agents. He found a 10 per cent. solution of iodoform ether specially active in this respect, a temporary contraction of the arterioles gradually giving place to intense congestion. In certain cases a 2 per cent. solution of collargol was employed with good results. It was employed, on account of its stimulating influence in the formation and organization of granulation tissue, for irrigation during the later stages, and appeared to be of value in promoting the closure of the upper recess of the knee-joint.

Haddaeus's procedure was as follows: In apparently simple cases of haemarthrosis, where the presence of a foreign body or of wound of the capsule could be excluded with some certainty, a large trocar was entered at the outer aspect of the joint, the blood allowed to flow out, and the joint distended several times with 3 per cent. solution of carbolic acid, the patella being raised to permit the fluid to reach the upper recess. The trocar was with-

drawn before completely emptying the joint, so that the fluid subsequently coming away might sterilize a possible infection of the puncture from the skin or the joint itself. The puncture was made under anaesthesia by ethyl chloride rather than novocain, since Haddaeus considered that the latter rendered the tissues more subject to be attacked by a spreading infection. The leg was then immobilized in a long Volkman's splint, with the knee left freely under observation.

In severe cases, with large contaminated wounds in the neighbourhood of the joint, or with fragments in the joint, or in which puncture with the trocar showed that the haematoma was already suppurating, or in which the capsule itself was wounded—in all such cases the joint was opened on each side by an incision into the upper recess. The wound edges and capsule were then held apart with hooks, and the joint cavity thoroughly irrigated with carbolic acid solution, the inner surface of the joint being at the same time vigorously swabbed and rubbed. Finally, 10 c.cm. of a 10 per cent. solution of iodoform ether was run into the joint and allowed to remain for a few seconds, and the limb put up in a Volkman's splint. In this way it was often possible to prevent an infection from becoming manifest or to arrest it. In 68 of Haddaeus's 70 cases, many of them infections of the severest kind, recovery followed.

Where the knee-joint was wounded from behind Haddaeus enlarged the wound in the capsule in order to gain free access to the joint. This generally sufficed, but in two cases it was necessary also to open the joint below the patella, the ligamentum patellae being split longitudinally and the apex of the patella excised. Haddaeus did not consider the bacteriological examination of the fluid contents of the joint at all equal in value, as an indication for operative treatment, to the clinical evidence of infection. Suppuration often followed in cases in which the aspirated fluid was sterile, the explanation being probably that the joint, originally sterile, became subsequently infected from the surrounding tissues.

Of the cases treated 63 recovered with a movable joint—that is to say, the joint could be voluntarily moved in some degree, and in many of them there was already good movement.

WAR NEPHRITIS.

PROFESSOR MAGNUS-ALSLEBEN,¹ in a paper on acute nephritis, observed among soldiers between January and October, 1916, states that the first twenty were under his observation only two to three weeks, the cessation of the most acute symptoms being the signal for drafting them elsewhere. It was then recognized that transport in this early stage frequently provoked acute exacerbations, and subsequently the patients were nursed in one place for two to three months. An immediate rise in the blood pressure did not always occur; among at least a third of his cases there was no appreciable rise. Yet this feature did not disqualify these cases for inclusion in the category of war nephritis, for the other signs of renal insufficiency—oedema, etc.—were the same as those observed in patients with high blood pressure. In about half of his cases the blood pressure was considerably increased (150 to 180 mm. of mercury). Within one to two weeks the blood pressure almost invariably fell gradually to normal, but an abnormally high blood pressure was still demonstrable after the other symptoms and the oedema had passed off. In most cases disturbances of the circulation and of excretion vanished quickly and completely. On the other hand, a trace of albumin and a few casts and red cells were often found in the urine for several months in spite of strict rest in bed. He saw only five cases of uraemia; it occurred as a rule in the period of increasing diuresis; venesection supplemented by saline infusion proved beneficial, and no death occurred. He considered that the amount of fluid given should correspond with the excretion of urine, and that the old fear that a scanty supply of fluid favoured retention of nitrogenous bodies was exaggerated. The diet should be rich in calories, poor in nitrogenous bodies and salts. Professor Magnus-Alsleben states that all recent German publications agree that war nephritis is not a new disease, but is the well known acute glomerular nephritis which is a common sequel to scarlatina.

¹ *Muench. med. Woch.*, December 12th, 1916.

Professor Beitzke and Dr. Seitz² have carried out the following investigations to ascertain whether war nephritis is a microbic disease or not. In thirty cases, terminating fatally, they examined serial sections of the kidneys stained with polychrome methylene blue and with Levaditi's silver impregnation. In two cases they found small coecal emboli, which had apparently originated in purulent, bronchopneumonic foci. The very fine Gram-negative rods often seen and the spirochaeta-like structures observed in three cases were evidently artificial, the results of the silver stain. Thus, in the majority of cases, no micro-organisms were found. In fifteen cases a bacteriological examination of the blood and urine was made, always with negative results. The blood examination also failed to show eosinophilia. The authors apparently attached no importance to small Gram-negative rods stated to have been found in urine-bouillon cultures in two cases. Intraperitoneal injections of urine and defibrinated blood were made from several cases into mice and guinea-pigs, four mice and two to four guinea-pigs being, as a rule, used for each case. At first half the number of these animals were chilled in ice water just before inoculation with a view to promoting the development of nephritis. But this procedure was abandoned when it was found that it alone was sufficient to cause albuminuria lasting several weeks. The animals which survived the inoculation were killed eight days to eight weeks later, and the liver and kidneys examined in the same manner as the kidneys of the patients dying of war nephritis. Most of the animals, particularly the guinea-pigs, showed more or less definite nephritis, but the chilled animals were not more affected than the others. Sections of the kidneys in several cases showed small Gram-negative rods, but these, again, were regarded as artificial, created by the stain. The authors conclude that their investigations failed to show an infectious etiology of war nephritis.

TUMOR ALBUS PYOGENES.

PROFESSOR A. TIETZE has described, under the name of "tumor albus pyogenes," an unusual form of chronic inflammation which at times affected wounded tissues and caused delay in healing. It occurred more especially in suppurating gunshot injuries of the bones and joints, and was characterized by great swelling of the capsule of the joint, and of the surrounding soft parts, which were converted into a gelatinous, oedematous granulation tissue, traversed by numerous sinuses. Fever was absent, and the discharge from the sinuses sterile. The appearances closely resembled those of the white swelling of tubercle, or the analogous condition more rarely met with in syphilis. In the cases in question, however, those diseases were excluded, and there seemed to be no doubt that the condition had its origin in the injury and the accompanying infection. The following case is an example of the condition:

A comminuted gunshot injury of the elbow-joint, with suppurative; excision of the joint. Observed a month later the infection was found to be quiescent, but several unhealthy wounds were present, and the whole region of the elbow had undergone marked swelling, causing a fusiform enlargement of the limb from the middle of the arm to the middle of the forearm. The swelling involved the soft parts only, the bones showing, by the x-rays, merely the changes resulting from the excision, and one or two fragments of the projectile. The ulnar nerve was paralysed, but was subsequently proved not to have been injured.

Tietze explained the origin of the condition on the supposition that while the infection ceased to be active, a formative irritation was set up in the damaged soft parts by small foci of necrosis resulting from the past infection, and by minute fragments of the projectile or bone implanted into the tissues by the explosive action of the injury. An examination of the parts removed in cases where excision had been performed appeared to support this theory.

The course of this very chronic process could not be accelerated to any appreciable degree by operation, since it was impossible to locate and remove the numerous foci of irritation present; there was, moreover, the ever-present danger of lighting up the quiescent infection through operative interference. It seemed preferable to limit operative measures to enlarging the existing sinuses where these appeared to afford an insufficient outlet for the

discharges. Tietze had, however, found that a rapid diminution of the swelling in these cases, with arrest of the chronic process and rapid healing of the wounds, followed the administration of potassium iodide.

HONOURS.

A SUPPLEMENT to the *London Gazette* dated July 18th contains a further list of awards to officers, non-commissioned officers, and men for conspicuous gallantry and devotion to duty in the field. The list includes the following medical officers:

D.S.O.

Temporary Captain James Harding Barry, M.C., R.A.M.C., attached London Regiment.

For conspicuous gallantry and devotion to duty in attending to the wounded under exceptionally trying conditions. Under very heavy shell fire he dug out five men who were buried, and amputated two men's legs on the spot. He showed utter disregard of any personal risk, and his example was splendid.

Major Lionel Wilfred Bond, A.A.M.C.

When in charge of advanced collecting and forwarding posts his total disregard of danger under a terrific hail of gas shells, H.E., and shrapnel fire gained him the confidence of all ranks and greatly assisted the evacuation of the wounded. Later, although wounded and partly gassed, he refused to leave his post, and his bravery and devotion saved a very critical situation.

Major Herbert Percival Brownell, A.A.M.C.

For conspicuous gallantry and devotion to duty whilst attending to the wounded under heavy fire. His coolness in organizing matters amidst the greatest confusion enabled the wounded to be expeditiously treated, and he personally treated some hundreds of cases under heavy shell fire.

Major Horatio Victor Patrick Conrick, A.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded. He proceeded to the scene of an explosion under very heavy shell fire, and personally directed the removal of the wounded. His fearlessness and disregard for his personal safety has been marked on all occasions.

Temporary Captain James Henry Fletcher, M.C., R.A.M.C.

He showed the utmost bravery and coolness when commanding the bearers. He worked continuously under artillery and machine-gun fire. It was largely due to his gallant conduct that so many wounded were safely evacuated.

Temporary Surgeon William James McCracken, M.C., R.N.

For conspicuous gallantry and resource during operations, when, after attending wounded in captured dug-outs, he pushed forward into a village which was being heavily shelled, compelled a captured enemy M.O. to show the best enemy R.A.P., and then kept him, with twelve enemy Red Cross men, busy all day bringing in and dressing over 150 of our wounded, who otherwise could not have been treated, and then sending them down. He also searched the front line under a heavy fire for wounded.

Bar to Military Cross.

Temporary Captain Charles Bromley Davies, M.C., R.A.M.C.

He was in command of the bearer division when evacuation was most difficult. He showed great gallantry and resource in pushing forward under heavy fire and rescuing several wounded men. (Military Cross gazetted August 25th, 1916.)

Temporary Captain James Churchill Dunn, M.C., M.D., R.A.M.C., attached Royal Welsh Fusiliers.

For conspicuous gallantry and devotion to duty in attending to the wounded. He crawled close up to the enemy's wire, accompanied by another officer, and brought in a wounded man on a waterproof sheet. (Military Cross gazetted August 25th, 1916.)

Temporary Captain Harold Garnett Janion, M.C., R.A.M.C., attached R.H.A.

He was assisting to remove the pilot from a wrecked aeroplane when the spot came under heavy fire from a hostile battery. Several of the bearers were wounded, but by his courage and example this officer collected fresh bearers and conveyed the wounded men to safety. This task was carried out under continuous shell fire. (Military Cross gazetted June 23rd, 1915.)

Captain Maurice Baylis King, M.C., M.B., R.A.M.C. (S.R.).

For conspicuous gallantry and devotion to duty in rescuing wounded under very heavy shell fire. His fearlessness set a splendid example to the stretcher-bearers, who were then much shaken by the heavy shelling. (Military Cross gazetted January 1st, 1917.)

Captain George Seabourne Robinson, M.C., A.A.M.C.

He displayed great courage and determination in attending wounded under heavy fire. On one occasion he personally led a party out in front of our line for the purpose of searching and attending the wounded not yet collected. (Military Cross gazetted June 4th, 1917.)

Temporary Captain James Lennox Stewart, M.C., M.B., R.A.M.C., attached Gordon Highlanders.

He behaved with the utmost gallantry in removing the wounded under shell fire. He continued to work in the open exposed to severe shell and machine-gun fire until every wounded man had been brought in. (Military Cross gazetted May 16th, 1916.)

Military Cross.

Temporary Captain Frederick Carson, M.B., R.A.M.C., attached Royal West Kent Regiment.

He behaved with the greatest gallantry in attending wounded under continuous heavy shelling. His total disregard for personal safety set a fine example to those around him.

Temporary Captain Henry Joseph Cotter, R.A.M.C., attached Lincolnshire Regiment.

Although wounded on the previous day, he declined to be relieved, and continued to dress wounded in the open under heavy fire, going through heavy barrage to reach some men lying out in an exposed position.

² *Berl. klin. Woch.*, December 4th, 1916.

Temporary Captain Albert Victor Craig, M.B., R.A.M.C., attached Royal Field Artillery.

Though suffering himself from the effect of gas shells, he displayed the greatest bravery and the most untiring energy in attending to the wounded under fire of heavy guns and gas shells. He risked his life day and night without the slightest hesitation.

Temporary Captain John Nissen Deacon, M.B., R.A.M.C., attached East Yorks Regiment.

He showed exceptional bravery and resource on several occasions in attending to the wounded under very heavy shell fire, with complete disregard for his own personal safety.

Temporary Lieutenant Cyril Duncan, M.B., R.A.M.C.

For conspicuous bravery and devotion in attending wounded close to a large ammunition dump which was on fire, with splinters and shrapnel shells flying about, and later, although partially gassed, attending wounded under heavy gas shell fire.

Captain Hugh Hart, C.A.M.C.

He displayed the utmost gallantry and courage in attending wounded continuously under heavy shell fire.

Temporary Captain James Duncan Hart, M.B., R.A.M.C., attached London Regiment.

He commanded an aid post close to a piece of heavily shelled road-way. He continually went out into the open road and attended wounded men under heavy fire, with a total disregard for his own personal safety.

Temporary Captain Charles Reginald Ralston Huxtable, M.B., R.A.M.C., attached Lancashire Fusiliers.

He showed the utmost skill and bravery in attending to and evacuating wounded. When seven of his bearers were buried by a shell he at once, despite the intense hostile bombardment, organized a party and dug them out.

Temporary Captain Charles Clouston Irvine, R.A.M.C., attached East Yorkshire Regiment.

He took his stretcher-bearers out under heavy barrage fire and brought the wounded back safely, carrying one man back on his shoulders. His complete disregard for his own personal safety was most marked.

Captain Cyril Jacobs, M.B., R.A.M.C.(S.R.), attached Lincolnshire Regiment.

After an assault he went out over the whole ground in daylight, cleared as many of the wounded as possible, and, having located the wounded who were in the enemy wire and close to it, completed his task by nightfall. He succeeded in evacuating all wounded men.

Temporary Captain Richard Orthin Hilton Jones, R.A.M.C.

For many hours he had to occupy a most exposed position under heavy fire, where he dressed and attended wounded at great personal risk.

Captain Douglas Ballantyne Kennedy, C.A.M.C.

He directed the work of the stretcher-bearers for forty-eight hours without rest, and repeatedly aided the wounded under very heavy shell fire.

Temporary Captain Francis Kenneth Kerr, M.B., R.A.M.C., attached Royal Scottish Fusiliers.

During heavy and accurate hostile fire he continued to dress wounded, although the building was hit several times. His fine example was of the utmost value to those around him.

Captain Charles Herbert Leedman, A.A.M.C.

Although he and several of his staff were wounded by the heavy shelling of his post by the enemy, he continued, with the greatest gallantry, to attend the wounded, remaining at his post until it became untenable.

Captain (now temporary Major) Ronald Hugh Macdonald, C.A.M.C.

One of our aeroplanes was shot down, the observer was wounded and pinned beneath the wreck. This officer and a bearer went out in full view of the enemy, who were shelling the machine, and extricated the wounded man and removed him to safety. He himself was severely wounded while doing so.

Temporary Lieutenant Joseph Randolph Morell Mackenzie, M.B., R.A.M.C., attached South Staffordshire Regiment.

For conspicuous bravery and devotion on numerous occasions when attending wounded and leading stretcher-bearer parties under every kind of heavy and continuous fire, and invariably exhibiting great skill, coolness, and contempt of danger.

Temporary Captain Randal Vivian McDonnell, R.A.M.C., attached Bedfordshire Regiment.

For over forty-eight hours he attended more than 200 wounded, many having to be dressed in the open under heavy fire. His total disregard of personal danger was beyond praise.

Captain Malcolm McGillivray, M.B., R.A.M.C.(S.R.), attached South Wales Borderers.

Although his dressing station was twice blown in, and himself extricated with great difficulty, he continued to attend wounded under heavy shell fire.

Temporary Captain Daniel McKelvey, M.B., R.A.M.C., attached Gordon Highlanders.

During an attack by his battalion he followed them closely and attended to the wounded in the open under very heavy fire. His fearlessness and gallant conduct throughout the operations was most marked.

Temporary Captain Murdo McKenzie McRae, M.B., R.A.M.C., attached Northumberland Fusiliers.

Owing to the shortage of bearers this officer carried in during the night seven or eight wounded men who otherwise would have died in the snow. He has performed consistent good work throughout.

Captain Robert James Manion, C.A.M.C.

While going forward through a heavy hostile barrage to establish an aid post he at great personal risk stopped and dressed alone nine wounded men.

Temporary Captain Arthur Gilbert Michelsen Middleton, R.A.M.C.

He showed great gallantry and bravery in carrying in two wounded men under heavy hostile shelling. He displayed the utmost disregard for danger throughout in carrying out his duties.

Captain Cyril Charles Minty, A.A.M.C.

He showed the greatest courage and fearlessness in attending wounded whilst exposed to heavy shell fire and gas fumes, and assisting to carry them to the collecting post. The stretcher-bearers had suffered severe casualties, and it was owing to his magnificent example that they maintained their courage and endurance.

Temporary Captain George Lynn Pillans, R.A.M.C.

He showed great determination and courage in leading bearer squads through heavy barrage. This he did several times, and throughout superintended the evacuation under heavy shell fire.

Temporary Lieutenant Joseph Rickards, M.B., R.A.M.C., attached Royal Scots.

He attended a large number of wounded in a barn which was under heavy shell fire. During the night he organized a party which brought in many wounded from an exposed position on the battlefield.

Temporary Surgeon James Ness McBean Ross, R.N.

For conspicuous gallantry and devotion on many occasions in organizing and leading stretcher-bearers in search for wounded, and attending them under very heavy fire.

Temporary Captain John Finlayson McGill Sloan, R.A.M.C.

His dressing station being blown in on the top, he dressed over 200 cases under very difficult conditions. He had to twice change his dressing station.

Temporary Lieutenant (temporary Captain) Harry Neville Stafford, R.A.M.C.

Having received a message that many wounded were on heavily-shelled ground, he organized rescue parties, and brought them all in, although he was severely wounded in this gallant work.

Temporary Captain Charles Gordon Timms, R.A.M.C., attached Royal Fusiliers.

For two days he attended the wounded in the open under heavy and incessant shell fire, quite regardless of personal danger, and his coolness and energy alleviated much suffering.

Temporary Captain William Annandale Troup, M.B., R.A.M.C., attached Wiltshire Regiment.

He displayed the utmost skill and endurance in clearing the wounded between the lines after the attack. Through the day he carried out his task under continuous shell fire, and was thus instrumental in saving many lives.

Captain Alexander Guthrie Semple Wallace, M.B., R.A.M.C.(S.R.), attached Royal Lancaster Regiment.

He continued to attend wounded men in the front line trench despite hostile bombardment. His total disregard for personal danger set a fine example to those around him.

Temporary Captain Robert Bruce Wallace, M.B., R.A.M.C., attached Leicestershire Regiment.

For conspicuous bravery and devotion on many occasions, and notably when suffering from a painful wound he not only continued to dress wounded but went out with stretcher-bearers under heavy fire and dressed and brought in men unable to move.

Temporary Captain Donald Alexander Warren, R.A.M.C., attached Royal Warwickshire Regiment (Lieutenant C.A.M.C.).

He continued to attend wounded for over an hour under heavy artillery and machine-gun fire and in full view of the enemy. Later he established an aid post, and carried on for forty-eight hours without rest under continuous fire.

Temporary Captain Philip James Watkin, R.A.M.C., attached Bedfordshire Regiment.

For two days he dressed wounded under heavy shell fire, and, when the captured trenches had been cleared, he commenced to search the shell holes in "No Man's Land," in spite of heavy sniping fire, until ordered to desist.

A bar to the Military Medal has been awarded to one non-commissioned officer of the R.A.M.C., and two non-commissioned officers and two privates of the A.A.M.C. The Military Medal for bravery in the field has been awarded to Sister L. E. James (Queen Alexandra's Imperial Nursing Service), Acting Sister E. Maude (Queen Alexandra Imperial Military Nursing Service Reserve), twenty-four non-commissioned officers and seventy-two privates of the R.A.M.C., thirteen non-commissioned officers and twenty privates of the A.A.M.C., two non-commissioned officers and two privates of the C.A.M.C., and five privates of the S.A.M.C. The Distinguished Conduct Medal is awarded to two non-commissioned officers and one private of the R.A.M.C.

MENTIONED IN DISPATCHES.

A supplement to the *London Gazette*, issued on July 21st, contains a list of officers, warrant and non-commissioned officers, men, and nursing staff of the British Salonica Force brought to notice by Lieutenant-General G. F. Milne for distinguished service during the past six months. The following medical officers are mentioned in the list:

SALONICA.

Army Medical Service.

Temporary Colonel F. D. Bird, C.B.

Royal Army Medical Corps.

Lieut.-Colonels (temporary Colonels): J. C. Connor, C. T. K. Maurice, C.M.G., P. MacKessack.
Lieut.-Colonel J. R. Whit, M.B.
Majors (temporary Lieut.-Colonels): L. L. Fisher, A. E. Kidd, J. Matthews.

Majors: F. J. Garland, P. H. Henderson, D.S.O., E. B. Waggett, W. J. Weston, R. K. White.

Temporary Majors: K. W. Monsarrat, H. Wiltshire.

Captains (acting Lieut.-Colonels): P. G. M. Elvery, M.C., B. Johnson, A. D. O'Carroll, G. H. Stevenson.

Captains (temporary Majors): C. M. Fegen, W. D. Sturrock.

Captains: D. V. M. Adams (Res. of Off.), J. H. Beverland, T. Carnwath, C. Clarke, D. M. Corbett, R. O. Eades, E. G. Gauntlett, J. P. Litt, J. Mair, G. P. Mills, M.B., W. L. Murphy, L. G. Parsons, F. Scroggie, R. G. Shaw, C. S. Staddon (S.R.), A. L. Urquhart, V. H. Wardle.

Temporary Captains: D. Bird, J. H. Box, C. A. Boyd, St. J. D. Buxton, J. H. Cuthbert, R. S. Dewar, W. H. Fleetwood, S. H. Hay, W. A. L. Henderson, G. B. Holroyde, A. G. Howson, J. F. W. Leech, J. M. Macfie, F. Paine, T. E. Parker.

Temporary Lieutenant J. M. Hammond, D.S.O., M.B. (died of wounds).

Honorary Lieutenants and Quartermasters: P. A. Baynes, T. E. Coggon, M.C., A. T. Hasler, M.C.

Temporary honorary Lieutenant and Quartermaster A. J. Wiseman.

Canadian Army Medical Corps.

Lieut. Colonels: W. B. Hendry, E. J. Williams.

Majors: C. S. McVicar, H. C. Parsons.

Captains: J. E. Campbell, W. A. Clarke, J. G. W. Johnson.

Honorary Captain and Quartermaster H. J. Middleton.

Indian Medical Service.

Major E. Bisset.

FRANCE.

A supplement to the *London Gazette* published on July 23rd contains an additional list of officers, non-commissioned officers, and men recommended for distinguished and gallant conduct and devotion to duty in Sir Douglas Haig's dispatch of April 9th. The following medical officers are included in the list:

Lieut.-Colonel G. H. Goddard, R.A.M.C.

Temporary Captain (acting Lieut.-Colonel) L. D. Shaw, M.B., R.A.M.C.

Captain G. E. Cole, A.A.M.C.

CORRECTIONS.

The following are among the corrections printed in regard to the names of those mentioned in Sir Douglas Haig's dispatch printed in the supplement to the *London Gazette* of May 29th:—*Royal Army Medical Corps*: For temporary Captain J. Davidson, M.B., read Captain J. Davidson, M.B. (S.R.); for Captain G. T. Van Der Vyver, M.B. (S.R.), read Captain G. T. Van der Wyver, M.B. (S.R.).

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Died on Service.

CAPTAIN F. A. DERAVIN, Australian A.M.C.

CAPTAIN IAN MACFARLANE, R.A.M.C.

Captain Ian Macfarlane, R.A.M.C., died at the Military Hospital, Cairo, at July 18th. He was the elder son of the Rev. Norman C. Macfarlane, of Juniper Green, Midlothian, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1911. He worked for some time as medical missionary at Nazareth, but had to leave Palestine when Turkey entered the war. He took a temporary commission in the R.A.M.C. as lieutenant on April 14th, 1915, and was promoted to captain after a year's service. He was recently in charge of a military hospital near Gaza.

LIEUTENANT J. E. FOREMAN, R.A.M.C.

Lieutenant John Eugene Foreman, R.A.M.C., was reported as having died on service in the casualty list published on July 21st. He was educated at the London Hospital, took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1906, and, after acting as house-surgeon of the Royal Victoria and West Hants Hospital at Bournemouth, went into practice at West Southbourne. He had only recently taken a temporary commission in the R.A.M.C. and was senior resident medical officer of Boscombe Military Hospital.

Died of Wounds.

LIEUTENANT B. COHEN, R.A.M.C.

A Correction.

In the casualty list published on July 13th the death from wounds of Lieutenant B. Cohen, R.A.M.C., was announced, and it was erroneously assumed that the reference was to Dr. Bertram Cohen of Sidmouth. We regret the error, and are glad to learn that this officer is in good health, and serving on the staff of the Royal Naval Hospital, Plymouth. The officer

who died would appear to be Dr. Benjamin Cohen, formerly of Cape Town, who received his commission as lieutenant in the R.A.M.C. in November, 1916. Dr. Benjamin Cohen was educated at the University of Glasgow and St. Bartholomew's Hospital, and took the degrees of M.B., Ch.B. Glas. in 1913. He was honorary medical registrar at the New Somerset Hospital, Cape Town, and additional medical officer and anaesthetist to the Free Dispensary, Cape Town.

LIEUTENANT J. S. MUNRO, R.A.M.C.

Lieutenant James Sutherland Munro, R.A.M.C., died of gastritis at the Officers' Hospital, Baghdad, on July 16th. He was the youngest son of Mr. Munro, of Dornoch, Sutherlandshire, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1900. He had only recently taken a temporary commission in the R.A.M.C., having previously been in practice at Pendleton, Manchester.

Wounded.

Captain J. G. A. Campbell, Canadian A.M.C.

Captain W. E. David, M.C., R.A.M.C. (temporary).

Captain G. D. Eccles, R.A.M.C. (temporary).

Captain A. T. Hawes, R.A.M.C. (temporary).

Captain E. H. Helby, R.A.M.C. (temporary).

Captain F. G. McNaughten, R.A.M.C. (temporary).

Captain G. M. Miller, R.A.M.C. (temporary).

Captain E. M. B. Payne, R.A.M.C. (temporary).

Captain C. P. Rosenthal, Australian A.M.C.

Captain and Quartermaster A. Morrison, R.A.M.C.

Captain H. D. Smart, M.C., R.A.M.C. (temporary).

Lieutenant F. Corner, R.A.M.C. (temporary).

Sister R. Pratt, Australian Nursing Service.

Wounded and Missing.

Captain H. K. Ward, M.C., R.A.M.C. (S.R.).

Erroneously Reported Wounded.

Captain E. A. Walker, R.A.M.C. (temporary), previously reported as wounded (*BRITISH MEDICAL JOURNAL*, July 14th) was reported as *not* wounded in the casualty list published on July 19th.

DEATHS AMONG SONS OF MEDICAL MEN.

Cooke, Christopher A. G., Midshipman R.N., eldest son of Lieut.-Colonel A. Cooke, R.A.M.C. (T.F.), of Cambridge, killed in the blowing up of H.M.S. *Vanguard* on July 9th. He was born in 1899, entered Osborne in 1912, and was mobilized at the end of his first term at Dartmouth. He was serving on H.M.S. *Aboukir* when she was torpedoed on September 22nd, 1914, and on H.M.S. *Vanguard* in the battle of Jutland on May 31st, 1916.

De Segundo, William, Midshipman R.N., second son of Major C. S. de Segundo, R.A.M.C. (T.F.), killed in the blowing up of H.M.S. *Vanguard* on July 9th, aged 17.

Duke, Alan C. H., Lieutenant Commander R.N., eldest son of the late Colonel A. W. Duke, R.A.M.C., died on July 11th, of injuries received in the blowing up of H.M.S. *Vanguard* on July 9th.

Garlike, George Popham, Somerset Light Infantry, second son of the late Dr. Garlike of Sutton Benger, Wiltshire, died in hospital abroad on July 5th, aged 35.

Green, Charles Arthur, M.C., Second Lieutenant Royal Garrison Artillery, son of the late Dr. Arthur Green of Gateshead, killed on July 13th, aged 20.

Robertson, James, Second Lieutenant Highland Light Infantry, son of the late Dr. James John Robertson of Oakfield, Montgomery, Wales, died of wounds on July 9th, aged 19. He was educated at Merchiston, where he was in the O.T.C., and had begun to work as a farming pupil, when he took a commission in November, 1916.

Woodforde, Hector Sidney Ridout, Australian Imperial Force, fourth son of William Sidney Ridout Woodforde of Goondiwindi, Queensland, killed February 25th, 1917.

Woodforde, Philip Sidney Scane, Major Australian Imperial Force, eldest son of the late Alfred Ernest Woodforde, L.R.C.P., of Uralla, New South Wales, died of wounds on May 6th. He was a first cousin of Hector Woodforde, both being grandsons of the late Dr. W. T. G. Woodforde, of Spencer's Wood, Reading.

Ziani-de-Ferranti, Basil, M.C., Major Royal Garrison Artillery, eldest son of Dr. S. Ziani-de-Ferranti, of the Hall, Baslow, Derbyshire, died of wounds on July 12th.

MEDICAL STUDENT.

Drewe, Adrian, Major Royal Garrison Artillery, killed on July 12th. He was the eldest son of Mr. J. C. Drewe, of Wadhurst Hall, Sussex, and was educated at Eton, at Trinity College, Cambridge, where he graduated as B.A., with first-class honours in psychology, and had passed his first and second M.B., and at St. Bartholomew's Hospital. He was a well known rowing man at Eton and at Cambridge, where he rowed three years in the third Trinity light four, which was then head

of the river, and won the University trial pairs in 1913. He got a commission in the R.G.A. on November 2nd, 1914, and went to the front in the spring of 1915.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

INVESTITURE.

At the investiture by the King at Buckingham Palace on July 21st the recipients were in two categories—the men themselves who had won distinction, and the near relatives of those who had died. In the latter category, unfortunately, occurred the name of Lieutenant Donald Mackintosh, Seaforth Highlanders, who won the Victoria Cross by an act of heroism recorded in our issue of June 23rd, but which cost him his life. The cross was received by his parents, Dr. Donald Mackintosh, C.B., medical superintendent of the Western Infirmary, Glasgow, and Mrs. Mackintosh.

Ireland.

IRISH COUNTIES WAR HOSPITAL.

The Irish Counties War Hospital was formally opened on July 18th by Lady Wimborne. Her Excellency said that the hospital was the crystallization of a desire on the part of the counties of Ireland to provide by their own efforts and by their own self-sacrifice some means of relief and help for wounded soldiers. The idea had originated with some of the directors of the county Red Cross organizations, who desired local institutions for their wounded. But it had been pointed out to them that a central hospital in County Dublin would be really more productive of good, and it was creditable to those organizations that they had at once sunk their individual feelings and thrown themselves so heartily and completely into the organization of a great central hospital, where the biggest and best results might be had for the money that had been subscribed. The building, so well situated, in such good air, was going to be a real help to the brave Irishmen who would be there. Of the many supporters and founders of the institution, she mentioned Mr. Hely, to whose efforts on behalf of the hospital were due so many generous subscribers, and Dr. Lumsden who, in his capacity as head of the V.A.D.'s, had done most wonderful work in connexion with it.

CRAIGAVON NEURASTHENIC HOSPITAL FOR SOLDIERS, BELFAST.

Lieut.-Colonel James Craig, M.P., and Mrs. Craig have lent their large house and grounds to the Ulster Volunteer Force Hospital Board of Management to be used as a hospital for discharged soldiers and sailors suffering from neurasthenic shell shock and kindred affections. The house is situated on the rising ground of the Castlereagh Hills, on the south side of Belfast Lough, and commands a view of the lough and much of the adjoining beautiful and wooded country; it is about three to four miles from the city. The grounds are over 30 acres, and the owner has also given permission to make all necessary alterations. The committee has arranged to erect a temporary ward in line with the loggia and large billiard room, and it is expected that the hospital will ultimately accommodate 100 patients. There will be numerous one-bedded rooms and small wards. The kitchen is enlarged, and a large dining-room is being built adjoining. The billiard room is for the present to be used as a ward, but in the near future it will be converted into a recreation room for concerts, lectures, and through the day for reading, etc. There will be a nursing staff of one matron, three sisters, and about twelve V.A.D. nurses, and accommodation for them is being provided upstairs. The Board of Management of the Ulster Volunteer Force Hospitals have appointed Dr. H. L. McKisack medical officer in charge, and he and Dr. W. Calwell and Dr. R. W. Leslie will form the visiting staff. Dr. J. Adamson, lately house-physician in the Royal Victoria Hospital, Belfast, is the resident medical officer and superintendent.

The opening ceremony was performed on July 21st in the beautiful grounds in front of the house. The Lord Mayor of Belfast occupied the chair, and called upon Mrs. James Craig, who declared the hospital open, and handed it over to Sir Edward Carson for the Ulster Volunteer

Force Hospital Board. Sir Edward moved a hearty vote of thanks to the donors for their magnificent gift. The Right Hon. G. N. Barnes, Minister for Pensions, in seconding the vote of thanks, said the country must not be content with giving a man a pension; it must build him up and return him a self-supporting and self-respecting unit to the community.

Sir Arthur Griffith-Boscawen moved a vote of thanks to the Lord Mayor for presiding, and expressed his pleasure at being present and his high appreciation of the gift. This was seconded by Mr. R. V. Williams, Chairman of the Belfast Branch of the War Pensions Committee. This is the second war neurasthenic hospital to be opened, and the sixth war hospital which this energetic board has established and is working. It follows on the lines of Golders Green, London, and will be under the guidance of Lieut.-Colonel Sir John Collie, director of neurasthenic institutes.

Scotland.

REPORT OF THE CENTRAL MIDWIVES BOARD FOR SCOTLAND.

The appearance of the report on the work done by the Central Midwives Board for Scotland for the year ended March 31st, 1917, shows that the Midwives (Scotland) Act, which was passed on December 23rd, 1915, is now in operation. The Board was constituted in February, 1916, but, until the two members to be selected from the midwives on the roll could be added, it was not of full size; consequently the final revision of the rules was delayed until after May 25th, when the representative midwives were present. Meanwhile the new rules prepared by the Central Midwives Board for England had become available, and the Scottish Board resolved that the curriculum, etc., prescribed should be coextensive with their requirements. The rules received the approval of the Privy Council on August 26th. Other matters which were attended to during the year were largely of the nature of adjustment and reciprocal recognition regarding curriculum and examination between the two boards. In the meantime, however, reciprocal recognition of examinations is incomplete, for midwives passing an examination in Scotland cannot be enrolled in England without passing also the examination of the English Board. The first examination of the Scottish Board was held in October, 1916, when seventy-seven candidates entered, of whom sixty-nine passed; the examination was conducted simultaneously at Edinburgh, Glasgow, Dundee, and Aberdeen. For the period to March 31st, 1917, the number of midwives enrolled was 2,026, including the sixty-nine above mentioned by examination. To the report, which is signed by Sir Halliday Croom, chairman, and D. L. Eadie, secretary, there are appended lists of teaching institutions and teachers recognized, of certified midwives approved to sign certificates, and of the examiners. The institutions are the Royal Maternity Hospitals in Edinburgh and Glasgow, the Maternity Hospitals in Aberdeen and Dundee, the Hospice of the Edinburgh Hospital for Women, the Queen Victoria Jubilee Institute, and the Church of Scotland Deaconess Hospital, Edinburgh; the Nurses Training Home, Govan, and the Glasgow Eastern (Poor Law) Hospital, Glasgow.

PUBLIC HEALTH OF EDINBURGH.

The annual report of the public health department of the City of Edinburgh for 1916, whilst much smaller than in the pre-war years, contains a great many facts and figures of outstanding importance. Dr. Maxwell Williamson, too, continues to make his statistics interesting. A remarkable sign of the times is the prominent position given to the birth-rate; it is actually more important than the death-rate. Thus, whilst the natural increase in the population of Edinburgh—that is to say, the excess of births over deaths for 1916 is 936, as compared with 432 in 1915—that greater increase is not due to a rise in the number of births but to a fall in the number of deaths, and, as a matter of fact, to the comparative freedom of the city from measles and whooping-cough. Indeed, the birth-rate has fallen—from 17.8 in 1915 to 17.4 in 1916, a figure, says Dr. Williamson, which is the lowest yet recorded; and he adds:

It is to be kept in mind regarding the low birth-rates which are now ruling that these do not mark a specially sudden fall in

consequence of war conditions as might at first sight be expected. No doubt these conditions have an important bearing on the birth-rates, but along with this statement there must be taken the other fact, that the diminution in the rates during the war has not been disproportionate to the diminishing rates which have ruled for wellnigh half a century. Thus, in 1871, the rate was 34 per 1,000; in 1884, 30; in 1888, 29; in 1890, 27; in 1894, 26; in 1902, 24; in 1905, 23; in 1911, 20; in 1913, 19; and then the two succeeding war years—1915 the rate was 17.8, and in 1916, 17.4.

The decrease, therefore, has not been much exaggerated during the three war years. Perhaps the serious nature of the effect of the falling birth-rate is more clearly shown by a table in the report exhibiting the increase in the population since 1861. It is only necessary to look at the figures for the terminal years (1861 and 1916) to understand why there is ground for anxiety. In 1861 the population was 170,444 and the births (with a rate of 33.4 per 1,000) were 5,694; in 1916 the population was 330,905 and the births (with a rate of 17.4) were 5,748. In other words, whilst the population had almost doubled, the total number of births had only increased by 54. At the old rate prevailing in 1861, there would have been about 11,000 births in 1916. No wonder Dr. Williamson has ceased since 1914 to put into his table the number of years which will be required to pass before the present population of Edinburgh is doubled, and it is not surprising that a large part of the present report is occupied with the forecast of the child welfare scheme which has during the past few weeks begun to operate, in part at least, in the city. The "torrent of babies" of which Tennyson the poet spoke in apprehensive terms some forty years ago, has ceased, in Edinburgh at any rate, to threaten the civic landscape. The cancer death-rate, 1.3 per 1,000, remains the same in 1916 as it was in 1915, and the same holds of the phthisis death-rate, 1.1 per 1,000; the fall of the infectious diseases death-rate from 1.5 per 1,000 in 1915 to 0.6 per 1,000 in 1916, and in the infantile mortality from 132 per 1,000 births in 1915 to 100 per 1,000 in 1916 are matters for rejoicing. In 1915 there were 774 deaths under one year, whilst in 1916 there were only 575; but the marked reduction has been almost entirely explicable by the fall in the zymotic rate, which reached an exceptionally low level. There therefore remains plenty of scope for the beneficent action of the child welfare scheme in preparation, and the same remark applies to the scheme in preparation under the Venereal Disease Order, which Dr. Williamson hopes to see in action before long. Unfortunately (as he points out) the order contains no compulsory power, and even after a scheme has been framed and put into force persons suffering from venereal disease in an actively communicable form may still remain at large in the streets unless they choose to take advantage of the treatment which will be provided for them. There are many other matters of interest in the report, including the rather ominous, although slight, increase in the density of the population.

England and Wales.

THE MEDICAL TRAINING OF WOMEN IN WALES.

IN connexion with the recent collegiate gathering at Bangor the annual meeting of the general committee for the promotion of the medical training of women in Wales was held in the Council Chamber of the University College, Mr. D. Ll. Thomas, chairman of the Executive Committee, presiding. The movement was started and a general committee appointed at a meeting held at Cardiff in February, 1916, the object being to facilitate the entrance of women into the medical profession. Owing to war conditions increasing the demand for medical service, the losses sustained amongst doctors serving abroad, and the depletion of medical students due to military service, the need for the training of women has, in the opinion of the committee, become urgent. The chairman pointed out that although the medical school was situated at Cardiff and the training would be given there, the organization was intended to serve the whole of Wales and to assist students from all parts of Wales. The Hon. Violet Douglas-Pennant, one of the National Insurance Commissioners for Wales, said that the movement aimed at

turning out such women as had rendered splendid service during this war in Serbia, Salonica, and other places. From a practical point of view she hoped that grants in aid would not be given till the fourth year of studentship, and that they would not be given at all except in absolutely justifiable cases. Principal Griffiths, of the University College, Cardiff, referring to the examination lists of the women candidates for the medical profession who entered at the beginning of last session, regretted to say that the results were quite deplorable. The fact was that they were asking too much of these young women until they were better prepared at the schools. They were expected to pass their first examination at the end of their first year. Practically none of them had done it. He was afraid that a great number of the students would not pass in the second year either, and that proved the wisdom of Miss Douglas-Pennant's suggestion that grants should not be awarded till the students had proved themselves capable. He suggested that those who had to do with the secondary school education of women students should give serious attention to the matter and try to get their science teaching to a higher level all round, and not specialize merely in botany. Principal Reichel (Bangor) also approved Miss Douglas-Pennant's suggestion, and dwelt on the usefulness of a loan fund for students.

HEALTH OF LANCASHIRE.

According to the quarterly report of the M.O.H. for the county of Lancashire for the quarter ending March 25th, it appears that there was a considerable increase in the general death-rate as compared with the same quarter last year. The rate in the urban districts had risen from 13.2 per 1,000 to 14.7, and in the rural districts from 12.9 to 15.8. The total deaths from all causes were 6,052; of these, 258 were due to epidemic diseases, excluding diarrhoea, 456 to tuberculosis, and 1,692 to bronchitis and pneumonia. The figures for measles are especially high; there were during the quarter 7,485 cases with 122 deaths, as compared with 5,188 cases and 60 deaths in the same quarter last year. Negotiations are still proceeding with the various hospital authorities in the county with regard to the treatment of venereal disease, and apparently the scheme is not yet complete. For maternity and child welfare work four county health visitors were appointed in April. They have already commenced their duties, and will report monthly on their respective districts.

The Midwives Act Committee reports that the number of midwives on the list was 776, but only 649 were actually in practice. Exactly half the total number are on the list because they were in bona-fide practice in 1901. The records of sending for medical aid numbered 636, and 96 stillbirths were reported. As in previous quarters, by far the largest number of cases where medical aid was called in were for ruptured perineum or tedious labour, while in the infants inflammation of the eyes accounted for most of the cases. No fewer than 90 cases of ophthalmia neonatorum were reported from all sources, and in connexion with them eight charges of negligence were preferred against midwives. The cases of puerperal fever numbered 15 with 3 deaths, as compared with 21 cases and 6 deaths in the previous quarter, and in connexion with them there were two charges of neglect against midwives. At the request of the Local Government Board a return was prepared showing the supply of midwives in each rural parish, and the Board urged the county council to frame a scheme for establishing a trained midwife in areas which at present are in need of such service, the Board's grant for maternity and child welfare work being available in respect of the necessary expenditure.

It was recently stated in an American newspaper that Dr. Yamei Kin is the only Chinese woman graduate of an American medical college. This statement is said to be inaccurate. According to the *New York Medical Record* Dr. Mary Stone (Meigil Shie), who is in charge of a hospital at Kiukiang, where she treats about 25,000 patients a year, graduated at the University of Michigan in 1896. Dr. Ida Kahn, said to be a direct descendant of Confucius, who is now head of a hospital at Nan-Chang where 23,000 patients are treated annually, graduated in the same class. Dr. Hu King Eng, head of the Woolston Memorial Hospital, Foo Choo, graduated at the Women's Medical College, Philadelphia, in 1894. Dr. Li Bi Cu of Ngan-Si en graduated at the same institution in 1906.

Correspondence.

THE BASLE ANATOMICAL NOMENCLATURE (B.N.A.).

SIR.—Any one who surveys the chaos which has come over the naming of the parts of the human body in recent years must be moved to exclaim with the ancient Hebrew: "Cursed be he that removeth his neighbour's landmarks." Perhaps another quotation is even more apt for the present circumstances: "Some remove the landmarks; . . . behold as wild asses in the desert go they forth." With your permission I want to examine this "wild ass" movement in a branch of knowledge which concerns every medical man; to trace its origin and aims, and to see how far it is possible for a well-intentioned but wrong-headed movement to be converted into one which will yield a real and lasting benefit to human anatomy.

In the late Eighties of last century leading German anatomists realized that a great advantage would ensue if a uniform system of anatomical nomenclature were introduced to German medical schools. In 1889 a commission was appointed by the Anatomische Gesellschaft. After six years of effective labour the commission submitted to the German Anatomical Society, when it met in Basle in the early summer of 1895, a new nomenclature, which was adopted by the society and named the B.N.A.—*Basle Nomina Anatomica*. The members of the society received it without demur; it was primarily intended to secure uniformity in German schools; there was no intention of dictating to the rest of the world. But I am quite certain if the leaders in France, Italy, Britain, or America had submitted such a list to their respective societies it would not have been accepted in faith: the members of those societies would have insisted on the rights of free men—of criticism and of choice. That is the first point we have to remember. The nomenclature (B.N.A.) which is now being pressed on us was designed not for us but for the needs of German schools.

The German system has merits; there could not be anything more stupid than to deny ourselves the privilege of improvements because at the present time the people amongst whom these improvements originated are our enemies. One outstanding merit, to my way of thinking, was that all the proper names which cumbered the pages of our textbooks got notice to quit. Sylvius, Fallopius, Eustachius, Poupart, Gimberaat, Wrisberg, Wirsung, Gasserius, Wharton, Hunter, Monro, Peyer, Treitz, Santorini, Magendie, and all their colleagues, ancient and modern, had to retire to their proper places—the dusty pages of historical records. New names had to be coined to take their places, and the German genius is clumsy when applied to the art of nomenclature. It would have been otherwise if the task had fallen to our colleagues of France—they have a gift for names. A very great number of the new terms proposed are clumsy and inapt. Eustachius had to go, but why call his tube "tuba auditiva"? it is the tube of the tympanic cavity—the tympanic tube. The pharynx is a big and important part, and when we read of the "canalis pharyngeus" we expect an important structure, and not the minute and relatively unimportant old friend—the pterygo-palatine canal. The foramen of Magendie becomes the "apertura medialis ventriculi quarti"; Pacchionian bodies, "granulationes arachnoidales"; the foramen of Winslow, "foramen epiploicum," while the pouch of Douglas becomes the "excavatio recto-uterina." Many of our terms become curiously twisted in the German system: acromio-thoracic, big and clumsy enough, becomes more clumsy in the B.N.A. form, "thoracico-acromialis"; palato-glossal becomes "glosso-palatine," and palato-pharyngeal "pharyngo-palatine." There were not a few pedantries introduced. "Hilus" was intended to replace our hilum; "capitulum," capitellum; "annularis," orbicularis. Although anatomists of other countries used "malar" as the designation for cheek bone, the German term "os zygomaticum" was retained in the B.N.A. The insignificant joint between the arytenoid and corniculate cartilages received the high-sounding designation of "synchondrosis arycorniculata," while the inferior tibio-fibular articulation became the "tibio-fibular syndesmosis." It is said that the German anatomists, in drawing up the

B.N.A., gave full consideration to the names used by anatomists in other countries. However that may be, they preferred to retain their own term for the second cervical vertebra, "epistropheus," while trapezium and trapezoid of the carpus became "os multangulum majus" and "os multangulum minus." In short the B.N.A. was founded on the usage in German schools, and no attempt was made to bring the new nomenclature into harmony with the usages in France, Italy, Russia, or English-speaking countries.

How does it come about that a scheme of names, compiled under the circumstances just narrated, is being forced on English-speaking medical men? To obtain an insight to the commencement of the movement we must turn to the introduction which Professor Lewellys F. Barker, Sir William Osler's successor in the Chair of Medicine at Johns Hopkins University, wrote to a work which he published in 1907, and entitled *Anatomical Terminology*.

"Now that the B.N.A. is being followed in medical and scientific schools throughout the world," he wrote, "and has been adopted as the language used in several newer English and American anatomical textbooks and atlases, it has occurred to the publishers of Morris's *Anatomy* that a concise statement concerning the origin and exact nature of this list of anatomical terms would be interesting and helpful to anatomists, physiologists, biologists, pathologists, and clinicians." Now I can assert without fear of contradiction that, in the year 1907, there was not a single anatomical school or teaching hospital throughout the whole length and breadth of Great Britain and Ireland in which the B.N.A. had been adopted; there was not a school in which there was any wish to adopt the new nomenclature *en bloc*. But it did occur to the publishers of an excellent and deservedly successful textbook on anatomy to adopt the new nomenclature. What have publishers to do with the terminologies to be used by medical men? Publishers make commercial adventures, and in making such adventures we cannot blame them if they exploit, as milliners do, the calls of fashion. If the new fashion "catches on" old wares go out of date and become unsaleable. It was under the aegis of publishers that the German terminology—which we politely name the B.N.A.—was introduced to English-speaking schools. There always has been, and always will be, in every class a very considerable section which is susceptible to fashion, and mistakes movement in a circle for real progress. It is that section which has capitulated to the new nomenclature—as the publishing trade hoped it would.

The picture which Professor Barker drew of the state of anatomical terminology in 1907 was, in my opinion, not a little exaggerated. "These double and multiple terms were passed on from lecture to lecture and from textbook to textbook, and as a result of this anarchy in the creation and use of terms the weight became terribly grievous. Teachers and pupils writhed under it." I was under the impression that the conditions pictured by Professor Barker referred to the state of matters in America rather than in England, but in that I seem to be mistaken, for in his introduction to *The Basle Nomenclature*¹ Dr. E. B. Jamieson, Lecturer on Anatomy, University of Edinburgh, repeats Professor Barker's arguments and figures. It is strange that when Professor Barker was drawing a picture of anarchy I and the men with whom I was then associated were unconscious of it. In examinations of the Conjoint Board, and in those for the Fellowship of the English College, and at examinations in provincial universities, we never met with any evidence of this anarchy. Teachers and taught from different universities found themselves with a common system of names. I cannot remember a single meeting of British anatomists where any difficulty or ambiguity was caused by a difference in the use of terms. But that state of matters has passed; now there is anarchy and chaos. The student's work has indeed become grievous, all because a few well-intentioned but stupid people yoked our English wagon to the German chariot. They were to give us a millennium; instead they have given us pandemonium.

In this country we had reached an approximate state of uniformity as regards the use of anatomical terms—as near the ideal as we are ever likely to attain. No one regarded the nomenclature as an ideal one, but it was

¹ *The Basle Nomenclature*. By Dr. E. B. Jamieson. W. Green and Son. 1915.

believed to be worth while to submit to its imperfections in order to retain uniformity. But now that uniformity is gone the time has come for every medical man, be he teacher or pupil, to use his best judgement at the present juncture of affairs. Three courses are open to us: (1) To accept the B.N.A., with all its defects, as the standard English nomenclature; that course will not be adopted in either France or Italy. (2) To retain our present nomenclature, with all its disadvantages. It is based on the system which prevails in France and Italy. (3) To accept such terms from the B.N.A. as are manifestly more apt than those we now employ. It is the third course which I would press now on the attention of medical men. Its advocates speak of the B.N.A. as if it were a decalogue to be obeyed in its entirety; it never seems to have occurred to either Professor Barker or Dr. Jamieson that it was possible to accept the good and leave the bad. That, however, is what one hopes may happen in every country where science rests on a democratic basis. Meantime, there will be a period of chaos, out of which the fittest names will ultimately survive. Medical men must insist on a freedom of choice. At the very least we must keep in mind and be influenced by the usages and needs of France, Italy, America, Russia, Holland, Denmark, Norway and Sweden, as well as by those of Germany and Austria.

I do not propose now to enter into an analysis of the merits and demerits of the Basle nomenclature. All that I would request in the meantime is that medical men should remember that English-speaking anatomists are heirs to a goodly heritage; in no country has anatomy been exploited by the practical man more than in our country, and our nomenclature has been shaped for our practical needs more than in Germany. My aim is gained if I have made physicians and surgeons realize the nature of the movement which threatens to overwhelm the system which they learnt in their college days. They must not think, when students and young medical men speak to them of the internal lateral as the tibial collateral ligament of the knee-joint, or the internal lateral as the ulnar collateral of the elbow-joint, or the auricle of the heart as the atrium, or the base of the bladder as its fundus, that they themselves are out of date; they should regret that such a student should be suffering for the wrong-headed zeal of teachers who are willing to sacrifice the living spirit of English anatomy for the Dead Sea fruit of a foreign terminology.—I am, etc.,

ARTHUR KEITH.

Royal College of Surgeons of England, London, W.C.,
July 18th.

ARMY MEDICAL ECONOMIES.

SIR,—Your article on army medical economies (July 14th, p. 52) classifies regimental medical officers among the partly employed—often underworked, but not always. There are, however, in every division three regimental M.O.'s who never go near any fighting and never do a full day's work. These are the M.O.'s of the divisional train, the divisional ammunition column, and the divisional engineers.

The divisional train carries supplies and forage from railroad to deliver them to quartermasters of units. As wagons go up in twos and threes to different parts of the line it may occasionally happen that a man gets hit. During the best part of a year that I have been M.O. of a train this has happened once. The man went to the nearest advanced dressing station, and was evacuated to the base before I heard of his being wounded. In the same way as the train carries supplies the ammunition column carries ammunition. The doctor of the unit is the last person likely to be called in in the case of one of his men being wounded. The case of the R.E. is different. They do go into the line and suffer casualties, but when they do so they are attached to infantry and attended by infantry doctors.

I suggest, therefore, that three doctors per division could be saved by abolishing these underworked appointments. The work could be done in one of two ways—either the train or the engineers as a whole could be looked after by a doctor who did some other work as well, or else each A.S.C. company or field company R.E. could be treated as a unit of the brigade which it serves, and would be attended by one of the infantry doctors, as is now done with machine-gun companies and trench mortar batteries.—I am, etc.,

July 21st.

TRAIN M.O.

PAYMENT OF MEDICAL OFFICERS TO V.A.D. HOSPITALS.

SIR,—I do not agree with Dr. Mothersole that "few, if any, of the medical officers concerned would wish to receive any payment for their services." The cost of living for medical men, as for other members of the community, has risen some 40 per cent., and the incomes of many have fallen considerably since the war began. Patients, both private and insured, have joined up in large numbers, and many private patients of both sexes have become employed, and therefore insured, persons. The War Office has announced that medical officers to auxiliary war hospitals are entitled to payment, which is made by the War Office and not by any charitable body. By all means let those men who can afford to do without the money devote it as suggested by Dr. Mothersole, but let every man ask for the payment to which he is entitled.—I am, etc.,

Northampton, July 24th.

A. W. COOKE.

QUO VADIS?

SIR,—In your issue of July 14th Dr. Rawdon Wood proceeds, with very soft tools, to "nail to the counter" Dr. Fordyce's statement that in 1912 the Government had ready a whole-time service scheme, and was prepared to work it. This is described by Dr. Wood as "a bluff pure and simple." It was very far from being so, *pace* Dr. Wood, but the proof which I might cite, communicated *in camera*, cannot be stated here. But I can assure Dr. Wood that at the final meeting of the practitioners of this district, before the Insurance Act came into being, this proof was given convincingly by one to whom the profession owes a deep debt of gratitude for his unselfish and unwearying labours on their behalf in those stormy months, and whose evidence, were I but allowed to name him, would be received as final and irrefutable. At this meeting Dr. Fordyce presided. The evidence, if produced, would sufficiently dispose of Dr. Wood's "proof" to the contrary.

I may perhaps add that, when seeing a prominent official under the Act shortly after this, I was told: "If there had been trouble, I don't say we should have staffed the country districts, but there would have been no difficulty about the town"—meaning Cambridge. After hearing the evidence referred to, I had no difficulty in accepting the statement.—I am, etc.,

Histon, Cambridge, July 21st.

L. GWILLIN DAVIES.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—I read in this week's issue that Professor Littlejohn of Edinburgh "knows of several senior students who are anxious to do hospital work or help in practices during the summer vacation." Three years ago, when the war began, these men would be junior students, would they not? If so, how, then, does it happen they have escaped military service? It would seem from what one hears quite a number of medical students have done so (vide a letter in the last issue of the BRITISH MEDICAL JOURNAL signed by "J. A. A.").

Those of us who have medical student sons fighting may well ask with him "whether patriotism really pays."—I am, etc.,

Felton, July 21st.

ROBERT A. WELSH.

A TOO-PUNGENT MOUTH-WASH.

SIR,—Mr. J. T. Hall is right, I think, in pointing out at this time of year that a saturated solution of thymol is somewhat strong for a mouth-wash. The fact is that with a substance such as thymol, the solubility of which rises with the temperature, a saturated solution in ordinary tap water is necessarily much stronger during the summer than in the winter, when I tested it. The antiseptic power increases rapidly with concentration and temperature, so that the solution may well be diluted, as I suggested in the article referred to, "should it be found to be irritating." Certainly no one should, and I can hardly imagine would, persist in the use of anything found to be irritating; unfortunately, most antiseptics tend to be so, if strong enough to be effective germicides. Thymol is by no means ideal, but when used in solutions of suitable strength it is

better than anything of which I know for preventing the growth of the tartar organisms.

Upon what evidence, I wonder, does Mr. Hail base his conclusion that a large proportion of the many cases of gingivitis and pyorrhoea are "due entirely to the prevalent use of mordant mouth-washes and pastes." Surely these diseases existed long before man thought of anything so hygienic as a mouth-wash!—I am, etc.,

Oxford, July 22nd.

HELEN GOODRICH.

The Services.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUND.

THE following donations for the Officers' Benevolent Branch have been received during the quarter ending June 30th:

Sum of £42 4s.—Officers' Training Centre, Birt.

Sum of £10 10s.—Dr. Stephen J. Henry.

Sums of £5 5s.—Major T. H. Ray, Captains E. D. Pineo, H. Richmond.

Sum of £5.—Captain K. Macewen.

EXCHANGE.

MEDICAL OFFICER in Charge Base Dépôt requires exchange with medical officer of F.A., M.A.C., or R.E.—Address No. 2450, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Universities and Colleges.

UNIVERSITY OF WALES.

HONORARY DEGREES.

AT the annual collegiate meeting of the Court of the University of Wales, held at the University College, Bangor, on July 18th, in addition to the ordinary admissions of successful graduates, honorary degrees were conferred upon a number of persons who have rendered distinguished service to the principality and to the empire. Lord Kenyon, who occupies the position of Senior Deputy Chancellor for His Majesty the King, presided over the Congregation of the University. Owing to the absence of the large majority of the men students, who are engaged in the war, the ceremony was shorn of some of its usual vivacity, but the proceedings throughout were most impressive, and the women students strove hard to give spirit to the "college war cries" which help to enliven such occasions.

Degrees voted to the Right Hon. Wm. Abraham (Mabon, the miners' leader); to the Rev. J. Williams (Pedrog), one of the Welsh Chaired Bards; M. Henri Gaidoz, the learned editor of the *Revue Celtique*; and Sir W. Goscombe John, R.A., the eminent sculptor, were not conferred owing to the absence of the recipients, but the other honours announced were warmly welcomed and tumultuously applauded. The degree of M.A. was conferred on the Rev. Thomas Shankland for services rendered to Welsh history and bibliography; that of M.Sc. on Mr. D. Cledlyn Evans for researches into the geology of West Wales; that of D.D. on Colonel the Rev. John Williams, Brynecyn, for distinction as a Welsh preacher; that of D.Sc. on Colonel Sir Robert Jones, F.R.C.S., C.B., for eminence in science and in the practice of orthopaedic surgery; and that of LL.D. on Lieutenant-General Sir James Hills Johnes, V.C., G.C.B., for services rendered to the country as a soldier and to the University as its Treasurer. He was a life-long friend and companion of the late Lord Roberts, and has for many years been one of the popular figures of Welsh national life; his presentation to the Vice-Chancellor, as "a soldier, administrator, and educationist," by Principal Sir Harry Reichel, evoked most hearty enthusiasm. Equally cordial and equally sincere was the welcome accorded to his younger "brother in honours" Colonel Sir Robert Jones. In presenting him, Professor Reginald W. Phillips, M.A., D.Sc., of the Bangor University College, said that, though orthopaedics taken literally was the branch of surgery concerned with the cure of deformities in children, the term by usage had been so extended that it now covered cases of deformity in persons of mature years. While in the past Sir Robert Jones's beneficent work had lain largely among children, latterly he had devoted himself almost exclusively to the cure of soldiers who had returned broken and maimed from the battlefield. More than any other man he had created orthopaedics in these islands as a recognized special branch of surgery, and his pre-eminent position was acknowledged by his medical colleagues everywhere throughout the civilized world. It was a delicate compliment to him that the orthopaedic surgeons of the recent American contingent had voluntarily placed themselves at his orders and under his command. The university was proud to hail Sir Robert Jones as a great Welsh orthopaedic surgeon, but he would himself be the first to acknowledge that he was carrying out and carrying forward the great principles of orthopaedics laid down by that remarkable Anglesey Welshman, Hugh Owen Thomas of Liverpool, whose skill in orthopaedic surgery was little short of genius. Early this year the King had invested Colonel Robert Jones with the military C.B., and at the King's birthday he received the honour of knighthood. The knights of old were required by their oaths never to draw sword save in a good cause. What

worthier cause could any knight of the most glorious days of chivalry have inscribed on his banner than that of the paralysed child and the crippled soldier? Professor Phillips, then addressing the Vice-Chancellor, said:

DOMINE VICE-CANCELLARIE: Virum illustrissimum, equitem spectabilissimum qui artem chirurgicam quasi patrimonio acceptam ingenio et labore suo ad summum perduxit secretum corporis humani compagem perspexit truncatos militum artus magica quadam solertia recoxit, praesento tibi ad gradum Doctoris in Scientia admittatur ROBERTUS JONES.

Sir Robert Jones's name is a household word throughout North Wales, and Professor Phillips's just tribute was thoroughly appreciated; seldom, if ever, has the bestowal of a degree by the University of Wales been more heartily welcomed. Since the inception of the University the degree of D.Sc. has been conferred only upon Sir John Williams, Bt., G.C.V.O., Dr. Frederick Roberts (Emeritus Professor of Medicine, University College, London), Sir William H. Preece, K.C.B., and Professor Galloway, F.G.S.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

M.D.—Branch I (Medicine): Mirza Mohammed Khan, Helen M. M. Mackay, D. J. Munro, Margaret R. Paterson.

Branch IV (Midwifery and Diseases of Women): Charlotte L. Houlton, Hilda M. Scarborough.

M.S.—Branch I (Surgery): C. Banting.

LONDON HOSPITAL MEDICAL COLLEGE.

The following awards have been made: Price and Entrance Scholarships in Science, (1) £100, R. A. Madgwick, (2) £50, D. Hunter; Buxton Entrance Scholarship in Arts, £31 10s., C. F. Fenton; Prize in Clinical Surgery, £20, G. Adler and H. Gluckman (aeq., prize divided); Prize in Clinical Obstetrics and Gynaecology, £20, F. W. A. Watt; Duckworth Nelson Prize in Practical Medicine and Surgery, £10, D. J. Valentine; Sutton Prize in Pathology, £20, I. H. Zortman; Wynne Baxter Prize in Forensic Medicine, £5 5s., G. R. Woodhead; Anderson Prizes in Elementary Clinical Medicine, value £3 each, A. E. Clark-Kennedy and M. Marcus; Honorary Certificates, D. Wallace, J. M. Winnett, and I. J. Cruchley; Prizes in Elementary Clinical Surgery, value £5 each, J. C. Collins, J. Brodetsky, I. J. Cruchley, and A. Eidinow (aeq., prize divided), and M. W. B. Bulman; Prize in Minor Surgery, £5, F. H. W. Tozer; Honorary Certificates, D. Hunter and D. R. Thompson; Prize in Anatomy and Physiology, value £25, M. Marcus; Prize in Practical Anatomy, value £6, E. L. Sergeant; Honorary Certificates in Inorganic Chemistry, M. Remy and F. C. Hunt.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.

The following awards have been made:—Burney Yeo Scholarships: E. H. Culver, M. S. Thomson. Senior Scholarship: L. B. Goldschmidt. Tanner Prize divided between D. C. Clark and C. K. Scates. Todd Prize and Medal: A. Blackstock. Class Prizes: (Medicine), L. M. Moody; (Obstetric Medicine), A. Blackstock; (Pathology), D. C. Clark, L. M. Moody; (Hygiene), L. M. Moody; (Psychological Medicine), A. N. M. Davidson.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

D.P.H.—F. J. Devlin, Captain R. A. Jones, Lieutenant N. Morris, Major R. S. Rodger.

UNIVERSITY OF GLASGOW.

THE following degrees were conferred on July 21st:

M.B., Ch.B.—J. S. Martin, J. Marshall, †R. Aitken, W. Adams, Janet M. Alexander, J. Ashforth, A. B. Austin, D. C. Buchanan, J. S. Craig, W. Dempster, M. Devers, K. H. Dyke, J. P. Fleming, T. Fleming, T. Forrest, W. W. Forsyth, R. J. L. Fraser, Jean M. Frew, G. K. Fulton, P. F. A. Grant, Grace L. Hunter, E. P. Irving, J. Joels, W. F. Kivlichan, Mary R. Knight, A. B. M'A. Lang, G. Lean, N. Mackillop, D. J. Mackinnon, Robina S. Mackinnon, Jessie B. MacLachlan, Lillias MacLay, W. M'William, D. S. Mitchell, J. Moffatt, G. Pearson, H. Robertson, J. J. Robertson, J. L. Rowlands, F. W. Sandeman, J. H. Shearer, D. Taylor.

* With honours.

† With commendation.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THE following gentlemen have been admitted Fellows: T. Ewing, W. L. Hodge, J. MacLean, W. W. Shorten, H. P. W. White, F. J. Woo.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates passed in the subjects indicated:

Surgery.—H. N. Dale-Richards, †L. E. A. B. Farr, †B. Ramirez *W. Stansfield.

Medicine.—C. W. Bower, †D. C. Clark, †H. N. Dale-Richards, †E. W. Diggett, †S. G. Mahomed, †E. J. G. Sargent, †G. R. Sharp, †F. V. Wynn-Wernick.

Forensic Medicine.—C. W. Bower, E. A. Leak, A. Magill, S. G. Mahomed, G. W. Pratt.

Midwifery.—A. E. Collie, G. W. Pratt.

* Section I.

† Section II.

The diploma of the society has been granted to Messrs. H. N. Dale-Richards, L. E. A. B. Farr, G. W. Pratt, B. Ramirez, and W. Stansfield.

Obituary.

DR. JOHN FRANCIS NEVILLE, of Newport, Mon., who died at Llandrindod Wells on July 14th in his 50th year, was born at Ahavine, near Youghal, co. Cork, was educated at Queen's College, Cork, and obtained the diplomas of L.R.C.P. and S. Edin. in 1895. He went to Newport, Mon., in 1896 as assistant, and afterwards started practice for himself. During the twenty years of his professional life in Newport he lectured to ambulance classes organized by the employees of the Great Western Railway Company, and as an acknowledgement for these gratuitous services was some years ago enrolled an Honorary Associate of the Order of St. John of Jerusalem. He was a member of the Monmouthshire Division of the British Medical Association, and was a frequent speaker at the discussions which took place at the inauguration of the Insurance Act. Though he laid no claim to oratory he had a humorous way of pointing his arguments which made him an acceptable debater. He practically died in harness, having worked until within a week of the end. He was a bachelor and is survived by two sisters. The writer enjoyed the privilege of a close friendship with the late Dr. Neville for twenty years, and for that reason can appraise his many good qualities. He was frank, generous, open-hearted, and relieved much suffering among the poor without fee or reward. Before his health began to fail he had a genial, sunny disposition, which attracted to him hosts of friends as well as patients. He was perhaps seen at his best when dispensing hospitality. As a colleague and friend he was loyal and devoted; his opinion on medical problems was always shrewd and sound. His busy practice made many demands on his leisure, but he was one who loved work and also enjoyed life to the full. He might have taken the lines from Horace's Ode (iii, 29) as his motto:

Ille potens sui
Laetusque deget, cui licet in diem
Dixisse vixi.

DR. AUGUSTUS W. THOMAS died at his residence at Swaffham on July 19th, aged 58. He received his medical education at University College, London, and the University of Edinburgh, and took the diplomas of L.R.C.P. and S. Edin. in 1882. He then assisted his father in practice and subsequently succeeded him. He was surgeon to the Swaffham Cottage Hospital, M.O.H. for the Urban District Council, and district and workhouse medical officer of the Swaffham Union. He took great interest in the volunteer movement, and had passed through all the grades of officership in the V.B.N.R., which subsequently became the 3rd Battalion of the Norfolk Regiment. After the outbreak of war he commanded his battalion for some time. He was the representative of the West Norfolk Division of the British Medical Association. He leaves a widow, two sons, and three daughters.

DR. JOHN DESCARRIERES BALLANCE, of Carbis Bay, Cornwall, died recently, at the age of 57, from heart failure. He studied at St. Thomas's Hospital, and took the diplomas of L.R.C.P. Lond. and M.R.C.S. Eng. in 1887, and held the post of resident accoucheur at his hospital. He subsequently held the offices of assistant surgeon to out-patients at the Evelina Hospital for Children, London, and resident medical and surgical officer at the Jaffray Suburban Hospital, Birmingham. Prior to retiring to Cornwall he was in practice at Edgbaston. He was a member of the West Cornwall Division of the British Medical Association.

DR. DAVID CARRUTHERS died at his residence at Muirkirk on June 8th. He was a native of Kirkpatrick-Fleming, received his medical education at the University of Glasgow and took the diplomas of L.R.C.P. and S. Edin. in 1881. He became assistant to the late Dr. Ritchie, and succeeded to the practice. He held the offices of medical officer to the parish council, the post office, and the Scottish Education Department, as well as certifying factory surgeon. He was a member of the Ayrshire Division of the British Medical Association, of which he was at one time chairman.

DEPUTY-INSPECTOR-GENERAL ALFRED WILLIAM WHITLEY, R.N. (retired), died of pneumonia at Ealing, on May 15th, aged 77. He was the youngest son of the late Rev. John Whitley, D.D., Rector of Ballymackey, and Chancellor of the Killaloe, and was educated in the medical school of the Royal College of Surgeons, Ireland, taking the L.R.C.S.I. in 1859, and the L.K.Q.C.P. in 1860. After serving as demonstrator of anatomy in Trinity College, Dublin, he entered the medical department of the Royal Navy, from which he retired thirty years later, on May 19th, 1894, with the rank of deputy-inspector-general. He was awarded a Greenwich hospital pension on December 5th, 1909.

COLONEL JESSE GRIGGS PILCHER, Bengal Medical Service (retired), died in London on July 3rd, aged 78. He was born on March 25th, 1839, educated at Dublin and at Edinburgh University; he took the diplomas of L.R.C.S. Ed. and L.A.H. Dub. in 1858, and M.R.C.S. in 1860, also the F.R.C.S. Eng. in 1869. He entered the I.M.S. on October 1st, 1860, one of the last batch gazetted before the service was closed for five years, became surgeon on October 1st, 1872, surgeon-major on July 1st, 1873, brigade-surgeon on May 14th, 1888, and deputy surgeon-general on March 29th, 1890, retiring on March 29th, 1895. Most of his service was passed in civil employ in Bengal, where he was for long civil surgeon of Howrah, and latterly for two years of Darjiling. After acting for a short period as Inspector-General of Civil Hospitals in Bengal, he filled that post in the North-West Provinces for his last five years' service.

LIEUTENANT-COLONEL ALBERT WILLIAM DENIS LEAHY, Bengal Medical Service (retired), died in London, after a long illness, on July 17th, aged 61. He was born on July 20th, 1855, and educated at Charing Cross Hospital; he studied also at Vienna, Strassburg, and Paris, and took the diplomas of L.S.A. in 1877, of M.R.C.S. in 1878, and of F.R.C.S. in 1881, and the degree of M.D. Durh. in 1893. After acting as house-surgeon at Charing Cross Hospital, he was appointed assistant surgeon to Westminster Ophthalmic Hospital and lecturer on anatomy to the School of Medicine for Women. He entered the I.M.S. as surgeon on September 30th, 1882, passing in first, became surgeon-major on September 30th, 1894, and lieutenant-colonel on September 30th, 1902; he retired on June 5th, 1903. During his service in India he held many important appointments. After two years' military duty and a short spell as surgeon to the Viceroy, Lord Dufferin, he entered the political department and served successively as residency surgeon at Kotah and at Baghdad and as civil surgeon of Quetta. About 1890 he was transferred to Bengal as civil surgeon of the 24 Parganas (Calcutta), and during the next ten years acted at different times in several of the professorships of the Calcutta Medical College—anatomy, surgery, ophthalmic surgery, and materia medica. He accompanied the Afghan Shahzada, son of the Amir Abdur Rahman, on his visit to Europe in 1894. During his last two years in India he was civil surgeon of Darjiling.

SURGEON-MAJOR GIRDHARLAL RATANLAL DAPHTARY, Bengal Medical Service (retired), died at Hammersmith on May 26th, aged 71, and was cremated at Golder's Green on May 31st. He was born on August 4th, 1845, and educated at the Grant Medical College, Bombay, and at Glasgow University, where he graduated M.D. in 1871, after taking the diplomas of M.R.C.S. and L.S.A. in 1870. He entered the I.M.S. as assistant surgeon on March 30th, 1872, became surgeon on July 1st, 1873, and surgeon-major on March 30th, 1884, and retired on February 17th, 1890. He served in the Afghan war of 1878-80, and received the medal.

HONORARY SURGEON WILLIAM KARNEY, Indian Subordinate Medical Department, Madras (retired), died at Madras in April, aged 83. He entered the I.S.M.D. over sixty years ago, was promoted to an honorary commission on February 12th, 1879, and retired on November 21st, 1889. He served in the Indian Mutiny, and in the second China war of 1859-60, and subsequently for many years held the post of assistant professor of materia medica in the Madras Medical

LIEUTENANT-COLONEL KARABA RAMCHODDAS KIRTIKAR, Bombay Medical Service (retired), died at Bombay on May 9th, aged 68. He was educated at the Grant Medical College, Bombay, and at University College, London, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1876. Entering the I.M.S. as surgeon on March 31st, 1877, he became surgeon-major on March 31st, 1889, surgeon-lieutenant-colonel on March 31st, 1897, and was placed on the selected list in 1902, retiring with an extra compensation pension on May 24th, 1904. The first five years of his service were spent on military duty, and during this time he served with the 19th Bombay Infantry in the second Afghan war in 1878-80, serving in the Girishik column, taking part in the battle of Maiwand and in the siege of Kandahar, and receiving the medal. In 1886 he was appointed to officiate as professor of anatomy in the Grant Medical College, Bombay, and as second surgeon to the Jamsetji Jijibhai Hospital. Subsequently he acted as professor of materia medica and of botany, successively, and as health officer of Bombay. In 1898 he became civil surgeon of Ratnagiri, where Thibaw, ex-king of Burma, and his family were in his medical charge. He was a botanist of repute, the author of works on *The Poisonous Plants of the Bombay Presidency*, and, with Major B. D. Basu, of *Indian Medicinal Plants*. A third work on *The Cryptogamia of India* was left unfinished.

DR. F. F. ULRICK, of Copenhagen, who took a leading part in the movement for the better housing of the working classes in Denmark, died recently at the age of 93.

Medical News.

MAJOR SIR EDWARD WORTHINGTON, C.M.G., M.V.O., has been appointed Physician to H.R.H. the Duke of Connaught.

ON the recommendation of the fifth Latin-American Congress of Medicine, the University of Lima, Peru, has established a chair of tropical pathology. Dr. Julian Arce has been appointed professor.

THE price of the *Queen* has been raised to 1s. The last issue contains a photograph of the presentation of French decorations to members of the Scottish Women's Hospital unit and the first instalment of Mrs. Humphry Ward's new novel.

THE house of the Royal Society of Medicine (1, Wimpole Street, W.) will be closed for cleaning and library stock-taking during the month of August, but officers of any British medical service and of the American medical service will be admitted to the library between 11 a.m. and 6.30 p.m. every day except Sunday.

THE following officers represent the medical department on the staff of General Pershing, commanding the U.S. forces on this side of the Atlantic: Colonel Alfred E. Bradley, chief surgeon; Colonel M. W. Ireland, senior assistant surgeon; Major George Peed, second assistant surgeon; and Captain Henry Beeuwkes, junior assistant surgeon.

DR. JOHN S. MUIR, J.P., of Selkirk, celebrated, on July 12th, the conclusion of fifty years' professional work in that district. In 1886 Dr. Muir was president of the Border Counties Branch of the British Medical Association. For many years he was medical officer in the Border Rifles, and retired in 1905 with the rank of Lieut.-Colonel, and honorary Colonel.

ON July 9th Dr. Henri Roger was elected Dean of the Paris Faculty of Medicine in succession to the late Professor Landouzy. Dr. Roger is professor of experimental pathology and is the author of a work on infectious diseases and of a treatise on general pathology now in course of publication. He has also won distinction in the field of literature, and a play of his entitled *L'Epreuve*, produced at the Théâtre Antoine, had a considerable success.

AT the annual general meeting of the Medico-Legal Society of London, when the President, Sir Samuel Evans, G.C.B., was in the chair, a recommendation of the council that aliens of enemy nationality should cease to be either honorary or ordinary members of the society, was unanimously approved. It was announced that the ordinary work of the society would be resumed in October, when, after the delivery of the President's address, Dr. F. J. Smith will open a discussion on medico-legal points involved in the Criminal Law Amendment Bill. The honorary secretary is Dr. Crookshank, 15, Harley Street, W. 1.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are: (1) EDITOR of the *BRITISH MEDICAL JOURNAL*, *Aitology*, *Westrand* London; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY and BUSINESS MANAGER (Advertisements, etc.), *Articulate*, *Westrand* London; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra*, *Westrand* London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the *BRITISH MEDICAL JOURNAL* are devoted will be found under their respective headings.

QUERIES.

H. has a patient with right-sided hemiplegia following cerebral haemorrhage three years ago. The leg is sufficiently recovered to allow slow walking, but much sleep is lost through tonic contraction of the extensor longus hallucis, with "cocking" of the big toe. Our correspondent seeks advice for the relief of this condition.

D. F. T., who holds the D.P.H., asks for names of books for a course of further reading. The following may be suggested: *Newsholme's School Hygiene: The Laws of Health in Relation to School Life*, rewritten by J. Kerr, M.A., M.D. (London: G. Allen and Unwin, Limited. 4s. 6d.) *Crowley's Hygiene of School Life*, by C. W. Hutt, M.A., M.D. Cantab., D.P.H. Ox. Second edition. (London: Methuen and Co. 1916. 3s. 6d.) *Occupations from the Social, Hygienic, and Medical Points of View*, by Sir Thomas Oliver, M.A., M.D., D.Sc., F.R.C.P. (Cambridge: University Press. 1916. 6s.) *Milk and its Hygienic Relations*, by Janet E. Lane-Clayton, M.D., D.Sc. Lond. Medical Research Committee Series. (London: Longmans, Green and Co. 7s. 6d.) *Rivers as Sources of Water Supply*, by A. C. Houston, M.B., D.Sc., F.R.S. Edin. (London: John Bale, Sons, and Danielsson. 1917. 5s.)

ANSWERS.

EXILED.—Judicious remarks on the training of memory in children may be found in the chapter headed "Mental Reproduction: Memory" (chapter ix, pp. 159-210, 1886 edition), in Professor James Sully's *Teacher's Handbook of Psychology*.

LETTERS, NOTES, ETC.

QUO VADIS (VEL CUI BONO)?

DR. ALBERT TEBB (London) writes to point out a blunder which may occur in the translation of the heading to a recent correspondence in the *JOURNAL*. Although *cui bono* could, without actual grammatical offence, be rendered by "what is the good?" or "to what good end or purpose?" the true meaning of the phrase is different. It was, in fact, the *obiter dictum* of some Roman jurist, and as such passed into legal phraseology. It meant, and still means, "who got the plunder or the advantage?"—that is, "who benefited?" or "for whose benefit?" In obscure criminal cases, where there is difficulty in putting a finger upon one among several persons implicated, the line of search should be to find out who benefited by the crime. To use the phrase in any other sense is a mistake.

CLINICAL ORGANIZATION OF THE MEDICAL PROFESSION.

DR. JAMES HAMILTON (Chelsea) writes: As the years pass senior practitioners lose knowledge of hospital staffs, especially of the rising juniors, and consequently are frequently in a difficulty when asked to name a consultant. Some plan on the lines suggested by Dr. Hawthorne at the annual meeting of the Metropolitan Counties Branch would serve as an introduction and be mutually advantageous.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

THE INVESTIGATION OF THE SIGNIFICANCE OF DISORDERS AND DISEASES OF THE HEART IN SOLDIERS.

SIR T. CLIFFORD ALLBUTT, K.C.B., M.D., F.R.S.,
REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF
CAMBRIDGE;
PRESIDENT OF THE BRITISH MEDICAL ASSOCIATION.

DR. LEWIS'S Report on the work done at Mount Vernon on Disorders of the Heart¹ as seen in the soldier is so careful and complete that there is little, at present, to add to it, and the comments I am requested to make upon it can be but few.

One main result of the investigation is to strengthen the opinion which, before these researches were established, was gaining ground—namely, that "heart strain," a phrase a few years ago in common use and application, is a rare event. In the article on Stress on the Heart in Allbutt and Rolleston's *System of Medicine*, an article which expressed the opinions at that time of Roy, Michell, and myself, we likewise had affirmed that "for one case of disability due to strain, or even of sharp overstress, there are fifty of secondary and incidental derangement." And again: "As the animal mechanism attained many wider and more various powers of survival yet scarcely even a momentary independence of the heart, this organ must itself have attained to an enormous endurance, and resources almost illimitable." But in the same essay, under "Infections," I said that "stresses upon hearts under this detrimental result only too often in (heart) strain..." "experience inclines me more and more to refer cases of heart strain to this category"; and I quoted Dr. Arthur Lambert of Harrow who "regarded in (1904) the specific fevers as the determinant of heart strain in schoolboys; anaemia, general debility and lack of training being subordinate causes. Up to 1903," he added, "I was able to collect a number of cases of 'heart strain,' and during those years influenza was always with us. After 1904 we saw very little of heart strain." With acute cardiac dilatation after such obvious infections as of scarlet fever and diphtheria we are all familiar, and in the article from which I am now quoting I stated that even a "bad cold" might have some such consequence, if during the brunt of it excessive exercise were undertaken.

It was in 1903, when de la Camp's paper² came into our hands—a paper in which the author reported, rather to our surprise, that the heart, far from expanding during muscular effort, diminished in mean diameter—that, infection apart, we began to take a different view of cardiac conditions under effort; that, instead of working under dilating stresses, the heart under exertion is normally smaller. Yet had we considered cardiac physics more intimately, we need not have been surprised. It is true that in exercise beyond the capacity of the myocardium the blood is heaped up in and near the right heart at the gates of the lungs; and this the more when the individual is imperfectly trained, or is becoming stale. But as rate and velocity increase, and the periphery expands, the output per beat must be less; and therewith the cardiac diameter. Furthermore, as the heart has its own blood supply, blood runs round the heart many times for once round the systemic area.

The heaping up of the blood in the right heart and veins is heavier, and tarries longer, in the untrained. Training is something far more than dietetics and muscular exercise; in the circulatory concert it means a development of the thorax, an unfolding of the lungs, and a swifter interplay of vascular, nervous and chemical responses.

In former papers I have described how in the first few minutes of increased effort—for example on starting to climb a steep hill—the arterial tree, as represented by its radial branch, opens out, not gradually but suddenly; and the better the training the sooner this expansive readaptation takes place. Under this change—this great reduction of friction—it is intelligible that the diameter of the left ventricle should diminish, or the chamber empty itself more completely. But in a man growing stale under training the vasomotor mechanism loses its tone, and its responses are enfeebled. There is no better test of the "fitness" of an athlete than to draw the finger-tip sharply down his cheek, when, if he be "stale," the red line will be strong and persistent. In many cases of "D.A.H." at

Mount Vernon this loss of vasomotor tone is conspicuous. The hand when hung downward turns a dusky blue, and its vessels empty when it is held above the head. If the finger be pressed upon such a hand and removed the white patch is long in recovering its colour.

But the researches of Dr. Lewis and Mr. Barcroft at Mount Vernon raise quite a new and a very interesting problem: setting aside for the while poisoning of the myocardium, may incidental infections produce any other effects in which the heart is concerned? The answer appears to be in the affirmative. These researches (p. 19) seem to discover a new disease, or rather to discriminate more exactly the features and nature of a disease less clearly apprehended already, by Da Costa and others, as "soldier's heart"; or by those of us who have written upon "neurasthenia" as "cardiac neurasthenia." The disease is one which is not uncommon in the civil population; but under the stress of the soldier's training, and amongst the aggregations of men in modern armies, it is more conspicuous and inconvenient. It is of the kind of diseases known to our fathers as "*morbi sine materia*"—a disease without a lesion. "Disease" is a clinical not a pathological term, and consists in a series of symptoms recurring with a fair uniformity. At Mount Vernon I have been much impressed by the uniformity of the series now chiefly under consideration. It consists in the main of the following terms or symptoms:—submammary pain, palpitation and quickened pulse, shortness of breath on exertion, tremor, exhaustion, "dizziness," and certain vasomotor phenomena. This group of symptoms is too uniform to be fictitious or fantastic.

Now it will be seen from the Report that in these cases—in this disease—although not rarely an infection takes some place in the history, the heart is mechanically unaltered. I am glad to add my testimony to the great care and precision with which these mechanical appreciations were carried out; the orthodiagraphic observations of Major Meakins and his colleagues being especially diligent and valuable.

The outcome so far then is that the fretful heart, known as the "soldier's heart," is not cardiac strain; and, whatever the explanation may be, for this I refer to the Report, there is this gain to nosology—that although, in the past, heart strain and what for temporary convenience I may call still "soldier's heart" have been confused, and even classed together, this disorder and that are now made separate and distinct. For "soldier's heart" we need a better name, and, if it is to be Greek, I have suggested ponopalmosis, a compound word which means palpitation on effort. Therefore, with a few chance exceptions, from the Mount Vernon category "heart strain" is dismissed.

Now by this selection I do not mean that heart strain does not occur; but that it is generally a result of some infection, is relatively infrequent, and does not constitute the bulk of the cases invalided from the army as "D.A.H." (see Report, p. 54 f.). With the gradual and inevitable deterioration of the myocardium after maturity—say in man from the age of 35 to 40 onwards—I have not now to deal. I have discussed this grave question in my *Diseases of Arteries*.³ At Mount Vernon nearly all the patients are under this period of life. This is one, and the first in importance, of the principles obtained under Dr. Lewis's research and direction. In the article referred to in the *System on Overstress of the Heart* the two classes of cardiac disorder were more or less confused; the cases which Roy and I and Michell studied were, many of them, it is true, cases of actual heart strain; but effects for the most part, if not in all instances, brought about under the influence of some infection. Moreover, in them the heart, the right side of the heart usually, was definitely dilated and the valves for a while often incompetent. In "D.A.H." the form of the heart is unaltered and the dyspnoea seems not to depend directly upon the heart.

Here however I would venture on some demur to the disrespect with which certain cardiac murmurs have been treated by Sir James Mackenzie—to whose researches we are all so deeply indebted—and by his disciples. This is an extreme reaction against the obsequious regard for these signals which not unnaturally prevailed in the generations immediately after Laënnec. It is true that in concluding "that the presence or absence of murmurs (wherever they may be audible) is of no value in estimating the soldier's

capacity for work." Dr. Lewis premises that he concerns himself only with the capacity of a man for military service for a subsequent period of undefined duration. This I agree is true; under my care at this moment is a man, aged 32, suffering from mitral regurgitation, now to the degree of large dropsy and dyspnoea, and in a condition beyond substantial remedy. He had rheumatic fever at the age of 6, and was then told that his heart was affected. But thereafter nevertheless for some twenty years or more he had been at work as a labourer. Last year I had a similar case in a man who, after rheumatic fever, with damage to the mitral valve reported at that time, had notwithstanding been occupied since as a coal-heaver for sixteen years; and for the while with impunity. Of such cases I think we must admit that though for many years the mitral regurgitant murmur had not indicated immediate physical incapacity, yet it did indicate cardiac disease, and sooner or later cardiac failure. That out of such a man the State may nevertheless get a few years' work, is a decision which at Mount Vernon we may very properly make without cynicism; as Dr. Lewis says, at Mount Vernon our business is only with capacity for farther service; still, as he admits, the diagnosis, or prognosis, is "open to criticism on academic lines";—that is to say, from the patient's point of view? And not the diagnosis only but also the rule of life.

Here may I remark that the phrase "back pressure," in common use even by expert writers on affections of the heart, is to me unintelligible. Surely by an increase of resistance in front the blood pressures must be raised in the whole area concerned; and equal in all directions, fore and back and lateral. To students at any rate, not to mention some of their seniors, this fallacious phrase suggests that the blood stream is reversed! In the generation of many a loud murmur the regurgitant wave, in the strict sense of the word, may be very small; possibly none, as a fluid vein and turbulent collisions of the particles of the blood may be caused by changes in the relative diameters of the chambers only. Or again, like a stream from a tap which when turned slightly on may be noisy, but when "full on" almost inaudible, so the slenderest thread of regurgitation may make a loud murmur. Constancy in the degree and quality of a murmur, as it suggests stability of structure and compensation is therefore, on the face of it, a good sign. In all cases of definite systolic murmur at the apex I believe there is regurgitation, whether the condition be temporary or permanent. I see no other explanation of the change of linear into turbulent motion.

In the class of cases we are considering, functional "murmurs"—that is murmurs dependent upon transitory causes—are very common: and I think we are bound not to ignore them but to do our best to analyse them and discriminate between them. This I think is not so difficult a task as it is often said to be. On the one hand in the "soldier's heart," as Dr. Levy pointed out to me, a systolic murmur having its chief seat along the left costal arch is very frequent; one would guess it to be but a whiff of air expelled at each jerky heart stroke from the lappet of lung. So again in the healthiest young man we may hear a systolic murmur over the area of the pulmonary artery; by this idle noise, although usually due merely to a slight impingement of the vessel upon the wall of the chest, and of no importance, many a lad has been kept out of the football field. Let us first eliminate all these insignificant noises from the list, and then on the other hand concentrate our more serious attention upon murmurs dependent on altered mechanical states of the heart; though, as even these are often transitory, a farther subdivision is necessary.

And for the present let us leave out of reckoning murmurs about the base of the heart, and direct our attention to those referable to the mitral and tricuspid areas. Even when these are transitory, as for example during convalescence from an infection, it seems certain that when systolic they signify valvular disorder; the valve, or more probably, in transitory cases, its bed, is awry; and the patient, so long as the murmur remains, should be treated on this assumption. For a murmur signifies the existence of an abnormal fluid vein, and an abnormal fluid vein means abnormal friction, and friction is a waste of energy. A young, vigorous, and normal heart, with some readjustment, may afford to waste this energy—for a while; but a perpetual waste, in an organ whose reserve is so precious, cannot go on without ultimate harm. It is a

handicap, and the efforts cast upon such a heart should not be immoderate.

In looking back upon many years of practice I recall very vividly, in respect of the present subject, the subsequent lives of many a patient in whom a mitral regurgitant murmur was for years the precursor of subsequent cardiac incapacity and ultimate failure. For the change from linear to vortex motion meant a fall in velocity, save in so far as the muscular structure of the heart at the part was buttressed. For many a year perhaps a young or comparatively young heart, out of its abundant stores, can meet excessive demands, and build itself up at threatened points; but if the interval is often a long one the event is none the less manifest. The murmur in crucial cases has been discovered accidentally; as for example in an examination for some temporary disorder, or for life insurance; though cardiac incapacity may not have ensued for years afterwards. After an uncertain period however the heart begins to enlarge, and the patient to feel a little transient dyspnoea on unusual effort; this symptom increases, and the heart begins to make itself felt; yet even thus the patient may live still for a few more years, and under due precautions do not a little work of a sedentary kind. It is then that effort tests may betray myocardial default, but the patient has then entered not upon his disease but upon the last stage of it. Then nocturnal dyspnoea will appear, the ankles puff up, and other symptoms of the final phase of the malady accumulate. Perhaps after this lapse of time I may refer to the first case of this kind of which I had any knowledge—that of my old master and friend Bence Jones. He bought a flexible stethoscope, then a novelty, and tested it first upon himself; unhappily a mitral regurgitant murmur made itself heard, and although this distinguished man lived on without suffering for a while, and in his impulsive way would still forget himself so far as to fly up the staircase at St. George's two steps at a time, yet gradually the increasing friction in the blood, and the consequent fall of velocity, made themselves felt, and brought about his premature death. Scores of such cases arise in my mind as I turn my eyes to the past; some of mitral regurgitation consequent upon an infection, some upon slow athero-sclerosis of the valve, and so forth. For, I repeat, an endocardial murmur means a fluid vein, an eddy; and an eddy means friction and a disturbance of linear motion; these, unless in some indifferent area, mean sooner or later a breakdown of the machine.

On one other point I would spend a few words—namely, on *latent mitral stenosis*. In consultation the question often arises whether or no in a particular case there is a murmur at the apex. "Murmurish," says one; another that the first sound is prolonged; another that the first sound is reduplicated, but no murmur. No "murmur," it is true; the added sound may not be murmuring nor whispering, but an addition to, or a hitch on the ordinary first sound. The first sound may seem divided, with a notch as it were, in the middle of it. Now the addition may be before or after the true first sound; in the latter case, sooner or later it murmurs more definitely, and betrays a mitral regurgitation. With this I am not now concerned; in the former case it is a sign of a mitral stenosis, slight in degree and "compensated." Now in this case a thrill—short perhaps, and narrow in area, but unequivocal—may, if carefully sought for, be detected. But in the absence of cardiac deformation, of definite murmur, and of proper symptoms, this thrill may not be looked for. These latent cases turn up in practice, civil or military, and, if not readily picked out, may be reckoned among "our failures."

As an illustrative example of latent mitral stenosis I may take the case of Mr. B., a patient of Dr. Johnson of Cambridge whom I had seen some years before for neurasthenia with irritable heart, to which he was, and still is, liable. Dr. Johnson sent him to me, in respect of a call to military service, with a note of a faint and variable presystolic murmur. He had had rheumatic fever but with no record of cardiac affection. The first sound was short and snappy, but his heart had always been irritable, and on this visit I could not hear any murmur unless it were, for a beat or two after putting him through some exercises, a very fleeting presystolic sound—so fleeting as to be hard to define or record. The heart's dimensions were to percussion normal. While murmur hunting I forgot till the last moment to feel for a thrill; but then I found a short apex thrill clearly perceptible, and presystolic in time.

Some ten days later I examined him again, and on this occasion a presystolic murmur was audible, brief and soft but decisive. Oddly enough, now the thrill had vanished; again and again I tried to find it but in vain. So capricious is this disease in its physical signs, and so elusive are its signs, in respect of military service or of life insurance. I am not as yet ready to accept a definite distribution of stenosis murmurs into early, middle, and late. Again, a young friend of mine, very active both in mind and body, and anxious to serve in the army, has been rejected on two occasions for "soldier's heart." He has a slight addition to the short first sound and a short presystolic thrill. He has never had rheumatic fever nor other illness.

We have had a complicated illustration of this phase in the Mount Vernon Hospital. With Dr. Wilson and another colleague I examined a man with the obvious signs of aortic regurgitation. The question arose whether or no a divided first sound, audible at the apex only, signified a reduplication of the first sound. This it scarcely seemed to be; the taps were too close and the first one too light and brief; but I thought I recognized in it such a split in the first sound as I have described. The carotid beat being, as usual in such cases, only too definite, we were able to conclude that the first tap of the duplex sound was presystolic. Following this up we detected a presystolic thrill, short and light but quite distinct.

A thrill must be very carefully placed and timed, for in many of these irritable hearts a systolic thrill can be felt; perhaps in most of them if some effort be made just before examination. It is short but often very distinct to the touch. It is not felt about the base of the heart, and is therefore not due to a slack aorta. How the thrill is generated it is not easy to say. Very often in these cases a systolic murmur at the apex is recorded, an alteration of the first sound, more like a prolongation of it with some change of quality than like a definite murmur of mitral regurgitation. To suggest the cause of this thrill is but to guess; but, if I may guess, my suggestion would be that in these cases the papillary muscles and their chords may be a trifle slack, so that the mitral sheets shiver a little in the current, as a sail shivers when the boat gets near the wind. Such a quaver would be transmitted to the ventricular wall, and thence to the thoracic. In such a condition there might well be a minute, inconstant, and insignificant regurgitation also; though ordinarily in mitral regurgitation there is no thrill.

In conclusion, I hope it may not be unbecoming in me as a member of the staff, but rather an onlooker than of effectual service, to offer my tribute of praise to the author of this Report; a brief summary of infinite pains, of his own and of those of his colleagues who are and have been on resident duty at the hospital.

REFERENCES.

¹ Medical Research Committee's Report upon Soldiers returned as Cases of "Disordered Action of the Heart," or "Valvular Disease of the Heart." Spec. Rept. Ser., No. 8. ²Zeit. f. klin. Med. ³See C. Allbutt's *Diseases of the Arteries*, ii, 475.

ON GUNSHOT INJURIES OF THE CHEST.

With Especial Reference to Haemothorax.

BY

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WOUNDS of the chest do not as a rule reach the bases in France until the fourth day after the infliction of the wound, except in periods of heavy fighting, then they may arrive much earlier, that is, on the second day. The observations recorded in this paper deal more especially with cases observed from the third or fourth day up to about three weeks after the occurrence of the injury, and thus they deal with only a portion of the subject. Gunshot wounds of the chest are usually divided into those penetrating and involving the lungs or other thoracic viscera, and the non-penetrating, although it is not always possible to be certain during life that an apparent non-penetrating wound is really such. Non-penetrating wounds may, however, give rise to pleural and pulmonary lesions, and in a certain proportion of cases of simple clean perforating

bullet wounds of the chest the positions of the entry and exit wounds suggest that the bullet does not only pass through the chest but also through the lung, nevertheless there are no signs or symptoms indicating the presence of either air or fluid in the pleura, and such cases may recover rapidly and apparently completely. Pleurisy and empyema are the most common pleural lesions produced by wounds of the chest wall not involving the lung. The pleurisy is often at first dry, but not uncommonly an effusion follows, and since such lesions are often due to streptococcal infections spreading from the wound track in the chest wall to the pleura, an empyema of the usual type develops and requires the usual treatment.

Haemoptysis, haemorrhagic infiltration of the lungs, and pneumonia of a septic bronchopneumonic type are the pulmonary lesions that may follow on a wound limited to the chest wall. In addition to these, collapse of the lung of a massive type may occur on the side opposite to the injury even when the latter causes no pleural or pulmonary lesion on the side injured. The haemoptysis and the septic pneumonia are both directly associated with the bruising and consequent bleeding into the lung produced by the impact of the missile on the chest wall and the resulting injury to the chest wall and lung. The haemoptysis may not only be severe, but may also run a long course, and some of the most severe cases of haemoptysis seen by the writer in a very large series of chest cases were those in which the missile only bruised the chest and had not only not produced any wound, but where there was no evidence of any fractured ribs.

The bruised and blood infiltrated lung is very prone to become infected either from the lung or by the spread of infection from the wound track in the chest wall, and hence pneumonia of septic or of a bronchopneumonic type develops. In some cases wounds of the chest wall lay open the pleural cavity but do not involve the lung, a portion of the chest wall, more especially in its lower parts or at the back, is carried away and a gaping hole, often of considerable size, is left. In such cases the lung does not as a rule undergo complete collapse, although the pleural cavity is in free communication with the air. In fact, the volume of the lung seems to approximate to that seen after death when the pleura is open, and therefore the pulmonary collapse is markedly less than that seen in ordinary pneumothorax where, as is well known, very complete collapse occurs, yet in the latter cases the intrapleural pressure may not be above that of the atmosphere.

Penetrating wounds of the chest usually produce one or more of the following conditions: subcutaneous emphysema, haemothorax, pneumothorax, laceration of the lung. These conditions may not only arise where the wound is one obviously involving the chest, or where the wound of entry is near the chest—for example, the neck or the abdomen especially in its upper part; but wounds in other regions—for example, the face or arm—may also give rise to haemothorax or pneumothorax from the course of the bullet being peculiar owing to the position of the soldier at the moment he is struck. In such cases there is often only a wound of entry, and this may be small and inconspicuous, but yet a large haemothorax or even a pneumothorax may be present.

Further, in wounds of the chest the haemothorax or pneumothorax may be on the side opposite to the wound of entry; the missile taking an oblique course may enter on one side, more especially in wounds of the back, and follow such a course that it does not open the pleural cavity on the side of entry, although opening that on the opposite side without or with a wound of exit. Again, in some instances a bullet may enter and leave the pleural cavity on one side without causing any appreciable lesion on that side, and yet so wound the pleura and lung on the opposite side as to cause marked lesions.

Bilateral haemothorax is sometimes seen as a result of a single wound the track of which is transverse or oblique, and haemopericardium may occur in association with either unilateral or bilateral haemothorax.

Unilateral wounds, however, may cause bilateral effects owing to the development of contralateral collapse or contralateral pneumonia.

The subcutaneous or so-called surgical emphysema so often present in chest wounds is usually limited to the vicinity of the wound or to an area of the chest wall adjacent of variable size. In exceptional instances its

distribution is more extensive, and it may sometimes involve not only the trunk but even the whole body, including the face and extremities.

HAEMOTHORAX.

Haemothorax is the most common result of a chest wound: both pneumo-haemothorax and pneumothorax are relatively rare, and in a series of 328 cases of gunshot wounds of the chest only 8 cases of the former and 4 cases of the latter were observed.¹

The haemothorax may be either sterile or infected, and if the latter the infection may be either early or late. If early, the infection occurs within the first few days after the infliction of the wound, and is doubtless dependent upon infective material being not only carried in with the missile, but directly infecting the effused blood generally and rapidly. In such cases exploration of the haemothorax reveals the presence of organisms in the fluid withdrawn. Infection, however, may occur later, that is, in the second or third week after the receipt of the wound. Such cases may at first run the course of a sterile haemothorax, with but few symptoms, and the fluid removed by paracentesis may fail to show the presence of any organisms. Suddenly urgent symptoms, such as increasing fever, dyspnoea, pain, rapid pulse and jaundice, arise, and paracentesis then reveals the presence of organisms in the fluid withdrawn. The infection may be more or less localized, and more especially so in the lower portions of the chest, and in such cases paracentesis may yield different results according to the site explored; at one spot a sterile fluid may be obtained and at another at no great distance from the first a fluid of a totally different character containing abundant organisms. This is especially the case with anaerobic bacillary infections. It is probable that in many cases the explanation of the rapid development of the clinical picture of infection, in the course of what seemed for some days to be a case of simple sterile haemothorax, is to be sought in the fact that the infecting agent, that is, fragment of clothing, etc., was shut off by blood clot from the general mass of haemothorax fluid in the chest. Later, owing to the spread of infection through the clot, the haemothorax becomes infected as a whole, and hence the rapid development of urgent and very dangerous symptoms. In a series of 450 cases of haemothorax observed by Bradford and Elliott infection was present in 117—that is to say, roughly, in 25 per cent.; and Captain H. Henry, who carried out the bacteriological investigation, found that lung organisms such as the pneumococcus, *B. influenzae* and *M. tetragenus*, were present in some 20 per cent. of the infected cases, and that in the remaining 80 per cent. streptococci, staphylococci, and anaerobic gas-forming bacilli were found.

In approximately 50 per cent. of the infected cases anaerobic bacilli, either alone or in association with cocci, were present; hence it would seem that infection of a haemothorax is much more frequently derived from the skin or clothing than directly from the lung. In some instances the pleural infection arises from direct extension from the infected wound track in the chest wall, and such a mode of spread may lead to the development of pleural and pulmonary complications in cases of wounds limited to the chest wall, and not directly involving either the pleura or the lung.

Henry and Elliott² have studied the morbid anatomy of wounds of the chest in a series of 100 cases observed in hospital at one of the bases in France. These observations deal only with cases that succumbed from the third day to the third week after the infliction of the wound, and one of the most striking facts ascertained was, that within these limits of time, death from haemorrhage as a result of a wound of the chest was very rare. Thus, in a series of 78 fatal cases of simple haemothorax there were 70 in which either infection or an additional visceral complication, or both, were present. In the remaining eight cases, where death might have been due to haemorrhage, purulent bronchitis was present in three, and in four cases no record existed as to whether sepsis was present or not, thus leaving only one case in which haemorrhage alone could be definitely asserted to be the sole cause of death.

Septic infection is by far the most frequent, and therefore the most important, cause of death in cases of haemothorax that survive the first few days immediately following the wound.

Secondary haemorrhage is also extremely rare, and in this series of 100 fatal cases only three instances were recorded; in two cases the haemorrhage took place into the pleural cavity, and in one a fatal haemoptysis occurred from a vessel in the vicinity of a small abscess in the lung round a fragment of shell. The writer has only seen one other instance of fatal haemoptysis due to secondary haemorrhage in the course of observations on many hundred cases of gunshot wound of the chest, and here also it was due to the lesions produced by a fragment of shell embedded in the lung.

The more important points in the morbid anatomy of haemothorax are the following: The degree of collapse of the lung, and especially of the lower lobe, is very marked, and would seem often to be greater in amount than that usually seen in pleural effusions. The over-distension and so-called emphysema of the upper portion of the lung above the fluid is certainly far greater than that seen in cases of pleural effusion. The anterior part of the upper lobe of the lung is frequently pressed up against the chest wall, and the anterior margin of the lung frequently extends beyond the middle line. There may be a line of loose fibrinous adhesions gluing the surface of the lung to the chest wall at the upper limit of the effused blood. The parietal pleura in the area corresponding to the effused blood is coated with a layer of fibrin one-eighth to one-quarter of an inch thick, and the surface of the collapsed lung is similarly covered to a greater or less extent with a layer of fibrin. The collapsed lung on the side of the haemothorax rarely, if ever, presents signs of inflammation except in the immediate vicinity of the wound track in the lung or round any retained foreign body. Pneumonic consolidation is not found in the lung beneath the haemothorax. Purulent bronchitis may be present not only in the contralateral lung but also in the emphysematous portion of the lung on the side of the haemothorax, but above the fluid. The great collapse of the lung would seem to be not only a safeguard against further haemorrhage in cases where the lung is wounded, but also a very efficient protection against the development of inflammatory complications. There is some evidence to suggest that wounds of the apices of the lungs—that is, the portion that would collapse last—are associated with large collections of bloody fluid in the pleural cavity.

The bloody fluid present in the chest in cases of haemothorax consists in the main of defibrinated blood—that is, a mixture of serum and blood corpuscles, often presenting to the eye a considerable resemblance to blood, but differing from it in that it does not usually undergo massive clotting after removal from the chest. The parietal and visceral pleurae are covered to a greater or less extent with a layer of fibrin, and it is probable that the defibrination of the blood occurs as a result of the movements imparted to it by the respiratory and cardiac movements, and that it usually takes place very soon after the blood is poured out into the chest. Direct experiment has shown that the bloody fluid in haemothorax contains no fibrinogen, and hence, that although it resembles blood to the eye, clotting has really taken place, and that it is in reality defibrinated blood (Elliott and Henry).

Even in cases of sterile haemothorax the whole of the fluid in the chest is not defibrinated blood. This is shown by two facts: first, the cell content of the fluid is different from that of defibrinated blood in that an increased number of lymphocytes may be present together with endothelial cells, eosinophile cells sometimes in considerable numbers, and marrow cells; secondly, the quantity of fluid is sometimes very large, that is, four to five pints, and even then the patient may not show any gross or obvious signs of anaemia. Hence it is evident that there is some pleural exudate as a sequel to, and result of, the presence of the blood in the pleural cavity. In some cases further evidence of the presence of pleural exudate is afforded by the occurrence of a slight and peculiar clotting in the fluid removed from the chest by paracentesis. This clotting resembles that seen in the fluid of ordinary pleural effusions, but differs from it in that the coagulum contains abundant red corpuscles. This clot, although containing red corpuscles, is often scanty and generally gelatinous in consistency, and hence quite different in appearance from the clot formed from normal entire blood. The superficial resemblance of

this "secondary clotting," as it is termed by Elliott and Henry, to true clotting is readily explained, inasmuch as the pleural exudate has added coagulable material to the defibrinated blood present in the pleural cavity and the abundant red corpuscles present have been entangled to a greater or less extent in the coagulation. In a small number of cases defibrination of the extravasated blood would seem not to occur, and paracentesis then reveals the presence of a mass of soft jelly-like clot that blocks the needle and prevents satisfactory aspiration; presumably in such cases more or less massive clotting has taken place.

In infected haemothorax the pleural exudate is much more abundant, and hence numerous polymorphonuclear leucocytes are found on microscopic examination, and the fluid removed by exploratory puncture may yield a deposit of pus visible to the naked eye. The fluid itself is often of a crimson colour from the haemolysis that has taken place. Massive clotting would also seem to be more common in infected cases, since, both at operations and in the *post-mortem* room, large clots may be found, especially in the lower part of the pleural cavity between the diaphragm and the chest wall, and also in the vertebral groove. In these infected cases the inflammatory exudate is apt to be poured out rapidly, and a sudden considerable increase in the amount of fluid in the chest is often strong clinical evidence of the presence of infection, since, as mentioned above, secondary haemorrhage into the pleural cavity in haemothorax is very rare, and then only occurs in infected cases. In sterile cases there is neither secondary haemorrhage nor a sudden copious effusion to cause any sudden great increase in the amount of fluid present in the pleural cavity. In a considerable proportion of these infected cases there is not only a rapid pouring out of inflammatory exudate, but, in addition, there is gas formation, owing to the infection being dependent upon the presence of anaërobic gas-producing organisms. The development of gas is often very rapid, and such cases may present very urgent signs and symptoms that increase rapidly in the course of a few hours. In others the clinical picture is much less urgent, and in a few only slight symptoms are present, and the condition is only appreciated after careful examination.

The gas may be free in the pleural cavity, associated with very considerable collapse of the lung, and a variable but usually large amount of haemothorax fluid. In other instances the conditions are more peculiar; the collection of gas is localized above the haemothorax fluid, and below the emphysematous over-distended upper lobe of the lung. The loose fibrinous adhesions at the upper level of the fluid in the thorax are probably sufficient to tether the upper lobe to the chest wall, but whether this be the correct explanation of the non-collapse of the entire lung or no, the fact remains that the gas forms a localized collection above the fluid of the haemothorax and below the non-collapsed portion of the lung. Such localized collections of gas are usually in the lateral or postero-lateral regions of the chest, and more especially in its lower portions. The gas is usually offensive, and has either a definite faecal smell or else that of rotten eggs. It is often present under considerable pressure, and in the *post-mortem* room, if a cannula is inserted, the gas issuing from it readily burns, when lighted, with a bluish flame. In cases of this type there is often considerable displacement of the heart, and this displacement may develop with great rapidity—that is, 2 in. in twenty-four hours. In cases where the gas is free in the pleural cavity, the clinical picture is that of pneumothorax or pyopneumothorax; and where the condition develops rapidly the symptoms are apt to be urgent and the error may be made of regarding the case as one of progressive pneumothorax, whereas in reality the phenomena are due to the rapid formation of gas under pressure as the result of infection of the haemothorax fluid.

In infected haemothorax the deposit on the surface of the collapsed lung is much more abundant and thicker than in sterile cases, as a thick layer of lymph more or less organized is often present. This is of considerable importance, inasmuch as this deposit hampers the subsequent re-expansion of the lung after the removal of the fluid by drainage of the pleura. The longer the delay in draining the pleura in such cases the greater is the organization of this deposit, and therefore there is much risk of permanent incomplete expansion of the lung. The deposit on the pleura not only causes the re-expansion of

the lung to take place more slowly but also less perfectly, hence it is most important that cases of infected haemothorax should be treated and thoroughly drained at the earliest possible moment. Bilateral haemothorax is not very uncommon, and such collections are usually of small or moderate size; they may be either sterile or infected, and cases have occurred of bilateral infected haemothorax that have recovered after drainage of both pleural cavities. In bilateral haemothorax one side may be sterile and the other infected, and recovery has here taken place after aspiration of the sterile and drainage of the infected haemothorax. Bilateral haemothorax may be associated with haemopericardium, or in infected cases pericarditis may occur as a complication. The pericarditis seen in cases of infected haemothorax is probably usually of streptococcal origin, but in some instances an anaërobic infection of the pericardium may occur and then very striking physical signs may be present owing to the presence of gas and fluid in the pericardial sac. Two such cases have fallen under the observation of the writer and both recovered after opening and draining the pericardium. In one the condition was recognized as the result of the percussion of the pericardial area yielding a tympanitic note when previously a dull note due to the presence of effusion in the pericardium had been present. Pericarditis probably only occurs in infected cases, although pericardial friction and the signs of fluid in the pericardium may be detected in cases of sterile haemothorax, where, in addition to the pleural lesion, there is also the probability of injury to the pericardium and where x-ray examination may reveal the presence of a bullet in close proximity to the heart. The accurate diagnosis of such cases is often difficult, but it is probable, inasmuch as they often have no symptoms indicative of pericarditis, and they recover, that the pericardial physical signs are due to the presence of a haemopericardium rather than to a pericarditis with effusion. In the infected cases the presence of pericarditis is a very serious complication; in some there is merely greasy lymph, in others a moderate effusion, or where an anaërobic infection is present the pericardium may contain gas as well as an effusion. If the effusion is at all large in amount it is usually situated in the posterior part of the pericardium, and is therefore liable to produce some degree of pressure on and collapse of the lower lobe of the left lung. In very large effusions the transverse diameter of the pericardium is greatly increased. When the effusion is posterior in position, the heart may still remain in partial contact with the chest wall anteriorly, and thus, owing to the persistence of friction the presence of even a large effusion may be overlooked.

COMPLICATIONS.

The complications directly associated with haemothorax are few and are most frequently seen in cases of infected haemothorax. Purulent bronchitis, pneumonia, pleurisy, massive collapse of the lung, and pericarditis are the most common complications. Abscess and gangrene of the lung may occur, but these are dependent not on the haemothorax but on pulmonary lesions produced by the missile. One case of meningitis due to streptococcal infection in association with an infected haemothorax has fallen under my observation, but no case of cerebral abscess.

The relation of purulent bronchitis to haemothorax is often very doubtful, as it occurs so frequently apart from wounds, but many patients give a history that is suggestive of the onset of the bronchitis after the wound, although even in these it may be dependent on exposure. One of the most striking features of its distribution is its absence in that portion of the lung that is collapsed beneath the haemothorax effusion. Pneumonia, in various forms, may be present, but is not common, and here again the collapsed lung on the side of the haemothorax is not involved. It may occur on the side opposite to the haemothorax, but care must be taken in the diagnosis, as the physical signs of massive collapse present great resemblance to those of pneumonia, and, as will be mentioned later, contralateral collapse in cases of unilateral chest wounds is of quite frequent occurrence. There is, however, clear evidence from autopsy that pneumonia on the side opposite to the wound may occur in haemothorax. Septic bronchopneumonia is common in wounds of the chest wall not accompanied by haemothorax, where, as a result of the impact of the missile, the lung is bruised and haemorrhage

into its substance has occurred. Pleurisy, often dry, is also not uncommon on the side opposite to the haemothorax; this occurs most often in infected haemothorax, but some instances have been seen where there was no bacteriological proof that the haemothorax was infected. Pleurisy of a serious type, and often progressing to empyema, occurs as a result of injuries to the chest wall of a tangential character and associated often with fracture of one or more ribs. Septic bronchopneumonia may coexist in such cases. The contralateral pleurisy is especially prevalent in cases of streptococcal infection of haemothorax, and may also progress to effusion and the formation of an empyema. Such cases are necessarily very serious, and if, as is not infrequent, pericarditis is also present they are of the utmost gravity.

SOURCE OF THE HAEMORRHAGE IN HAEMOTHORAX.

There is some difference of opinion as to whether the injury to the chest wall, or that of the lung, is the more common cause of the haemorrhage into the pleural cavity, and it is not possible to dogmatize on this subject. Morbid anatomy does not yield any direct evidence of the bleeding having arisen from the chest wall, but it is obvious that it would be very difficult to exclude the possibility of the wound of an intercostal vessel. On the other hand, it is not unusual to find direct evidence of blood coagulation in the track produced by the missile in its passage through the lung, and the wall of the track is also infiltrated, to a varying depth, by extravasated blood. Henry and Elliott record in their series four cases of perforating wounds of the lower chest wall involving the pleural cavity below the area occupied by the lung and not wounding the lung, and where no haemothorax existed. Many instances of extensive injury to the chest wall opening the pleura have been seen where the lung itself was not involved, and where no haemothorax was present. The great rarity of secondary haemorrhage in cases of haemothorax is also in favour of the pulmonary origin of the bleeding, since the collapse of the lung associated with the haemothorax tends not only to check haemorrhage directly but also to prevent secondary haemorrhage owing to the rarity of septic inflammations in collapsed lung. It is probable, therefore, that in the great majority of cases of haemothorax the source of the bleeding is the injury to the lung, although cases may be seen occasionally where the haemorrhage is derived from a vessel in the chest wall, such as an intercostal or the internal mammary artery, or one of the big vessels at the root of the neck. Injuries of the great vessels of the neck sometimes coexist with haemothorax; aneurysm of the innominate artery has been seen in association with pneumo-haemothorax, but in such cases it is probable that the haemothorax is really independent of the arterial lesion and due to other pulmonary lesions, and the haemothorax or pneumo-haemothorax may be on the opposite side to that of the arterial lesion.

In rare instances the haemothorax fluid contains, in addition to blood, bile. The bile is derived from the wound track involving the liver, and in such cases the bile may reaccumulate in the pleural cavity after paracentesis has been performed and the haemothorax fluid drawn off. Repeated paracentesis may be required to draw off the reaccumulations of bilious fluid, and it is remarkable that jaundice does not necessarily develop in such cases, although the amount of bile present in the pleural cavity may be very large. This is further evidence that the pleural cavity in cases of haemothorax does not readily absorb fluid, and the lack of absorptive power is probably in part dependent upon the fibrinous coating on its surface, and in part, perhaps, on the lack of efficient respiratory movement on the injured side. In one case there was evidence of the presence of stomach contents in the haemothorax fluid.

SIGNS AND SYMPTOMS OF HAEMOTHORAX.

Dyspnoea, although often at first urgent, diminishes rapidly, and even when the quantity of fluid in the chest is large—that is, over three pints—it is not usually a marked feature after the first three days. It is, however, greatly increased by exertion and movement, and hence many patients on arrival at a base hospital after a long journey often have considerable dyspnoea and distress for twenty-four hours. Moderate pyrexia is usually present, and it may rise to 103° F.; but the pulse is not much accelerated,

and is usually under 100, and the patient does not have much distress unless cough is severe, frequent, and painful. The continued presence of high fever, pain, distress, rapid pulse, and furred tongue should always suggest the possibility of the haemothorax being infected, and a sample of the fluid should be removed with an exploring syringe without delay in order to determine this point by bacteriological methods. Jaundice is an important sign, as, if marked, it is a characteristic sign of infection, and more especially infection with anaerobic bacilli. In simple sterile haemothorax only a slight icteric tinge is present in the conjunctiva, but in anaerobic infections a deep yellow jaundice involving the skin generally develops, often with great rapidity. Such a jaundice is often misinterpreted as indicating a wound of the liver, especially when the wound is in the lower chest, but jaundice is quite exceptional in liver wounds, whereas it is a very characteristic sign of infected wounds, and especially of anaerobic infections. It may also, of course, be seen in the course of streptococcal infections.

The physical signs produced by haemothorax present considerable variety and often are very difficult to interpret. They are much more complex than those usually regarded as characteristic of simple pleural effusion.

One outstanding sign, easily demonstrated by percussion and confirmed by x-ray examination, is that the diaphragm on the affected side is much higher than normal. The high level of the diaphragm is most easily demonstrated in left-sided haemothorax, since then the tympanitic percussion note due to the stomach resonance is readily obtained high up in the axilla, and also in the antero-lateral region of the chest. In some instances this tympanitic stomach resonance may reach so high a level as to merge into the area of skodaic resonance in the infraclavicular region above the level of the fluid, and unless care is taken a mistaken diagnosis of pneumothorax may readily be made. X-ray examination often reveals that the diaphragm is not only high but also immobile. The skodaic resonance obtained in the upper chest above the level of the fluid is usually much more marked and much more extensive in its distribution than that present in ordinary pleural effusion, and not infrequently extends beyond the middle line, and this fact again is liable to lead to confusion of the condition with pneumothorax. The distribution of the skodaic resonance is confirmed by the observations on the morbid anatomy, as these show that the upper portions of the lung, especially anteriorly, are greatly over-distended and emphysematous, and that quite frequently the upper lobe is so over-distended as to extend well beyond the mid-sternal line.

The high level of the diaphragm, notwithstanding the presence of a large amount of fluid in the chest, and the very extensive and marked skodaic phenomena are two striking features of haemothorax and are in contrast to what obtains in simple pleural effusion. Over the area occupied by the fluid, blowing tubular, or even cavernous, breath sounds are frequently heard on auscultation. They are not only more marked than those occasionally heard over pleural effusions, but they are also heard over a much larger area, instead of being limited, as in pleural effusion, to a small area in the vicinity of the angle of the scapula.

Bronchophony and oegophony are also well marked and very definite; pectoriloquy is by no means rare. The physical signs thus often present a more or less clear resemblance to those usually regarded as characteristic of pneumonic consolidation, and it is not surprising that in a considerable number of cases where haemothorax is present, the erroneous diagnosis of so-called traumatic pneumonia is made. The signs described above are not present in all cases; in some the signs are similar to those found in cases of pleural effusion—that is, dullness, weakness, or absence of vocal fremitus, and weak or absence of breath sounds. Further, a case may present at an early period of its course the first set of signs with well-marked tubular breathing, and later on, with an increase in the amount of fluid, the second set with weak or absent breath sounds. This is more especially observed in infected cases where a rapid and considerable increase of the effusion may occur. In others where, as a result of the presence of anaerobes, gas is formed, a cracked-pot percussion note may be elicited often over a localized area where previously the percussion note had been dull. In these cases a bell sound may or may not be obtained, but the percussion note is quite characteristic.

Collapse of the Lung.

In ordinary pleural effusion the chest on the affected side is usually obviously enlarged, and the respiratory movements are diminished in amplitude; this is also true of some cases of haemothorax, more especially when the amount of fluid present is very large—that is, four to five pints. In a considerable number of cases, however, a very different condition is present, inasmuch as the chest is flattened and retracted on the side of the effusion, and the movements are so much diminished that the affected side is practically immobile. This retraction and immobility of the side may be present not only when the amount of fluid is small, but also in many cases where there is a moderate collection of fluid, approximately two pints in amount, but it does not occur in association with the largest collections. It is remarkable that in cases where retraction and flattening are quite marked, the apex beat may be displaced, as in ordinary pleural effusion, towards the opposite and unaffected side. This retraction of the injured side is a remarkable and common phenomenon in cases of haemothorax, and it seems to be a fact of the same order as the high level of the diaphragm already noted. Sometimes it is only seen in the first few days after the wound, and then, with an increase in the amount of the effusion in infected cases, it is replaced by bulging of the usual type. Well marked tubular or even cavernous breathing is heard on auscultation in those cases where marked retraction is present, together with bronchophony and pectoriloquy. The retraction of the injured side, the immobility of the chest and the high level of the diaphragm, would all seem to be due to extensive collapse of the lung or of the lower lobe of the lung, a collapse that is out of proportion to the amount of fluid present in the pleura, and is really very probably a collapse that is more or less independent of the presence of the fluid, and has some other mode of origin. It may well be that this collapse is a constant phenomenon in cases of gunshot injury of the chest, but that when a large haemothorax coexists its presence is naturally attributed to the mere effusion and its real nature is only obvious where it is clearly out of proportion to the effusion. Thus cases of massive collapse of the lung on the side of the injury have been observed by Bradford and Elliott where the amount of the effusion was so small as not to need aspiration, and where the signs cleared up and the lung re-expanded after a short interval. There are, however, other facts that may be adduced in support of the view that the collapse is more or less independent of the effusion. Thus it may occur on the opposite side of the chest to that injured, and not only is this the case, but it is probably of quite frequent occurrence, only the physical signs produced are erroneously attributed to the presence of contralateral pneumonia when contralateral collapse is really the condition present. The main distinguishing feature between the physical signs of pneumonia and those of massive collapse is the position of the heart's apex beat; in pneumonia there is no appreciable displacement, whereas in massive collapse the apex beat is displaced towards the collapsed lung. In an ordinary haemothorax affecting one side it may be impossible to determine clinically whether physical signs on the opposite side are due to pneumonia or collapse, since if the apex beat is found displaced, the displacement will necessarily be attributed to the presence of the fluid on the injured side. In such cases the diagnosis of contralateral collapse is largely an inference based on the absence of the clinical picture of pneumonia and on the rapidity with which the signs clear up, but in any given case there may be much doubt unless the diagnosis is confirmed by autopsy.

Contralateral collapse, however, has been observed in cases of wounds implicating the chest wall only, where physical examinations confirmed by x-ray observations showed that there was no lesion of the pleural cavity on the wounded side, the injury being a contour wound. Nevertheless, in such cases very extensive massive collapse has been present on the side opposite to that wounded and where there has been no retained missile or other foreign body. In some instances the massive collapse has involved the whole of the left lung and the displacement of the apex beat into the left axilla has been very marked. Such patients do not present the clinical picture of pneumonia, although the physical signs in the affected lung are very similar, and the patients' general condition of comparative

well-being, together with the absence of high fever, rusty sputum, etc., shows at once that they are not suffering from pneumonia. Further, contralateral collapse has been observed both during operation on the chest and also on autopsy. In one instance an exploratory operation was performed on a case of contralateral collapse under the impression that the physical signs indicated the presence of an intrapulmonary abscess.

Although the mechanism producing collapse of the lung on the side of the injury and on the opposite side is obscure and cannot be discussed here fully, the presence of this collapse is probably the explanation of the curious and characteristic physical signs so often present in haemothorax, such as the high level of the diaphragm and the frequent presence of tubular breathing, bronchophony, and pectoriloquy over the area of the pleura where fluid is present. This collapse of the lung must be regarded, therefore, as one of the leading, if not the leading, phenomenon of gunshot injuries of the chest. There is some evidence to suggest that it occurs early, soon after the infliction of the wound, as when cases are seen within a few hours of being wounded few physical signs beyond immobility and deficient air entry on the side of the injury can be detected. Such cases seen again twenty-four hours later may then show the ordinary signs of a haemothorax, but in their earlier phase the signs are often quite insignificant in comparison with the urgency of symptoms, such as distress and dyspnoea.

Displacement of the heart's apex beat is a valuable sign in haemothorax; sometimes it is of a simple character and similar to that seen in pleural effusion—that is, displaced to a varying degree away from the side of the haemothorax. In others the displacement is mainly dependent upon the presence of contralateral collapse, and, as mentioned above, in some of these cases, there is no pleural lesion—that is, no fluid, air, or gas in the pleura on the side of the injury—such cases may be misinterpreted unless care be taken in the examination. The displacement present in any given case may undergo an increase or a diminution. An increase in displacement is usually due to the haemothorax being really infected, and an increase in the exudation or gas formation has taken place in the interval between the two clinical observations.

A decrease in the degree of cardiac displacement in recent cases of haemothorax and occurring during the first week after the date of wounding is also not infrequent, and is often more difficult of explanation. It is commonly attributed to absorption of some of the bloody exudate; this, however, is highly improbable, since absorption from the pleura in these cases is extraordinarily slow and certainly does not occur to any appreciable extent in the early days after the wound. The return of the heart may be due to an alteration in the distribution of the haemothorax fluid dependent on increasing collapse of the lung on the side of the lesion, or else it may be due to disappearance of contralateral collapse. The degree of displacement of the heart in any given case is therefore a very uncertain guide of the size of a haemothorax.

DIAGNOSIS.

The main problem in diagnosis is the determination whether a haemothorax is infected or not, and this often presents difficulties, since a haemothorax that at first runs an apparently sterile course may be infected later, owing to the spread of infection either from the wound track or from some localized infection round a retained foreign body. In some of these cases of delayed infection, and more especially in those with anaerobic infection, the symptoms may develop with much rapidity, and be of such a character as to suggest the occurrence of secondary haemorrhage, where no haemorrhage has taken place. Rapid pulse, pallor, sweating, and collapse are not uncommon symptoms of a rapidly spreading anaerobic infection. Microscopic and bacteriological examination of the fluid withdrawn from the chest will generally determine absolutely the presence or absence of infection, provided care be taken to repeat the exploration and too much stress is not laid on the negative result obtained at the first puncture. It is often necessary to explore the chest at different levels. Cases are seen occasionally where the symptoms, and especially the character and duration of the pyrexia, suggest that infection is present, yet no bacteriological confirmation is obtained even with

repeated paracentesis. Such cases may get well with no special treatment after running a prolonged course of several weeks' duration. Their explanation is difficult, but it may be that the pyrexia in such cases is dependent upon the inflammatory process in the wound track, and more especially in that in the lung, and that the layer of fibrin coating the pleural surfaces prevents the infection reaching the pleural fluid. Care must always be taken in considering the diagnostic significance of pyrexia that it is not due to some associated complication, such as purulent bronchitis, contralateral pleurisy, pneumonia, or pericarditis, although all such complications are much more liable to occur in infected than in sterile haemothorax. The rarity of pulmonary inflammation in the compressed lung on the side of the haemothorax should always suggest, if symptoms are urgent, that infection of the fluid is present rather than pneumonia, although the physical signs may be such as to render diagnosis difficult. In all such cases there should be no delay in making an exploratory puncture, as it is essential for the successful treatment of infected haemothorax that the cases should be recognized as early as possible.

TREATMENT.

In sterile haemothorax, if the amount of the bloody effusion is small, there is no need for any special active treatment; such cases do well, although their progress may sometimes be slow. If the effusion is at all large in amount—that is, the dullness reaching above the angle of the scapula—the fluid should be removed by aspiration about the end of the first week after the wound. In a few cases earlier aspiration may be required to relieve distress arising mechanically from the amount of fluid present. Aspiration with oxygen replacement is better than simple aspiration, since by this method, with suitable local anaesthetics, the operation can be carried out without discomfort to the patient and without any of the symptoms that so commonly occur in ordinary aspiration, and not infrequently prevent by their urgency the completion of the procedure. Further, with oxygen replacement practically all the fluid present in the chest can be removed at one sitting; this is rarely feasible with ordinary aspiration, where the development of such symptoms as a sense of constriction, distress, cough, etc., occurs before all the fluid has been removed. These unpleasant symptoms develop as a consequence of a too sudden change in the intrapleural pressure resulting from the rapid removal of fluid, together with incomplete adjustment owing to incomplete expansion of the lung. Different patients vary considerably in the degree of their tolerance of pleural pressure changes, and these are necessarily much influenced by the degree and rapidity with which the lung re-expands. With an oxygen replacement apparatus a measured quantity of oxygen at any desired pressure can be introduced, and thus violent and sudden changes in the intrapleural pressure are avoided.

For practical purposes it is not necessary to measure accurately the intrapleural pressure; it is sufficient to regulate the introduction of oxygen by the presence or absence of symptoms. The aspiration of the fluid should be temporarily stopped when distress or a sense of constriction is first noticed by the patient; if the symptoms do not subside at once, a small quantity of oxygen from the oxygen replacement apparatus (Parry Morgan or other) should be allowed to flow into the pleural cavity. Then with the relief of all distress, a further quantity of the fluid can be aspirated and the process continued until the operation is completed. The patient is left at the end of the aspiration with a small quantity of oxygen in the pleura—for example, 200 to 500 c.cm. at a pressure considerably less than the pressure of the haemothorax, but still appreciably above the normal pleural pressure. The oxygen is gradually absorbed in the course of the following week, but it is remarkable that many days are required for the pleura to absorb even small quantities of gas, and this slow absorption is probably due to the coating of the parietal and visceral pleura with fibrin, as it is in remarkable contrast to the rapid absorption of air that is known to occur after opening the normal pleura.

Free drainage is required in all cases of infected haemothorax, and it is of the utmost importance that this should be provided as early as possible, as the organization of the deposit of lymph on the visceral pleura produces a great impediment to the rapid expansion of the lung after the

removal of the fluid, and this organization proceeds rapidly in cases where delay in operating takes place. Removal of the infected fluid by free drainage is, however, not sufficient treatment in all cases; the inflammation in the pleural sac and the septic clots must be treated by the local application of some efficient antiseptic, applied either by periodical washing out of the cavity or else by the instillation method and the Carrel-Dakin technique that is now so much used. If the cavity is treated by washing out, care must be taken to avoid raising the intrapleural pressure. Septic clots, often of considerable size, can be removed with success by this method. Recently the Carrel-Dakin technique has been applied with success to cases of infected haemothorax, and a few cases have already been so successfully treated that the operation would be required for the excision of the rib has been closed by secondary suture before the evacuation of the patient to England.

Two difficulties are met with in practice in cases of haemothorax. In one group of cases, although the pyrexia and the patient's general condition suggests the presence of infection, bacteriological examination does not confirm this. In another series of cases organisms are detected in the fluid, but there is little or no pyrexia, and the patient does not seem to be very ill. It is probable that some of the cases falling into this second group recover after simple aspiration, but their convalescence is often very slow, and certainly in some instances such cases develop serious and even urgent symptoms. For these reasons it is advisable to excise a portion of rib and procure free drainage in all cases of haemothorax where the bacteriological examination reveals the presence of pathogenic organisms, even if the clinical condition of the patient is not such as to suggest infection. As regards the first group, the position is more difficult, but it is probably wiser to delay opening the pleura until proof of infection in the fluid is obtained, as the pyrexia and even the other symptoms may have some other origin; it is a serious matter to open a sterile haemothorax in view of the possibility of secondary infection.

Care must be taken in selecting the site for excision of a portion of rib to provide really efficient drainage, and the fact that the diaphragm is abnormally high in these cases must be borne in mind, as otherwise the opening will be made too low down.

In some instances the wound of entry or exit communicates more or less directly with the pleural cavity and fluid in variable quantity drains from it; this drainage is rarely satisfactory or sufficient, and such cases require a counter opening in a suitable situation to really drain the effusion.

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FACTORS IN FIELD AMBULANCE WORK WHICH HELP THE WORK IN CASUALTY CLEARING STATIONS.*

BY CAPTAIN K. M. WALKER, R.A.M.C.

IN spite of its necessary limitations, the surgery of the field ambulance is of the greatest importance. The treatment that a shattered limb receives during the first four or five hours may alter the whole future history of the case.

The surgery of the aid post and the dressing station is necessarily a surgery of emergency. Collection of the wounded, and rapid evacuation, must always be recognized as the most important functions of the field ambulance units; and when it is possible to do so, anything in the way of operative treatment must be postponed until the arrival of the wounded man at the casualty clearing station.

Haemorrhage.

In this surgery of emergency the treatment of haemorrhage takes first place, and there is a certain type of case in this connexion to which I should like to call attention. I refer to those cases in which there is a slow, continuous oozing that is at no time sufficiently rapid to be regarded

* Paper read at a meeting of medical officers of an army in the field.

as severe haemorrhage, but which in the long run may cause more loss to the patient than a brisker haemorrhage that has received prompt treatment. The danger of these cases is, of course, that they may not be recognized. A wounded man passes through many hands before he reaches the casualty clearing station, and although his dressings may have been changed on several occasions because they have "come through," no one may have been in a position to realize how much blood he has lost and how urgent is the call for prompt treatment. Such a case may not, indeed, be in danger of death from haemorrhage, but he will start his fight against *sepsis* severely handicapped. Every ounce of blood is of value to a wounded man, and the more efficient the work of an ambulance the less will be this avoidable loss. The wounds which are most likely to result in loss of blood in the above manner are compound fractures of the tibia and fibula, and wounds around the ankle-joint. Therefore, before dispatching such injuries from the dressing station, great care should be exercised in making certain that no oozing is taking place. The application of large quantities of gauze and wool to such cases is an "ostrich" policy as well as a wasteful one.

I have purposely dwelt on the less profuse forms of bleeding, for true arterial haemorrhage is not only rarer, but is so dramatic that there is no chance of its being overlooked. It is scarcely necessary to add that the application of a tourniquet to any case of haemorrhage must always be regarded as a purely temporary expedient. No case ought ever to leave a field ambulance with a tourniquet.

Splinting of Compound Fractures.

Another branch of field ambulance surgery that exercises a great influence on the future history of a case is the splinting of compound fractures, and especially of compound fractures of the femur.

It is during the first five or six hours after wounding that the danger of moving an unsplinted femur is greatest. When men with compound fractures of the femur die before reaching a casualty clearing station they almost invariably die of shock; and if anything is likely to aggravate shock, it is a long journey with a fracture that is imperfectly immobilized. I am aware of the difficulties that attend the use of a "Thomas" splint so far forward as an aid post, but one is stimulated to continue urging that something more should be attempted for these cases.

As the result of discussing these difficulties with various regimental and ambulance officers, I submit the following suggestions:

1. That nothing further should be attempted at an aid post than the simplest possible adjustment of a Thomas splint—that is to say, that it should merely be placed in position, traction made by a clove hitch round the ankle, and a sling tied behind the thigh.
2. That time be saved and exposure avoided by applying the splint over the clothes and without even removing the boots. Thus used, a Thomas splint should take less time to adjust than a Liston, and the task can be undertaken by any orderly.
3. That the more elaborate technique for completing the adjustment of the splint should only be attempted when the patient reaches more convenient surroundings.
4. That the Thomas splints supplied to the more advanced stations be rendered more portable by making the ring detachable. A dozen rings and a dozen bars could then be packed into the space now occupied by two Thomas splints.
5. That some exchange system between the ambulance advanced or main dressing stations and the aid posts should be maintained in order to ensure the supply of "Trench Thomas," in the same way as rules with stretchers and blankets.

I do not flatter myself that these suggestions entirely eliminate the difficulties that attend, and must always attend, any attempt to deal more efficiently with compound fractures of the femur at an early stage. They are offered tentatively, and if they do nothing else than stimulate discussion, and thereby assist at arriving at some practical solution of a difficult problem, they will not have been made in vain. The difficulty may be great, but the

necessity for improvement in dealing with these injuries is even greater.

Emergency Amputations.

Hopelessly shattered limbs should be amputated on arrival at the dressing station, if for no other reason than to relieve the wounded man of needless pain on his journey down the line. The operation is not a formal amputation; it is merely the completion of the work that the explosive has all but effected.

Chest.

It is often wiser to allow a chest case to remain quiet in the field ambulance rather than to subject him too soon to the dangers of a journey. When, therefore, it is possible to do so, perforated wounds of the chest should be retained in the ambulance until the dangers of shock and of haemorrhage have been weathered. Beyond the usual treatment there are only two points to be borne in mind. The first is that the sudden appearance of alarming symptoms in a case of haemothorax may be due to an anaerobic infection, requiring the immediate adoption of drastic measures—that is, drainage by resection of a portion of a rib. The second is that in the event of any likelihood of a gas attack, all chest cases must immediately be evacuated. Chest injuries and box respirators do not harmonize.

Head and Abdomen.

The more quickly head and abdominal injuries are evacuated the better. Owing to the difficulties of accurate diagnosis in abdominal wounds, it is better to err on the side of excessive caution, and to regard all wounds of the abdomen, back, and buttocks as potentially penetrating, unless there is clear evidence to the contrary. There is only one type of penetrating abdominal wound whose retention in a field ambulance is justifiable—namely, perforating bullet wounds of solid organs like the liver or kidney, in which it is certain that no hollow viscera are implicated, and in which there are reasons for suspecting haemorrhage. Such cases may be retained until the danger of haemorrhage is past, but to do this the diagnosis must be absolutely certain.

Shock.

In addition to these injuries, severe cases of shock should be retained until some reaction has taken place. Superficial and extensive lacerations often produce a disproportionate amount of shock like superficial and extensive burns. Such wounds are in no urgent need of surgical treatment, but are immediately dangerous only on account of the shock produced. For this reason the evacuation of such cases may be delayed until reaction has begun.

The improvement of the ambulance dressing stations and the increased facilities for surgical work that now exist should result in an improvement of the work performed there, rather than in an enlargement of its range.

Discussions as to the best type of dressing to employ in field ambulances are not, to my mind, very profitable. When the interior of a wound is full of dirt, cloth, shell fragments, and destroyed tissues, it matters little whether eusol gauze or cyanide be employed to the mouth of the wound. An alcoholic solution of picric acid is, however, more satisfactory than tincture of iodine, in that it is less irritating to the skin and at the same time more lasting in its effect.

I have avoided launching out into new ideas on the subject of ambulance surgery, and have merely selected a few points that seemed worthy of consideration. The casualty clearing station and the field ambulance are so closely connected, that anything that assists in bringing the work of the two into line must contribute towards efficiency.

THE Caledonian Hospital was opened recently in Brooklyn, New York. It is the first Scottish hospital established in the United States. Dr. William J. Cruikshank is president of the medical and surgical staff, and is head of the department of medicine. There are also departments of surgery, obstetrics and gynaecology, genito-urinary surgery, neurology, paediatrics, ophthalmology, laryngology, otology, roentgenology, and anaesthesia.

DERMATITIS DUE TO EXPLOSIVES USED IN AIR RAIDS.

BY

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IN the BRITISH MEDICAL JOURNAL of June 30th, p. 894, I called attention to a form of dermatitis caused by the handling of powder from high explosive bombs and aerial torpedoes used in the air raid on June 13th. Many bombs have been dropped in various parts on previous occasions, but there had been no dermatitis of this particular type. It is evident that some new substance is being used.

Since my note appeared in the JOURNAL cases have been reported by Dr. J. W. Tyson,¹ whose patients were soldiers engaged in digging out bombs; by Dr. H. G. Adamson,² who saw cases at St. Bartholomew's Hospital simultaneously with mine at the London Hospital; by Dr. J. M. H. MacLeod,³ and by Dr. G. W. Sequeira.⁴ I have also had private letters from practitioners who have met with instances.

I have now seen 59 cases of dermatitis, 35 males and 24 females, and they fall into two groups. The majority following the raid of June 13th first attended the London



FIG. 1.

Hospital during the week ending June 30th, with a few stragglers in the next week. The later group, due to the July 7th raid, began to attend for dermatitis on and after July 18th. Four of these patients, two of the first group and two of the second, were shown at the meeting of the Dermatological Section of the Royal Society of Medicine on July 18th.

The irritant comes into contact with the skin in several ways. The following are characteristic instances:

1. A large number of workpeople were in a cap factory when the place was wrecked by bomb. The interior of the building and the material and made-up articles were covered with a yellow powder. The employees began to clear up the place and to resume work on June 15th. Their hands, and particularly the palms, were stained an orange colour, and vesication began on the night of June 23rd.

2. A man and a boy were buried in debris from the wreck of an office. To extricate themselves they had to make their way through much rubbish mixed with the yellowish powder. Their hands were stained at once, and nine days later vesication was noticed.

3. A man who had seen an aerial torpedo fall in a street on June 13th went out into the thoroughfare to obtain a souvenir. He picked up some of the powder, put it in paper, and took it home. His hands were stained, and although he did not again touch the powder the dermatitis began on June 23rd, and he has suffered severely.

4. Two women who walked through streets where bombs had been dropped suffered from dermatitis of the feet from the irritation of powder which had invaded the shoes.

5. An official at the London Hospital who was assisting relatives to identify the dead in the mortuary, a process necessitating examination of papers and clothing, has suffered from dermatitis of the foot, some of the powder having entered his shoe.

6. A small house was wrecked, and a woman occupier suffered in the usual way. Her four children were at school, and as the house had been demolished they were sheltered by neighbours.

The mother went in to attend to them, and they have been affected.

7. A young girl was admitted to the ward with injuries of the foot caused by a bomb. As she fell her hands came in contact with the powder, and although admitted at once to hospital the dermatitis developed after the usual interval.

SYMPTOMS.

The clinical picture is distinct. The initial staining is nearly always of a distinct orange tint. It is especially well seen on the palms. After the lapse of nine days (as a rule) the patients complain of intense irritation and itching, which interferes with sleep. This is followed by the appearance of closely set discrete vesicles the size of hemp seeds (Fig. 1). These are on the palms and along the sides of the fingers and in the interdigital clefts. The backs of the hands are swollen, and there are occasionally small vesicles the size of millet seeds. There is not much redness of the parts. The eruption of vesicles increases, and in many cases huge confluent blebs form, some of these are as large as a hen's egg. From one bleb 20 c.cm. of clear serous fluid was obtained, and in another instance the fluid dripped copiously from a ruptured vesicle. On the feet the phenomena are similar (Fig. 2), but the vesicles are rarely larger than a pea. In a few instances the lesion rapidly became infected and pustules formed, and in another a widely spread erythema with purpura on the lower limbs. The eruption is at its height about the fourth or fifth day, and the epidermis gradually separates, leaving a raw rather dry red surface. In some cases seen early the vesicles dried up with desquamation. In a few instances the feet were affected after the hands, probably by contact. Occasionally the face has been involved, and in one instance a widely spread eczematous eruption formed. Most of the patients were in a nervous condition when first seen, and in others this developed later from loss of sleep. In a few instances relapses are continuing, but are

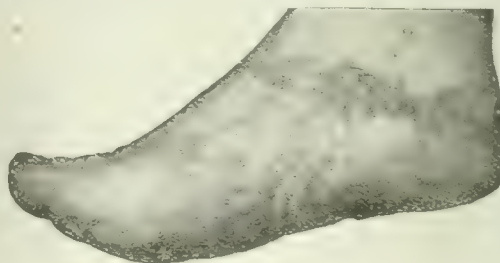


FIG. 2.

not so severe as the primary attack. Patients who wore gloves to clean up their houses suffered most severely.

Pyrexia.

Three patients were admitted to the ward on account of the severity of the symptoms. One case ran an apyretic course; in two others the temperature reached 100° F. on two evenings.

BACTERIOLOGICAL EXAMINATION.

Dr. Western examined fluid from three cases. In the early stage the serum in the bullae was sterile. In one *Staphylococcus epidermidis albus* was found, and in another, already suppurating, *Staphylococcus pyogenes aureus*.

BLOOD EXAMINATION.

Dr. Panton found eosinophilia in three cases examined. In one instance 11 per cent. of eosinophiles were found, and in another 6 per cent. This was to be expected, and compares with Dr. Panton's report on trinitrotoluene cases.⁵

TREATMENT.

Prophylactic Measures.

It is important to avoid touching the powder or materials impregnated with the powder. Its removal can be effected by moistening a surface with a weak alkaline solution (one teaspoonful of sodium bicarbonate to a quart of water). Brushes may be moistened with this solution. If the circumstances permit, a hose may be used to wash down an apartment or surface covered with the powder. It is better not to wear gloves, as they soon become impregnated with the powder, and moist perspiring surfaces appear to be more easily irritated. Rags wet with the alkaline solution may be used.

If the skin of the hands is stained, an endeavour may be made to remove as much of the stain as possible by pumice, and by washing with the alkaline solution.

Treatment of the Dermatitis.

When the eruption has developed, the parts should be washed as little as possible, but the alkaline solution may be used without risk. I have found that the best local application is a liniment of calamine (calamine 70 grains, lime water 1 oz., olive oil 1 oz.). This rarely fails to allay irritation and to promote healing. If the parts become septic, the usual remedies are of service, and in a very bad case I found that spraying the parts daily with a malachite-green sublimate solution was of great value. The solution, which we owe to McIntosh and Fildes, is made as follows: Malachite green 1 part, hydrarg. perchlor. 0.5 part, spirit. vin. rect. 100 parts.

CAUSATION.

The substance which is the cause of the dermatitis appears to be hexa-nitro-diphenyl-amine. The phenomena are identical with those caused by aurantia, an orange dye (ammonium hexanitrophenylamine) which has been used for the dyeing of cheap brown shoes and other leather articles. In Prosser White's *Occupational Diseases of the Skin*, p. 99, "aurantia, emperor's yellow," is described as "a basic aniline azo dye," which causes an abundant uniform-sized crop of vesicles, thickly crowded together all over the palm. Cases were recorded by Radcliffe Crocker,⁶ whose description of the phenomena of aurantia dermatitis on p. 417 of his textbook on *Diseases of the Skin* (third edition) tallies exactly with the appearance and symptoms which have been observed in the cases now described.

The use of the substance was prohibited in Germany, and it is not used on either silk or wool in this country. In Thorpe's *Dictionary of Applied Chemistry*, vol. i, p. 340, it is stated that, according to Gnehm (*Ber.*, pp. 1246, 1557) and Bayer and Co. (*W. J.*, 1877, 879), aurantia produces skin eruptions. Martius contends that this effect is due to idiosyncrasy, and quotes the opinion of Salkowski and Ziureck in support of his statement. The ministerial order of November 8th, 1877, prohibiting its manufacture was cancelled in June, 1880.

I understand that hexa-nitro-diphenyl-amine is recognized as an explosive substance, and that it is combined with trinitrotoluene in the bombs which have been used in the recent air raids in this country.

I hope to be able to report later on some experiments which are being made with the substances in question, and would gratefully acknowledge the assistance afforded me by the officials of the Ministry of Munitions and the Medical Research Committee.

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² H. G. Adamson, *ibid.*, p. 45. ³ J. M. H. MacLeod, *ibid.*, July 21st, p. 80. ⁴ G. W. Sequeira, *ibid.*, p. 80. ⁵ P. N. Pantou, *Lancet*, July 21st, 1917, p. 81. ⁶ Radcliffe Crocker, *ibid.*, 1905, vol. i, p. 491.

STATISTICS OF DEFECTIVE VISION OBTAINED AT A RECRUITING MEDICAL BOARD.

BY

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The medical examination of the adult males of the country who are of military age affords an opportunity for inquiring into the incidence of disease which has never previously been obtained. In particular the ophthalmic centres attached to the recruiting medical boards have given facilities for estimating the relative frequency of ophthalmic disabilities in the different areas, which may be of some general interest and which should be of value in determining the suitability of different candidates for military service.

The accompanying table, prepared from the statistics of one ophthalmic centre for a period of six months, from June to November, 1916, may now be considered. At the outset it may be stated that the region from which the men were drawn included thickly populated suburban districts, country towns, and extensive agricultural areas, together with a few of the smaller manufacturing centres.

Table showing 2,640 Cases of Defective Vision seen at an Ophthalmic Centre between June and November, 1916.

1. Myopia :			
(a) In categories B 1 and C 1	...	...	951
(b) In categories B 2, B 3, C 2, C 3	...	...	523
(c) Classed as unfit	...	...	73
2. Hypermetropia :			
(a) In categories B 1, C 1	...	...	123
(b) In categories B 2, B 3, C 2, C 3	...	...	153
(c) Classed as unfit	...	...	2
3. Amblyopia	...	...	354
4. Corneal opacities	...	...	141
5. Traumatic cataract	...	...	119
6. Congenital cataract	...	...	44
7. Enucleation of eyeball	...	...	76
8. Fundus defects :			
(a) Choroido-retinitis	...	...	20
(b) Detachment of retina	...	...	9
(c) Retinitis pigmentosa	...	...	6
(d) Progressive optic atrophy	...	...	11
9. Night blindness, without special fundus changes			
...	...	...	3
10. Iritis	...	...	6
11. Nyctagmus	...	...	21
12. Miscellaneous :			
(a) Vitreous opacities	...	...	2
(b) Chronic glaucoma	...	...	1
(c) Ocular paralysis with diplopia, etc.	...	...	2

2,640

The period is one of six months, and includes the time during which the men were called up who had been previously rejected for military service as being below the standard adopted in the British army for general military service. All the cases examined were those who were below this standard or who had been referred for ophthalmic examination on account of certain obvious defects. From this it will be seen that many cases of minor errors of refraction, or even some of graver eye troubles, may have been passed for general service if they possessed the visual acuity of R. $\frac{6}{24}$ L. $\frac{6}{60}$, which satisfied the military requirements for general service during the greater part of the period dealt with.

No attempt has been made to estimate the proportion of defective eye cases to the adult male population in general, for by far the larger part of healthy adult males had already been passed into the army, so that in these later months there has been a far larger proportion of defective cases, from whatever cause, many of these having been rejected in the earlier months of the war and being brought up again for examination and possible classification in some of the categories below that for general service. I will now discuss in detail some of the causes of disability which seem to be of greatest importance.

1. Myopia.—It will be seen that by far the most important question is that of myopia. Those who are affected by this refractive error are divided for convenience into three classes :

- Those whose defect can be corrected by glasses so as to fit them to shoot.
- Those who are below the standard for shooting but who might be fit for labour or sedentary work.
- Those who are unfit for any military service.

(a) The large number who are included under this head, nearly one-third of the total of cases of defective vision, indicates the importance of securing these men for service in the army. A considerable proportion of these could read $\frac{5}{6}$ with glasses, and the general standard adopted for this class was a visual acuity of not less than $\frac{5}{6}$ in the right eye after correction with less than -6 D. In the chief armies of the Continent these men would be accepted for the regular army.

(b) The next class includes those who could be corrected sufficiently with - glasses, such as were supplied during the period under review at Government expense (namely, a maximum of 6 D. spherical with + 4 D. cylindrical), if these would enable them to do labour or sedentary work. Some latitude has been granted recently to officers in charge of ophthalmic centres to order stronger glasses. No hard-and-fast standard was adopted in these cases, a decision being based largely upon the previous experience of the individual recruit. This class formed more than a fifth of the total, and if these are added to the total of the previous class the number of myopic cases

who could be selected as fit for some form of military service after correction amounted to more than one-half of the total of cases of defective sight.

(c) Only sixty-five cases were classed as unfit for any form of military service as a result of myopia.

2. *Hypermetropia*.—Cases included under this heading were again divided into classes (a), (b), and (c), as in the case of myopia. Before, however, commenting on these figures certain explanations should be made. It is obvious that a large number of men having slight degrees of hypermetropia would pass the War Office standard for general service, and therefore were not referred for special ophthalmic examination. On the other hand, a considerable proportion of cases included under the head of amblyopia were those in which one eye was amblyopic as a result of hypermetropia, and in many cases associated with strabismus. It will be seen, therefore, that the figures given do not afford an exact statement as to the incidence of hypermetropia among adult males in the same way as myopia. We may now deal with the subdivisions mentioned above:

(a) Only 123 cases were placed in the higher categories (B1 or C1) after the correction with convex glasses, and when this is compared with the similar figures under the heading of myopia, it appears comparatively insignificant. The fact is, as already explained, that most of the lower forms of hypermetropia are not likely to be a hindrance to general service even without the use of glasses. This no doubt accounts for the fact that the Continental armies seem to pay little attention to hypermetropia. If it is small it is of little significance; if it is high, the use of glasses is not likely in many cases to render the individual fit, at least for shooting units.

(b) A rather higher proportion of cases, 153 in all, were placed in the lower categories (B2, B3, C2, C3), in which great accuracy of vision may not be required, or in which clerical work could be performed with suitable correction.

(c) Only two cases were definitely classified as unfit on account of high hypermetropia. This is explained partly by the fact that even in the higher forms of hypermetropia examined the men were in most cases fit for some sort of military service with correction. It must also be remembered that some of these were included under the head amblyopia.

3. *Amblyopia*.—This heading is of no scientific importance, though it cannot be omitted from notice, as it helps to explain the inadequacy of the figures included under hypermetropia. By far the larger proportion of these were cases in which one eye was amblyopic as a result of hypermetropia, a few being due to myopia, and in many cases the amblyopia was associated with strabismus. No case of toxic amblyopia was noted.

4. *Corneal Opacities*.—One hundred and forty-one cases were recorded of opacity of the cornea in which this condition produced serious defect of vision in at least one eye, and it was only in a small number that both eyes were affected. Cases of obvious total blindness from corneal or other defects did not appear before the Board. Some cases of interstitial keratitis and of corneal ulcers still in an active stage were included in this series.

5. *Traumatic Cataract*.—This accounted for 119 cases, most of which had undergone some operative procedure. In nearly all cases there was no useful vision in the damaged eye, but the eye was quiet, and if the other eye had good visual acuity they were accepted for modified service.

6. *Congenital Cataract*.—This condition accounted for 44 cases.

7. *Enucleation of Eyeball*.—There were 76 cases in which one eye had been removed, usually, if not in all cases, as the result of injury.

8. *Fundus Defects*.—There were 20 cases of choroido-retinitis, 9 of detachment of retina, 6 of retinitis pigmentosa, and 11 of progressive optic atrophy. Defects due to myopia are not included under this heading. Probably there were numerous minor defects not seriously affecting vision, or at least in which the minimum requirements of the army were satisfied, so that there was no call for detailed examination.

9. *Night Blindness*.—In addition to the cases of retinitis pigmentosa there were three cases of night blindness in whom no fundus disease could be detected. These were cousins belonging to a family in which the condition only affected males and had been transmitted through females

from grandparents, the intermediate generation having been omitted. There were also three brothers with high myopia, one of whom had also some lens opacity, who had to be led from their work after dusk.

10. *Iritis*.—Iritis, whether recent or of old standing, was only recorded in six cases.

11. *Nystagmus*.—So-called "congenital nystagmus" was responsible for most if not all of the twenty-one cases included under this heading. There was associated defect of vision, and, owing to the exceedingly unsatisfactory results of the enlistment of men suffering from this condition, they were classed as unfit. No instance of "miner's nystagmus" was seen, there being no mining districts in the area.

12. *Miscellaneous*.—Among other defects there were two cases of vitreous opacity, one case of chronic glaucoma, and two cases of ocular paralysis associated with diplopia and other symptoms which rendered them unfit for any military service.

A METHOD OF SUPINATION BY PLASTER.

BY

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At the Military Orthopaedic Hospital, Shepherd's Bush, we see numbers of cases of gunshot wound of the upper limb in which the forearm is held more or less in a position midway between pronation and supination, and passive supination is impossible. This condition is due to the habit of putting up such cases originally either on an internal angular splint or even on a Thomas extension splint without due regard to the preservation of supination, which is notoriously the most difficult movement to restore. I have recently devised a simple and effective means of treating these cases by means of plaster. The plaster is



FIG. 1.

applied over felt (previously stitched together round the limb) and consists of two parts. A few temporary stitches hold the two portions of felt together while the plaster is applied, and are then cut. The upper reaches from the middle of the arm to the middle of the forearm; the lower from the middle of the forearm to just above the heads of the metacarpal bones, a hole being left for the thumb to protrude. On either side of the interval between the two portions pieces of metal (Fig. 2) are incorporated in the plaster. These consist of metal strips $\frac{3}{4}$ in. wide and 3 in. long, one inch of which is turned up at a right angle and the other



FIG. 2.

two inches notched to ensure firmer incorporation in the plaster, the notched corners being turned up to form spikes. One of these is fixed into the radial and another into the ulnar side of the lower part, and two other pieces are similarly inserted into the inner and outer aspects respectively of the upper part. When the plaster is firmly set (next day), pieces of rubber tubing are stretched round

these two pairs of metal pieces and gradually tightened from day to day, supination being complete when the two pairs are opposite one another. If desired, pronation can be obtained by reversing the process. It will be found necessary to put extra felt padding over the head of the second metacarpal, over the lower end of the radius, and over the ulnar border of the hand. When supination is complete the arm should be kept in this position for at least three weeks to prevent relapse before massage is begun.

This method is suited to cases of adhesions in the upper and lower radio-ulnar joints, fractures of the forearm where there is danger of cross union, and disability due to contracture of soft parts.

I am indebted to Colonel Sir Robert Jones, C.B., for permission to publish this article. The photograph was kindly taken for me by Mr. F. H. Lewis.

A SIMPLE MEANS OF ASCERTAINING IF A STERILIZING HUT IS HOT ENOUGH TO DESTROY LICE AND NITS IN CLOTHING OR BLANKETS.

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PREVENTIVE MEDICINE.

The following method was planned in the first instance with a view to its possible service to sanitary officers who had to use extemporized sterilizing chambers, but a subsequent knowledge of the working of permanent hot-air sterilizing huts in home camps suggests that it might be of assistance to officers in charge of these also. Unless an electric ventilating fan, or other efficient means of circulating the air and so causing a uniform temperature throughout the chamber, exists, a stratified condition obtains, in which the heat is too low to kill at the lower levels and needlessly high at the top. For instance, door thermometers (that is, thermometers visible through a glass panel let into the door) record only the temperature in the vicinity at the level at which they are placed, and Captain J. T. Grant's trials with maximum thermometers have shown that, while the door thermometer records 60° C., the temperature just over the floor may be only 37° C., while at 7 ft. it is 103° C. The use of maximum thermometers placed at different situations within the chamber affords a useful check upon the record of the door thermometer, but may be deceptive, as only the extreme temperature is registered, there being no indication of the length of the period to which the clothes have been exposed to it.

By the use of porcelain pots or dishes of a definite surface area, containing a given quantity of stearin or paraffin wax of a suitable melting point, a sufficiently stable relationship between the heat and period required to kill both the insects and their nits can be established. In arriving at this relation a number of experimental trials must be made, but once the quantity and surface area required for a stearin or wax of a known melting point is settled only the simplest precautions are required to ensure efficiency. It is necessary that the wax or stearin should be replaced when it gets dirty, as otherwise its melting point may be reduced, and that the pots, which may either stand or hang, are not tilted at such an angle that the surface area is altered. Even if this last condition should occur, however, it will lead to an increased temperature or period of exposure being needed to melt the stearin, so that the error would be on the safe side.

I have worked out the following quantities in relation to the temperature and period needed for the destruction of the nits of *Pediculus humanus* when enclosed in a pocket made of khaki cloth as used for army breeches in France and the home service. The samples of stearin used were supplied by Messrs. Price, Ltd., and melted at 60° C., according to the trade tests. Nits, when protected by a single thickness of khaki cloth as above described, are killed by a fifteen minutes' exposure to a temperature of 52° C. As the method pursued in practice is to place clothing or blankets in a cool, or with the second and later batches in a warm, chamber, and count the exposure period from the moment when the door thermometer reaches the stated temperature, the same procedure was followed in the trial tests. The periods quoted, therefore,

always presuppose a gradual rise up to the temperature, except in the case of the precautionary tests dealing with a quick rise to a high temperature mentioned below. In order to allow an adequate margin for contingencies, the temperature and period required for the destruction of nits is assumed to be 60° C. for thirty minutes, thus allowing as a margin at least fifteen minutes in time and 8° C. The porcelain pots used were supplied by Messrs. Price, Ltd.; they are those commonly used in the trade for samples of tallow, stearin, etc., and should therefore be easily obtainable. They are 2½ in. deep by 2½ in. in diameter; if only smaller or larger ones are obtainable the quantities of stearin used must be reduced or increased accordingly. The stearin must, of course, be melted in the pot and allowed to cool before use; 7 grams of stearin (trade melting point 60° C.) require thirty minutes at 60° C. under the conditions named, a small portion being still unmelted after twenty-five minutes; 10 grams require between forty and fifty minutes to completely melt it, only a narrow ring being melted within thirty minutes.

If two pots, one containing 7 grams and the other containing 10 grams, are placed or hung slightly below the level of the lowest garments in the sterilizing room, one can be sure, if all the stearin in the 7-gram pot is melted before the removal of the garments, that the exposure has been sufficient, both as regards period and heat; while, if all the stearin is melted in the pot containing 10 grams, it will show that greater heat or a longer exposure than was necessary has been used.

The question of the possibilities of an altered relation between the melting of the stearin and the killing of the nits with a short-period exposure to a higher temperature was tried. Nits and stearin were exposed together, and it was found that the stearin was more resistant to these conditions than the nits. For instance, when the temperature was rapidly raised from 21° C. to 80° C. within twenty minutes, the nits were killed while the 7 grams of stearin was not quite all melted. A rise to the same temperature in eighteen minutes showed the same result. A rise to 82° C. in fifteen minutes was just sufficient to melt all the stearin, the nits being killed. Again, a rise in twelve minutes to 81° C. killed the nits, but left a central disc of stearin unmelted.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

MECHANICAL AIDS IN A FIELD OPERATING THEATRE.

This short description might have been headed "The Mechanical Orderly," as most of the devices are made with a view to releasing the services of a trained man.

Fig. 1 represents a webbing loop and a length of tent rope with runner and button. The rope is looped round bars (½ in. water pipe is useful) placed some 7 ft. 6 in. high

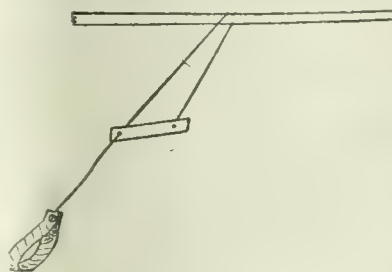


FIG. 1.

and parallel to, but away from, the foot and sides of the table. By placing the loop round ankle or wrist the elevation and the degree and direction of traction on the limb can be instantly adjusted. A stretcher sling unpicked to its full length makes

four loops. It is specially useful in fractured thigh cases.

Fig. 2 shows a very simple arm rest made from two pieces of wood and two wide strip-iron hooks. The table portion should be 19 in. by 9 in., and the thinner piece, half of which is screwed to the under surface of the former, is 40 in. by 4 in. The thin portion goes under the top of the operating table, and the hooks then engage with



FIG. 2.

the bar side of the same. It is very useful for forearm cases and intravenous saline infusions.

Fig. 3 is a "chest rest," and replaces the unsatisfactory sandbag for keeping chest, back, buttock, and lumbar cases in the required posture. The trunk rests on the flat portion, which lies on the table, and the chest, shoulders, buttock, or abdomen, rest against the inclined plane according to the position desired. The base and inclined plane are padded and covered with jaconet.

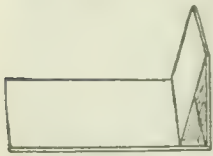


FIG. 3.

Measurements: Base 22 in. by 6 in., upright 9 in. by 6 in.

Fig. 4 is a useful little box for the anaesthetist, made of a piece of wood 24 in. by 4½ in. and two of the larger shaped blocks out of 18-pounder shell boxes, forming two round wells 2½ in. deep and 3½ in. across. One of these holds comfortably an ordinary 8 oz. bottle for ether and a flat 4 oz. (or Mills's drop) bottle for chloroform. The thin end slips under the pillow, or the end of the waterproof palliasse of the table, and the whole takes up very little space in cramped quarters.

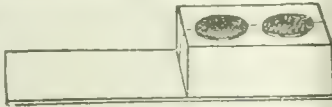


FIG. 4.

Fig. 5 is a webbing strap about 45 in. long, with sliding quick adjustment (a stretcher sling cut down) and a hook at either end to engage the sides of the top of the theatre table. One of these placed over the knees and another the



FIG. 5.

chest and elbows of a patient saves one and often two orderlies during the induction of anaesthesia.

All these have been tried in casualty clearing station work during the last ten months and proved most useful, as well as saving labour during "rush" work. They are light and easily made; a coating of white enamel improves their cleanliness. The chest rest can be made with double hinges for ease of packing. The operating table referred to is the standard W.D. pattern.

W. F. BENSTED-SMITH, Captain R.A.M.C. (T.F.).

London, E.C.

DERMATITIS FROM HANDLING EXPLOSIVES.

CASES similar to those described by Dr. Sequeira in the *BRITISH MEDICAL JOURNAL* of June 30th have been observed in France amongst soldiers.

About a year ago a series of explosions took place in an ammunition dump. A considerable number of shells were removed in time and transported to a place of safety. These were, however, covered with a yellowish powder from the explosion of other shells in the vicinity. Several days later a number of men were admitted to hospital from a labour battalion engaged in handling these "yellow" shells.

The first case admitted showed a large number of deeply seated vesicles upon the hands, distributed mainly on the palms and between the fingers, intensely irritable, and resembling closely a severe cheiropompholyx. The palms of the hands were of a bright yellow colour, and a local irritant was at once suggested. Against this, however, were the facts (1) that the man had been employed on unloading shells for several months, (2) that he had been handling the "yellow" shells for over a week—a period considerably longer than that required for most irritants to produce dermatitis, (3) that though most of his co-workers had yellow palms no others had as yet developed any eruption, and (4) that the eruption did not extend further up the arm than the palms. On these grounds, and also that no previous case of "shell dermatitis" had been seen, the provisional diagnosis of cheiropompholyx was made.

That this was incorrect and that the irritant was certainly responsible became evident next day, when several other cases arrived from the same company, all showing a more or less similar eruption on the hands. Others followed on successive days, about a dozen in all being admitted, and in several of these there was an

eruption on the arms extending up nearly to the shoulder, apparently affecting those parts exposed when the sleeve is rolled up. In this situation the eruption was not vesicular but resembled severe seborrhoeic dermatitis.

The cases were treated in the acute stage with starch poultices, and later, when the inflammation subsided, with boric starch dusting powder, containing a small quantity of salicylic acid. The course followed closely resembled that of an ordinary pompholyx, the eruption being followed by desquamation. Some idiosyncrasy seemed to be necessary to determine the eruption, for though a whole company was engaged on the same work only a small proportion became affected.

Subjects of the seborrhoeic diathesis seem particularly susceptible to the action of irritants. The dermatitis observed by Dr. Sequeira, and noted also in France, seems to be closely allied to the variety which occurs amongst munition workers from the handling of explosives.

W. D. D. SMALL,
Captain R.A.M.C. (T.C.).

On July 3rd a man was told off to clean out a cistern into which had fallen a bomb from an aeroplane. He noticed a yellow powder in the water. His hands were immediately stained yellow and his feet were wet.

Ten days later a vesicular rash appeared on the skin of the palm and the dorsum of the hands and between the fingers. The vesicles were very small and deeply situated in the true skin. There was much redness, accompanied by the feeling of heat and itching. A similar rash appeared on both feet.

The rash lasted some thirteen days, after which the skin over the affected areas peeled off in large flakes. The itching was much worse during this stage. The patient was treated with calamine lotion.

Felixstowe.

P. L. GIUSEPPI, M.D. Lord., F.R.C.S.

THE SPHYGMOMANOMETER IN GENERAL PRACTICE.

As the stethoscope and clinical thermometer are the constant companions of the general practitioner, so should the sphygmomanometer be also. If used regularly and careful records kept, it will prove invaluable not only as an aid in diagnosis, but also in prognosis and treatment. Indeed, as proof of its worth, many of the life assurance companies ask for a blood pressure reading. For some I have used a Tycos apparatus, which is portable and reliable, and its use has not only been a scientific pleasure, but an invaluable help in cardiac, renal, and pulmonary cases. It is to its value in tuberculosis cases especially that I wish to draw attention in this note; I have found hypotension a constant feature, and the early diagnosis of phthisis has been possible before any appreciable signs or symptoms have developed, or the bacilli have been found in the sputum. Indeed, any case exhibiting a persistently low blood pressure, with a small pulse ratio, should lead one to suspect tuberculosis. Not only is early diagnosis possible, but the blood pressure reading enables one to watch the progress of the case. If the maximal (systolic) pressure increase accompanied an improved pulse ratio we know the case is progressing satisfactorily; if, on the contrary, a decrease is noted, the prognosis is invariably bad. In short, it may be said that all conditions having a sustained pressure of 100 mm. or lower, or over 150 mm., must be regarded as pathological.

Blood pressure depends on four factors—cardiac power, peripheral resistance, elasticity of the walls of the vessels, and the quantity of blood in the circulatory system. For correct estimation the systolic, diastolic, and pulse ratio readings are of equal importance.

To discuss the various meanings of blood pressure readings generally is not only a task beyond my power but beyond the scope of this note, which is intended to draw attention to the immense help the sphygmomanometer can give when regularly used in practice, and especially as an aid in the early diagnosis of phthisis, for it is now universally admitted that it is only in the early cases we can hope to achieve any measure of success in treatment.

By way of illustration I may quote two recent cases.

A young man passed as fit for general service came to me complaining of hoarseness and a slight cough. His temperature was raised, but he had no definite lung signs. The systolic

blood pressure was only 90 mm. with a diminished pulse ratio. I at once suspected tuberculosis, and when the sputum could be had it proved to be positive. He died soon after. There was no family history; it was a case of direct infection from tuberculous meat; he was a butcher, and, like many others in his trade, held a knife in his mouth while dressing a tuberculous calf.

The second case was a young girl of 16 with a bad family history who was ill for three weeks with vague stomach symptoms. Her blood pressure readings showed marked hypotension. A week later cough developed and the sputum was examined, but reported negative. The following day some more sputum was sent to Dr. R. Solly, of Exeter, who reported tubercle positive.

In these two cases, then, diagnosis was possible before definite signs appeared.

In conclusion I should like to add that as variations may occur in normal conditions under abnormal circumstances, repeated readings are necessary and careful records must be kept.

Cheriton Fitzpaine, Devon.

DAVID H. VICKERY,
Late Surgeon R.N.

Rebrielus.

HEALTH AND THE STATE.

DR. BREND is a clear-headed, able writer, and although we may not agree with all his conclusions he deserves a careful hearing. In his recent book, *Health and the State*,¹ he examines critically the existing public health services, the measures now in force, and the methods by which they are administered. Dr. Brend finds waste and inefficiency, and the main object of his book is to demonstrate the need for complete reorganization of the public health services. He suggests three main reasons for the failure to apply the large mass of knowledge available as to the means for the prevention and cure of disease: (1) vested interests, (2) complex administration, (3) ignorant legislation. About the first there is not much to be said, the facts are well known; the second is fully discussed by Dr. Brend in various parts of his book. From the Government departments, tainted with official bias, right away down to the smallest local authority, he finds overlapping and lack of co-ordination. With regard to ignorant legislation, he has many hard things to say about our rulers. His main thesis here is that most of the past endeavours made by the community to reduce or stamp out disease have failed, and wrong views have been spread throughout the people, because the problems involved have not been sufficiently investigated. "Wherever effort to improve public health has failed, it has not been the fault of medical science, but of legislators and administrators who have misunderstood that science, or have failed to appreciate the difficulties and conditions under which they proposed to apply its teachings."

In the chapter on the causes of infant mortality, which is a reprint from a publication by the Medical Research Committee, it is contended that post-natal factors beyond the mother's control are far more potent forces than either pre-natal conditions or maternal ignorance and neglect. The author's view as to the importance of environment finds fuller expression in the chapter on public health, land, and housing. This has for its text the assertion that man is biologically not adapted to life in towns. True measures of reform, according to this dogma, should not tinker with curative and palliative measures, but should attack disease-producing conditions, in particular the deadly habit of urbanization. "The land question lies at the bottom of nearly all the forces which make for ill health, whether they be rural depopulation, holding up of suburban land, continuance of slums, or insufficient housing."

The present position of medical treatment among the working classes is discussed in two long chapters, with special reference to the operation of medical benefit under the National Insurance Act. The author holds that the public health aspects of this measure have been quite lost sight of, and that the whole complex system set up under it has been of little benefit to the health of insured persons; the drug fetish has been perpetuated; the standard of treatment among the insured class is no

better than that which prevailed before the Act, and the elaborate records give doctors much trouble, and are of no scientific value. In short, he thinks the panel system unsound throughout. Enormous powers have been given to the Insurance Commissioners, resulting in an extreme degree of centralization and complexity of administration, while the local Insurance Committees, from which much was expected, are impotent and futile bodies merely engaged with minor administrative details. The Insurance Act, the author tells us, was the most ambitious piece of public health legislation ever attempted; but, like nearly all others, it suffered from complete absence of scientific medical inspiration, and so was an amateurish affair from the start. We seem to remember a time when Dr. Brend was not quite such a severe critic of this measure.

The author is naturally in favour of the setting up of a Ministry of Health to put things straight. He has his own plan for reorganizing the public health services both central and local. The only authority for which he has a good word is the Registrar-General's office; it is not concerned with administration, and it carries out the most important public health research in the country: this, then, he thinks, should be the nucleus of the new department. The great function of a Ministry of Health, according to Dr. Brend, should be research into public health questions, especially of a sociological kind, with a view to the application of scientific knowledge to the needs of the community. An independent and unbiassed body of skilled scientists should investigate the causes and distribution of disease, and consider and advise on all legislative public health proposals. The functions of this ministry would thus be investigational, consultative, and advisory, rather than executive. Existing Government departments concerned with health do not, in the author's view, need uniting so much as co-ordinating; some rearrangement is necessary, but co-ordination is the principal need, and this mainly in their scientific and statistical work. Administration should be simplified by decentralizing the services. For instance, the Insurance Commission should remain a merely financial body responsible for central administration, and the machinery of medical and sanatorium benefit should be taken out of the Insurance Act and merged into local medical services no longer applying solely to insured persons. Thus the greater part of health administration would pass into the hands of local bodies furnished with increased powers and combining for all health purposes into single local health authorities. Dr. Brend thinks that the best plan would be to appoint the ministry first on the lines he suggests, and authorize it to inquire into the whole system of public health administration, and recommend what further changes are desired.

KUT AND AFTER.

UNDER this heading two recent books may be noticed. The scope of the one is sufficiently indicated by its title, *Besieged in Kut—and After*,² but a great deal the most interesting part of it is the story of the siege. Its author, Major CHARLES H. BARBER, I.M.S., seems to have been with his hospital at Basra for nearly a year before he went up to Kut in October, 1915, with as much of the equipment and as many of the personnel as a small steamer could carry; the remainder got up by instalments in time to be established, along with another of 500 beds, a short time before the British retreat from Ctesiphon. The two hospitals would seem to have received temporarily some five-sixths of the wounded from that action, probably nearly 4,000 men, but contrived to pass most of them on before the investment was complete. When that happened the hospitals had to be moved from their huts outside the town into the bazaars on the river bank, but this site, though less exposed, was by no means safe from shells, and great havoc was wrought one night by a bomb dropped from an aeroplane plumb in the middle of the British hospital in the upper part of the bazaar. It is a sad story—the alternations of hope and despondency as the relief force tried and tried again and failed. Each failure was marked by a reduction of rations, until to the pangs of hunger was added scurvy, which handicapped the surgeons, making them refrain

¹ *Health and the State*. By W. A. Brend, M.A. Camb., M.D. (State Medicine), B.Sc. Lond. London: Constable and Co., Ltd. 1917. (Demy 8vo. pp. 361. 10s. 6d. net.)

² *Besieged in Kut—and After*. By Major Charles H. Barber, I.M.S. Illustrations and Maps. Edinburgh and London: William Blackwood and Sons. 1917. (Cr. 8vo. pp. 344. 5s. net.)

from operations that would otherwise have been beneficial. As to this, readers may recall the report of a medical meeting at Kut on April 1st, 1916, published in our columns of January 6th, 1917. The disease seems to have been noticed first early in February and to have increased rapidly until about the middle of March. Then the warmer weather stimulated growth, and grass and weeds were collected and cooked as spinach—a nauseous mess, but effective as a cure and prophylactic—and vegetables sown early began to yield crops. Perhaps the most vivid impression of the gradual descent from shortage of food to absolute want is given by the story of the flour mill. Machinery was found near the fort, the most advanced point in the semicircle of the defence, and brought into the town and put together; millstones which were wanting were dropped by aeroplanes, hidden stores of grain were rooted out and the mill began to grind merrily. But a couple of months later—early in April—Major Barber relates how, making his way by a back lane through the town, he came on the flour mill. "It was still . . . like everything else it had the air of having finished. It had done its job." The book is illustrated by drawings, photographs and sketch maps, and contains Townshend's official announcements to his troops, which it was well to preserve. This story of the siege will live by reason of its directness and vivid touches of realism.

The *Message from Mesopotamia*^{*} which Sir ARTHUR LAWLEY brings after spending last February and March there, is that though the campaigning on the Tigris plain is fraught with difficulty and danger owing to the physical conditions, "the steps which have now at last been taken to minimize the risks and ensure the well-being of our men seem to me to be wise and adequate." He went to Mesopotamia as the representative of the British Red Cross and the Order of St. John, and visited all the principal military posts from the base at Basra to Baghdad, which he entered with the flotilla on the day after the fight for the DIALA crossing ended. He saw the evacuation of the wounded from that action, and speaks highly of the good work done by the Red Cross motor launches. The wounded had to be carried in ambulances or carts over a bad stretch of country (some eight miles) to the river bank, but the launches took them thence to the field ambulances below. An advanced Red Cross dépôt was quickly established in a good house in Baghdad. With regard to stores, the work of the Red Cross has been to supplement the official equipment by the provision of extra comforts to hospitals and hospital ships; in future it is proposed to rely more and more on the Indian Branch of the Joint Committee of which Sir Pardey Lukis is chairman; he, says Sir Arthur Lawley, is "a tower of strength," never failing to meet "endless demands on him for supplies of every kind." The most novel work has been the provision and maintenance of motor launches; in an amphibious campaign such as this launches of various sizes and adapted to serve various purposes can be of the utmost use, but Sir Arthur states that when he left the only launches available for use by the medical service were those supplied by the Indian Branch of the Joint War Committee and the Order of St. John. This does not seem quite satisfactory, for it suggests that even yet the principle that the medical service is an essential part of any army, to be furnished, without question and as a matter of routine, with suitable transport on an adequate scale, is not fully understood and acted upon. After enumerating, in a concluding chapter headed "All's well," the evils of a summer campaign in Mesopotamia—the evils of heat, of flies, mosquitos, and sandflies, of fever and dysentery, of dust, thirst, and ennui, which, he says, our army to-day will look in the face undaunted and undismayed, Sir Arthur Lawley adds the significant sentence, "the clouds of doubt and distrust which twelve months ago darkened the horizon and quenched the spirit of our soldiers have been swept away. The men are in great heart, they know that they are going to win through. They know that their leaders will look carefully to their well-being." Is it good generalship to let the spirit of your men be quenched because they know that proper provision has not been made for them if wounded or sick, as must happen? Such

lapses are excused on the ground of military exigencies. But is not the care of the sick and wounded from a force one of the military exigencies for which a skilled commander and a competent military administration always provides?

NOTES ON BOOKS.

THE eleventh edition of the late Professor SIMON'S *Manual of Chemistry*,⁴ revised by Professor BASE of Baltimore, is in many respects an improvement on the tenth, which was reviewed in the *BRITISH MEDICAL JOURNAL* of February 1st, 1913 (p. 227). The book is now devoted entirely to chemistry, inorganic and organic; the section given in previous editions to physiological chemistry has been omitted, with the exception of the chapter on the proteins. The first fifty pages deal with chemical physics; inorganic chemistry is discussed in the next three hundred pages, and then follows a short section on analytical chemistry. Organic chemistry is described in the following two hundred pages, and there are four appendices, of which two are given to the spectroscopy and the polarimeter. The reviser is to be congratulated upon the success with which he has carried out his work. The book has long been an established favourite in America, used by students of chemistry as well as by students of medicine. It is written in a somewhat academic style; but has the virtues of fullness and trustworthiness. The preface reveals an interesting, and for practical purposes wholly undesirable, instance of the confusion introduced into the terminology of standard measures by a pedantic adherence to accuracy. Professor Base writes: "The U.S. Bureau of Standards, the U.S.P. and Br.P., U.S. publications, and a number of authors, have adopted the term milliliter (abbreviated mil. or ml.) in place of cubic centimeter (c.c.), inasmuch as the liter, as now fixed, is 0.027 c.c. larger than one thousand cubic centimeters." Thus 1.0 mil. = 1.000027 c.c.; Professor Base has not adopted the "milliliter" in this volume. The book may be warmly commended to those for whom it is intended.

Miss MARGARET E. BJÖRKEGREN'S *Handbook of Anatomy for Students of Massage*⁵ contains all that it is necessary for them to know on this subject, with illustrations from Buchanan's *Manual of Anatomy*. The chapter on surface markings in this second edition has been enlarged and other alterations and additions made which should increase the value of the book as a practical manual.

⁴ *Manual of Chemistry*. By W. Simon, Ph.D., M.D., and Daniel Base, Ph.D. Eleventh edition, thoroughly revised. London: Baillière, Tindall, and Cox. 1917. (Roy. 8vo, pp. xvi + 648; 55 illustrations, 7 coloured plates. 13s. net.)

⁵ *Handbook of Anatomy for Students of Massage*. By Margaret E. Björkgren. Second edition. London: Baillière, Tindall, and Cox. 1917. (Demy 8vo, pp. x + 233; 73 figures. 5s. net.)

MEDICAL AND SURGICAL APPLIANCES.

Apparatus for Treatment of Dislocation of the Acromial End of the Clavicle.

MR. HERBERT H. BROWN, M.D., F.R.C.S. (Ipswich), writes: Dislocation of the acromial end of the clavicle is not a very common injury. It can only take place if there is rupture of the strong conoid and trapezoid ligaments attaching the clavicle to the base of the coracoid process. While easily reduced, it is difficult to keep the clavicle in contact with the acromion; any contraction of the trapezius muscle raises the bone. Some years ago I devised the simple apparatus shown; it was made for me locally, and can now be supplied by Messrs. Meyer and Meltzer. A is an oblong pad, which rests upon the clavicle near the acromion. The upper surface is of stout leather, and underneath is a soft pad covered with chamois leather. Between the two slides a leather strap attached to a bucket splint (B) of leather, supporting the forearm and elbow, by buckles in front and behind the arm. From the inner angle of the pad A a strap passes to a soft pad (C), which rests in the opposite axilla. This strap can be adjusted by a buckle. In adjusting the apparatus the straps between the clavicle pad A and the splint B should be drawn tight so as to prevent any displacement of the clavicle upwards. The strap attached to the pad C prevents the pad A from slipping off the shoulder. For the first fortnight the apparatus may be worn next the skin, afterwards outside the shirt. In the cases in which I have used it, it has been entirely satisfactory.



^{*} *A Message from Mesopotamia*. By the Hon. Sir Arthur Lawley, G.C.S.I., G.C.I.F. London, New York, and Toronto: Hodder and Stoughton. 1917. (Small 8vo, pp. 143. 2s. 6d. net.) The author's profits will be given to the Prisoners of War Fund.

British Medical Journal.

SATURDAY, AUGUST 4TH, 1917.

WOUNDS OF THE CHEST.

A COUPLE of months ago, in a note appended to the paper by Sir Anthony Bowlby and Colonel Cuthbert Wallace on the development of British surgery at the front, Colonel Sir Wilmot Herringham gave an account of penetrating wounds of the chest observed at a casualty clearing station. This week we are able to publish a paper by Colonel Sir John Rose Bradford on gunshot injuries of the chest, dealing especially with the conditions observed at the base hospitals. Sir Wilmot Herringham told us that in all but fourteen out of a consecutive series of 211 cases seen at casualty clearing stations there were signs of haemothorax, and Sir John Rose Bradford's paper is largely concerned with the treatment of this condition as observed later on. Sir Wilmot Herringham made a passing reference to a new method of treatment of penetrating wounds with retention of the missile, introduced towards the end of 1916. On the second day after the injury ribs were resected or a costal flap turned back, the pleura opened, the missile removed, the pleura thoroughly washed out, and the whole wound carefully closed. The number of cases so treated within his experience was limited, but the results observed had been favourable. The treatment of chest wounds until recently may be summed up by the statement that it has been in the main expectant, coupled with free drainage as soon as bacteriological evidence of pyopneumothorax was found; this, if it occurred, usually came on within ten days.

In the early summer of 1916 there was a move on the British side towards surgical treatment, but it was interrupted by the long offensive on the Somme front. There was also in the same year a similar movement on the French side under the lead of Duval, who showed that the lung could be freely exposed and handled without producing shock or interfering seriously with respiration, and that in cases of serious haemorrhage life could often be saved by direct attack on the bleeding parts and suture of the lung tissue. He argued that such operations, besides arresting haemorrhage, tended to prevent after-complications, and suggested that the lung was as self-protective as the peritoneum, but could not withstand constant exposure, through a breach of its surface, to the influence of an infected pleural cavity. Proceeding from this, he argued that all chest wounds in which a foreign body was buried might rightly be treated like, say, thigh wounds, by prophylactic or surgical cleansing operations.

Duval began to give expression to his views in the late autumn of 1916, and about the same date a consideration of the possibilities of chest surgery was resumed on the British side. At first the operations were of a tentative nature, but the results were of such a kind as to cause the pendulum of opinion to swing rapidly in favour of abandoning expectant treatment as the routine procedure in front line units. It has now swung again to the perpendicular, and the present view seems to be, first, that in the comparatively rare cases in which patients suffering from severe haemorrhage survive to reach an operating station life may occasionally be saved by operative interference. Secondly, that prophylactic operations

are legitimate and desirable in two classes of cases in which grave infection is otherwise certain to occur: those in which so many ribs are destroyed that the lung is certain to be infected from without, and those in which there is a large opening in the chest wall and the contents of the pleural cavity are churned at every movement of a not entirely collapsed lung. Thirdly, that operation for the removal of a foreign body, which may very possibly cause infection, but will not certainly do so, is also legitimate, subject to two provisos—namely, that it is known to be large and can be localized precisely by x rays, and that the operation can be undertaken in what may be called the pre-sepsis stage—in other words, within the first twenty-four hours or so after receipt of the wound. Fourthly, that search for small fragments is illegitimate even if the foregoing provisos are met, for they do not always cause infection, and, when they do, early treatment of the resulting pyopneumothorax by free drainage gives very good results.

It appears, in short, that the treatment of chest wounds is undergoing, if it has not already completed, much the same evolution as the treatment of abdominal wounds underwent. In the early days the treatment of abdominal wounds was for the most part expectant, and those who considered that it might be anything else with advantage had to admit that operations could scarcely be advised in existing conditions. When, however, with the continuance of trench warfare the casualty clearing stations gradually changed their character and were more fully equipped, operations on the abdomen began to be undertaken with encouraging results. It was clear, however, from the beginning that success was largely dependent on the earliness with which these operations were undertaken, and the first formal attempt to meet this proviso and to make a definite feature of abdominal surgery was spoilt by the military circumstances in which it necessarily took place. This was Loos of 1915. In order to secure the cases early the abdominal operating station was placed close to the ordinary field ambulances, but the casualties of all kinds were so heavy that the abdominal work was quickly overwhelmed. The next formal endeavour was made in quiet times, the operating stations being placed fairly close to the line but off the main lines of traffic, and arrangements were made for bringing cases straight down to them. In this and other ways the possibilities of abdominal surgery were soon established, with the result that for at least a year abdominal surgery has been an habitual and very successful feature of front line casualty clearing station work.

The problem of the treatment of abdominal cases having been solved, that of chest wounds was taken in hand, with the results above indicated. It is to be noted, however, that so far as the base hospitals are concerned no change is likely or desirable. In the first stage of the war the general impression was to the effect that chest wounds were curiously benign, and it has been borne out by experience so far as bullet wounds are concerned. If these do not cause death from haemorrhage, recovery is usually rapid and complete. Nowadays, however, the majority of wounds are due to shell fragments, and these are more liable to provoke sepsis. Nevertheless, it is found at the base hospitals that even when infection occurs or the recovery is otherwise not uninterrupted, excellent results may be expected, even in very severe infections, if the principles of treatment recently so well set forth in full in the *BRITISH MEDICAL JOURNAL* by Lieut.-Colonel Elliott and Captain Henry¹ are duly

¹ Infection of Haemothorax by Anaerobic Gas-producing Bacilli. *BRITISH MEDICAL JOURNAL*, March 31st and April 7th, 1917.

observed. Not only do chest wounds, as seen at the bases, return quite a low mortality, but on their arrival they have usually passed the stage when operation can be safely undertaken, unless free drainage is to be regarded in that light.

The mortality from chest wounds, however, is not fully represented by the experience of the base hospitals. In many cases death from haemorrhage occurs at once, and among those that survive to reach the casualty clearing stations and advanced operating stations a considerable proportion die within a very short time either from the continuance of haemorrhage or the onset of fulminant sepsis. There now appears reason to believe that a good many of these formerly fatal cases can be saved by surgical interference. If this conception prove well founded, thoracic surgery, like abdominal surgery, will be a bright spot in the history of the war. Both have been rendered possible by the wise policy of the Director-General in France and his advisers of developing casualty clearing stations to such a degree that they are now hospitals of the very best type, and in every sense of the term.

Two points of general interest emerge from what has been said, and from the underlying facts. Lung tissue does not resent handling, suturing, and other surgical procedures. Formerly regarded as intangible, it has been shown to be as tangible with safety as another structure which was formerly regarded as being too dangerous to touch—namely, the peritoneum. The other point is that, though operations on the chest and its contents are not entirely novel, it has hitherto been supposed that their performance is only possible with the assistance of complicated arrangements in the way of compressed-air chambers and other devices for maintaining equality of pressure. It is now seen that all these things are superfluous, and that a lung can be fully exposed with safety and success in any ordinary operating room, and without the assistance of any special devices. It is also clear that chest surgery demands no unusual technical ability on the part of the operator, but that what is essential is judgement to decide between the cases that should be subjected to operation and those in which it should be withheld. Chest work, in short, cannot be undertaken successfully except by the co-operation of sound physicians, skilled surgeons, and good radiologists.

THE ANNUAL REPRESENTATIVE MEETING.

THE annual meeting of the Representative Body was held in London at the close of last week. The attendance was good for the end of the third year of the war, and close interest was manifested throughout. In spite of a long programme the business was disposed of within the two days. Wider discussion at the present moment of certain very large questions would scarcely have repaid the expenditure of time and energy involved in prolonging the session into a third day. The publication of a report of the proceedings is commenced in the SUPPLEMENT this week, but exigencies of space compel us to hold over the remainder until next week. We shall not attempt here a running summary of resolutions and debates covering almost the whole field of medical politics, but certain outstanding features of the meeting may now be mentioned.

The troubled times in which we live justify special reference to the Treasurer's financial statement. The paragraphs of the annual report of Council relating to finance have been before the members of the

Association since May 5th, and in moving their approval, Dr. Haslip went into the factors which have mainly affected the finances of the Association since the outbreak of war. Notwithstanding grave difficulties, it has been possible, through the increased revenue from subscriptions, and by means of drastic economies in the production of the JOURNAL, to reduce indebtedness on account of loans to much less than a quarter of the amount outstanding at the close of 1913. Anxious days are ahead, but this restoration of financial equilibrium in the midst of a period of great stress is a matter for congratulation. Whilst on this subject we may remark that the Treasurer's figures throw light on editorial difficulties in war time and explain the need for rigid selection and compression of everything submitted for publication.

A noteworthy aspect of the Representative Meeting was the praise accorded to the work of the Central Medical War Committee. The manner in which the statements of its Chairman, Dr. Verrall, were received and the tone of the Representative Body throughout their discussion, made it clear that the unremitting efforts of the Committee on behalf of the civil population, the army, and the medical profession are appreciated by the body of the profession. Complete approval was expressed of the firm attitude taken up by the Central Medical War Committee, and the Committee of Reference, at the end of April last, when the War Office made the unfortunate blunder of calling up all medical men under 41 without reference to the statutory professional committees. It is evident that the strong and prompt action then taken did more than was recognized at the time to establish the committees firmly in the confidence of medical practitioners up and down the country. Representatives who came with amendments questioning once more the payment out of Association funds of the expenses of the Central Medical War Committee disclaimed any intention of criticizing the work of the Committee, and the general view of the meeting, reinforced again by legal opinion, was that this work amply justifies the disbursement of Association money, although non-members profit by it equally with members. Again, upon the grave question of mobilization of the medical profession, the Representative Body, after hearing both sides, decided to associate itself with the resolution passed in December last by the Central Medical War Committee, with the proviso that any such control of the liberties of medical men in advance of other sections of the community, if and when needed for national security, must be carried out under the direction of accredited representatives of the profession, by which was understood the statutory professional committees.

The cognate question of the supply of doctors for the army was also raised during the meeting, but any tendency towards a discursive ventilation of specific grievances and anomalies was wisely held in check. The very widespread feeling that the War Office is not making the best use of the medical men supplied to it, and that the combing-out process has gone dangerously far already, found expression in a resolution, passed without dissentient vote, which will strengthen the hands of the War Committees in future dealings with the army authorities. In the matter of the reconstitution of medical recruiting boards, the Representative Body gave general approval to the steps already taken to watch over professional interests by the special committee of the Council of the Association, and by the conference on July 25th between the Central Medical War Committee and the Committee of Reference. As the outcome of these votes of confidence, the professional bodies charged with the national duty of selecting

civilian doctors for the army, and of safeguarding the civil population and the medical profession, will feel encouraged to continue spending themselves upon this task, knowing that they have behind them the support of the profession at large.

The recommendations of the Council with regard to a Ministry of Health were introduced by Dr. Garstang, who explained the origin of the scheme. From various amendments sent up by Divisions it was clear that misunderstandings had arisen as to the reason for the action taken in this matter by the Council in advance of a mandate from the constituencies. The explanations given by Dr. Macdonald and Dr. Brackenbury satisfied the meeting that the Council, if it had not at once moved in the matter, would have failed in its duty. The Representative Body, when the position was fully revealed to it, endorsed the action of the Council, and approved generally the outline scheme put forward. The meeting eschewed a rambling discussion of details, and showed its renewed confidence by entrusting to the Council further consideration of the matter and the duty of representing the scheme to the Government. The oversight by which the reasons prompting the Council to take rapid action were not fully explained in the report of Council has thus been corrected in the fullest possible manner, and misapprehensions have been removed. Whatever may be the merits, or demerits, of the scheme proposed, the idea that it is a State medical service in disguise is now recognized to be altogether mistaken—in fact the exact opposite of the truth. Here it should be noted that the Representative Body at a later stage in the proceedings, when national health insurance matters were under consideration, passed resolutions to the effect that medical treatment of the industrial and poorer classes should not be carried out by a whole-time salaried State medical service, but by a modified and improved insurance scheme.

RECRUITING.

THERE is no published evidence that any progress has been made, since we referred to the matter last week, with the scheme for handing over the organization of recruiting for the army to a civilian body. The Secretary of State for War distinctly declined to commit himself to the suggestion of the Select Committee that the work should be undertaken by the Local Government Board, and there have been several suggestions that the National Service Department, which seems to be out of work, would be willing to undertake it. There is also a suggestion that the recruiting department should be independent of any other; and, finally, a suggestion that the advice of the Select Committee should be disregarded and the department retained as a section of the War Office, but reorganized with a larger civilian element in control and administration. Any civilian recruiting authority will be faced with an extremely difficult problem, and on the medical side it will only be possible to solve it completely by making the fullest possible use of existing medical organizations. As was pointed out last week, the work to be done has two aspects—the calling up of men for medical examination, and the medical examination itself, which must involve some primary classification. The first aspect has nothing to do with the medical profession, but it was the mistakes made by inexperienced recruiting officers in calling up for medical examination many men who were obviously unfit, and too many men for examination each day, so that they had to come day after day, that gave most of the substance to the agitation. The two points made by Lord Derby were that before any man came under

the authority of the military a civilian body should ascertain whether he could be spared from his civilian employment, and whether he were fit for any one of the various categories of service the army requires. The first point is not a medical question, the second is, but it raises military considerations. The chief difficulty of the medical profession at the beginning was that all the conditions were new; the medical examiners had no experience of the kind of work which recruits would be called upon to undertake in the various branches of the army. The old idea, that only men absolutely fit in every way could be utilized by the army, was given up long ago, as it was soon seen that on such a basis an adequate number of men would not be obtained, while numerous men would be rejected who could do useful work in the army in categories other than the fighting line. We believe that when Lord Derby's second point—that is to say, whether a man is fit for any of the various categories of service required by the army—is carefully considered, it will be seen that the presence of medical men having military experience on medical examining boards is a necessity. The mistake, it seems to us, has been that the presidents of these boards have been in so many instances retired regular medical officers unacquainted with civil conditions, and that sufficient use has not been made of Territorial medical officers and those who have held temporary commissions and gained experience during the last two or three years with the armies in the field. Another point is that the army authorities will have to arrange that when a recruit has been classified by a civilian board, he shall not after he has entered the army be put into a different category except at the direction of a properly constituted military medical board. On the whole it is fair to say, however, that the situation had been gradually improving, and would probably have been satisfactory by this time but for the interference of the Select Committee.

UNQUALIFIED PRACTICE OF DENTISTRY.

THE Departmental Committee appointed by the Lord President of the Council to investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act has held a preliminary meeting. The members are: The Right Hon. Francis Acland, M.P. (Chairman), Sir Almeric FitzRoy (Clerk of the Council), Sir Arthur Newsholme (Medical Officer of the Local Government Board), Sir George Newman (Chief Medical Officer of the Board of Education), Lord Knutsford, Mr. C. S. Tomes, F.R.S., Mr. W. H. Dolamore (President of the British Dental Association), and Mr. G. P. Blizard. Mr. F. N. O. Jerman, staff clerk of the Local Government Board, is acting as secretary. The subjects into which the committee are directed to inquire are: (1) The causes of the present inadequate supply of qualified dentists and dental surgeons. (2) The expediency of legislation prohibiting in the United Kingdom the practice of dentistry and dental surgery by unqualified persons; and, in the event of such legislation being deemed expedient, the conditions under which certain classes of unqualified persons at present engaged in the practice of dentistry might be permitted to continue in practice by the institution of a special roll for the purpose. (3) The practicability, without impairing the existing guarantees for the efficient practice of dentistry, of (a) modifying the course of study and examination prescribed for dental qualifications; (b) reducing the time occupied; (c) diminishing the cost of training dental students.

LORD RHONDDA AND A MINISTRY OF HEALTH.

LORD RHONDDA, in presiding on July 30th over a meeting of the National Baby Week Council, expressed regret at leaving the Local Government Board before he had completed the work which he had undertaken there. He repeated his public statement that before accepting the

post of Food Controller he had obtained a pledge from the Prime Minister that this unfinished work should not be thrown away. Relying on this promise, Lord Rhondda expressed his belief that before long, probably early next session, a bill would be introduced for the setting up of a Ministry of Health. He had no doubt that the pledge would be fulfilled, but those interested in the question must go to work to satisfy the Government that the overwhelming mass of public opinion was in favour of such a Ministry. The only opposition of which he was aware came from those claiming to represent certain approved societies; but he had received a very satisfactory letter from the Executive Council of the Association of Approved Societies dissociating themselves from any opposition to the proposals of the Government and forwarding a resolution in favour of the establishment of a Ministry of Health. This resolution, passed by the executive on July 18th, expressed the view that it is desirable in the interests of the health of the community, uninsured as well as insured, that immediate steps should be taken to set up a Ministry of Health, which would take over the principal health services, including the care of lunatics, feeble-minded, and inebriates; the medical profession, and midwives; the medical care of school children, and the administration of medical and sanatorium benefits; that the functions of the Insurance Commission should form an integral part of the work of this Ministry, and that approved societies should continue to administer sickness, disablement, and maternity benefits under the direction of the Minister of Health. Lord Rhondda expressed his pleasure at receiving this letter, but he was not fully satisfied that there were not some vested interests opposed to the proposal. In this matter the Government should be guided not by vested interests but by public opinion. In reply to a question as to the scope of the proposed bill, he said that the aim was to co-ordinate the activities of the various branches of Government departments now dealing with public health matters. The present overlapping of departments made for inefficiency, friction, and lack of economy. Regarding this bill as an urgent war measure, he had made it as short and as little complicated as possible. He had been informed on good authority that a thousand infant lives a week were lost that might be saved, and one of the means he proposed to remedy this was to co-ordinate the health functions of different departments of State; beyond this he had not proposed to go in the first instance. When the health activities of these various departments had been brought together under one head the way would be open for immediately improving the health of the country. A resolution in favour of the establishment of a Ministry of Health was unanimously carried by the National Baby Week Council, on the motion of Mr. E. B. Turner, seconded by Dr. Eric Pritchard. Two days later, in the House of Commons, Mr. Bonar Law, replying to questions from Sir William Collins and Major Chapple, said that the Government had not decided to establish a Ministry of Health, nor did they think it advantageous to set up a commission to consolidate the existing laws affecting questions of public health before the establishment of such a Ministry had been decided upon.

HOUSING.

The President of the Local Government Board has issued a circular to local authorities, asking them to state whether there is or is not need for further housing for the working classes in their area, and whether they desire financial assistance from the Treasury. It is recognized that for some time after the war many of the difficulties which have brought the building of such houses almost to a standstill will continue to prevail, and that throughout the period of the war there will be an increasing arrear of building to be subsequently overtaken. It is considered that the provision of such houses is one of the most

pressing of post-war problems for which immediate preparation should be made, and it is realized that private enterprise, to which was due approximately 95 per cent. of such building prior to the war, will be unable to grapple successfully and speedily with this arrear. The Government has therefore come to the conclusion that for the year, immediately following the war it will be necessary to rely far more than in the past upon local authorities to provide the houses required, with their road, water, and drainage accompaniments. The War Cabinet has approved the suggestion to afford substantial financial assistance from public funds to those local authorities prepared to carry through without delay at the conclusion of the war a programme of housing for the working classes approved by the Local Government Board. At the same time, Mr. Hayes Fisher recognizes that the complete solution of the housing problem is not likely to be accomplished except with the co-operation of private enterprise, including that of public utility societies, and that in order to secure full advantage of their help it may be advisable for the State to offer them assistance in one or other of the directions now under the consideration of a conference sitting at the Local Government Board. It is added that it is not possible at this stage to indicate either the form which the assistance to local authorities will take or its extent, but it is assumed that it will be available only for a limited period. About the urgency of the need for improved housing conditions in the majority of large and growing towns there is no room for doubt, and a sufficient number of mistakes have been made both by the Legislature and by local authorities to afford a large experience of the errors to be avoided. There is also the question of rural housing which has difficulties of its own. Housing legislation in the past has failed to achieve the beneficent object aimed at by its promoters mainly because the magnitude of the problem has not been appreciated, and the evil has been allowed to go on growing while the Legislature debated and hesitated. There is no indication in Mr. Hayes Fisher's circular of the expenditure the War Cabinet is prepared to contemplate, but it must be very large if the evil is to be abated and its growth stopped. The committee appointed to report upon the best methods of securing economy and dispatch in the provision of dwellings for the working classes in England and Wales consists, as to the majority, of architects, engineers, and other experts, with a dilution of members of Parliament, but there is no representative of the public health service, which would be surprising were it not so much in accord with the general custom of the Local Government Board. Its chairman is Sir J. T. Walters, M.P., who is a surveyor by profession.

PROPORTION OF FAT IN MILK.

A curious case, raising a question as to the regulation with regard to the minimum amount of fat in milk, was heard on appeal in the King's Bench Division on July 26th. It appeared that the respondent was the owner of one cow, which had recently calved; on a certain morning the cow had not been fully milked, some being left in it for the calf. The case arose on the sale of half a pint of the milk of the cow which was deficient in fat to the extent of 13 per cent., the actual percentage being certified to be 2.6 instead of 3 per cent., as fixed by the Sale of Milk Regulations, 1901. Four days afterwards, when the cow was completely milked, a sample taken contained 3.9 per cent. milk fat. The justices held that the deficiency was due to the manner in which the respondent had milked his cow, but held that as the milk had been sold as it came from the cow, without abstraction or addition, it was of the nature, substance, and quality demanded by the appellant, and dismissed the case. The Court of Appeal upheld the decision of the justices, but the Lord Chief Justice, after saying that the case was covered by the decision of *Hunt v. Richardson*, which was to the effect that when the product was sold as it came from the cow it was milk,

and that being so there was no offence on its sale, added an expression of his opinion that the arguments in the case had convinced him of the desirability of fresh legislation. The authorities should determine whether it was the intention of the legislature or of the departments which had the means of introducing amending Acts of Parliament that milk should be sold to the public, as it was in this case, with an undoubted deficiency in milk fat, the result being that the farmer could retain for himself the better quality, leaving to the public the inferior. Mr. Justice Atkin, in his judgement, added the observation that as things now stood a farmer was entitled by law to give preference to his own calves over the babies of his customers. The effect of the regulation and the decisions under it is that if milk does not contain 3 per cent. of milk fat there is a presumption that something has been added or abstracted, but that presumption may be met by evidence, and if a court is satisfied that it has been so met, then it cannot find that an offence has been committed.

PHARYNGITIS ARTEFACTA.

A CORRESPONDENT who has been reading the articles and the *EPITOME* on malingering published last week, calls our attention to a most extraordinary case of self-inflicted ulceration of the throat, reported to the Clinical Society of London in January, 1895. The patient was an unmarried lady, aged 36, who stated that she had been for four years suffering from an almost constant ulcerated sore throat, without difficulty in breathing or swallowing or any change in the voice. On examination it was seen that the mucous membrane of the soft palate, the uvula, the arches of the palate, and the tonsils, were affected in part by apparently submucous whitish infiltration, and in part by ulceration; in other parts the mucous membrane was bright red, in others denuded of epithelium, in others whitish shreds were seen, in others there were patches looking like diphtherial false membranes, and in others like the pricked and collapsed skins of blisters; other patches again were yellowish and even brownish in colour, as though strong nitric acid had been applied to them. Though syphilis and pemphigus suggested themselves, no definite idea could be formed as to the real nature of the disease, diphtheria even in its chronic form being excluded by the long duration. It was noted that the lesions terminated abruptly; neither in the nasopharyngeal nor in the oesophageal cavity, nor in the larynx could anything pathological be detected. When seen a fortnight later the patient considered her throat better, and though the condition on examination was similar in its general aspect the details were considerably altered. The most characteristic point was still the abrupt termination of the inflammation, with almost parallel borders both above and below, where the parts could cease to be accessible to the patient herself. A statement to the effect that the details of the appearances had much changed led the patient's mother to say that such changes frequently occurred from twelve hours to twelve hours. This confirmed the observer's conviction that the whole affection was self-inflicted. A private conversation with the mother then elicited the information that years before the patient had artificially blistered her breast and at one time blackened her face under the eyes in order to procure sympathy. It was also said that another surgeon who had been consulted had, on a second examination, become convinced that the ulceration was artificially produced. The patient denied the suggestion, though not with much indignation, and refused to go into a nursing home for observation. Six months later it was ascertained from the mother that the ulceration of the throat continued, and that the usual medical adviser of the family had also come to the independent conclusion that a sudden attack of whiteness of the throat and lips had been artificially produced, probably by silver nitrate. Protean as the morbid power of

invention of such patients is in discovering new forms of suffering for themselves in order to attract sympathy, we are not aware that either before or since has the throat been chosen as the locality for such self-inflicted injuries.

PETROL FOR MEDICAL PRACTITIONERS.

COMPLAINTS have been received from several medical practitioners, who have up to now received 60 or 70 gallons of petrol a month, that the new licences issued to them as from August 1st, limit them to 50 gallons a month—a quantity in their case quite inadequate for their professional needs. As the result of inquiries made at the Petrol Control Department, it appears that the position with regard to the petrol supply is now very acute. In consequence of the increasing shortage of petrol for civilian purposes the department is tightening up restriction all round, and medical practitioners must be prepared to go on shorter commons than ever. There is even a possibility that before very long the civilian supply of petrol will be cut off. Hitherto practitioners who proved that the allowance of 50 gallons a month was insufficient, have been able, as the result of the efforts of the British Medical Association, to obtain supplementary licences from the Petrol Department. No promise can now be obtained that the same arrangement will be continued, notwithstanding strong representations as to the need for maintaining the mobility of the remaining civilian practitioners by an adequate supply of petrol. As from August 1st, the Petrol Department will issue no new licences for more than 50 gallons a month; but it has promised to consider any case in which a practitioner can prove conclusively that the supply is inadequate; the Association will make every effort in such cases to induce the department to grant a supplementary licence.

Medical Notes in Parliament.

British Prisoners in Germany.

LORD NEWTON, who was one of the Commissioners at the conference with German Commissioners at the Hague, made a statement in the House of Lords on July 31st as to the agreements reached. All existing agreements are to be resumed as quickly as possible. The agreements as to exchanges are roughly these: (1) The exchange of civilians over 45; (2) the exchange of invalid civilians; and (3) the exchange of totally incapacitated combatants. These exchanges will, it is hoped, be resumed without any delay. Further, an agreement has been reached for more lenient schedules of disability with regard both to exchange and internment in neutral countries. Pending the conclusion of these schedules, those adopted between the French and German Governments will be utilized. Additional prisoners are to be sent to Switzerland, and to provide accommodation a certain number of men will be repatriated from Switzerland. Lord Newton was unable to give the number of men who could be accommodated in Switzerland—he could not say more than a few hundred.

Punishments are to be much diminished. For an ordinary attempt to escape the punishment would only be two weeks, and in aggravated cases would not exceed two months. Reprisals having been exercised on British prisoners of war on the alleged ground that excessive punishment had been awarded to German prisoners in Great Britain for attempting to escape, the German delegates undertook the release from punishment of all British prisoners confined under this provision. It had further been agreed that all punishments inflicted upon either civilian or military prisoners prior to August 1st shall be remitted until the conclusion of the war. As to the future it had been agreed that reprisals shall only take place after at least four weeks' notice. In cases of great urgency and importance a personal meeting will if necessary be arranged at the Hague. On complaints as to delay in the delivery of parcels the principal German delegate had explained that much of it had occurred through the necessity for an extremely strict censorship, due to the discovery in many parcels sent to prisoners of war—not necessarily British—of what were known as

instruments of *sabotage*. Both Governments had agreed to issue a notice in their own and the foreign press deprecating such practice and the German Government had undertaken, as soon as the form of words had been agreed upon, to make a large relaxation of the censorship. On complaints by the British delegates as to delay in the notification of captures the parties had agreed that captures should be notified with the least possible delay and that every prisoner should be provided with the means of communicating at once with his relatives. Minor agreements covered the treatment of youthful prisoners and the exchange of ministers of religion and of civilian doctors.

Lord Newton afterwards explained the agreement reached for the internment of a large number of prisoners, both military and civil, in Holland. The Netherlands Government had offered to put 16,000 places at the disposal of the two Governments. Of these places, 7,500 are to be allotted to invalid combatants, 6,500 to officers and non-commissioned officers who have been for eighteen months in captivity, and 2,000 to civilian invalids, of whom 1,600 will be Germans and 400 British. The British delegates asked that privates should be included among the men to be interned in a neutral country on the ground of eighteen months' captivity, but there were two difficulties: First, it would have been practically impossible to include all the privates eligible, and, secondly, the Germans did not intend to part with any one out of whom they could get work. Officers and non-commissioned officers could not be set to work, but the men could. It could not be said, however, that the private soldiers had been excepted from benefits. Nearly all the seven thousand invalid combatants would probably be privates, and privates would be exchanged under the agreements already prevailing. Lord Newton explained also the apparent disproportion as between Germans and British in the civilian figures. Taking the proportion of the civilian prisoners of the two countries, this agreement really worked out in our favour because there were something like six or seven times as many German civilians in this country as British civilians in Germany. There was this further provision that whereas it might be difficult to discover 400 British civilians sufficiently ill to come within the agreement, it had been stipulated that if this number could not be found the number should be made up to 400 by taking men whose health had been less tried. Lord Newton added in regard to the exchange that the Germans at first suggested Southwold as the place of exchange. That was quite unsuitable and the British delegates suggested a port on the Thames. The Germans pronounced that impossible. As an alternative, Holyhead was mentioned by our Admiralty, but since then Sir Edward Carson had arranged, subject to German concurrence, that Hull should be the port.

Speaking generally of impressions derived from the conference, Lord Newton gave the opinion that the authorities in Berlin did not know a great deal of what was going on in the camps.

Army Medical Arrangements in Mesopotamia.—Major Hunt asked Mr. Macpherson, on July 26th, what provision had been made for the transport of sick and wounded since the disclosures in the report; whether there were suitable motor ambulances, launches, and hospital ships with shallow draft for use on the Tigris and Euphrates; was there ice-making machinery for the hospitals from Basra to our further point about sixty miles north of Baghdad; and what means of locomotion was provided for the medical officers who required to visit the hospitals and different stations. Mr. Macpherson, in reply, said that the question raised points which could not be suitably dealt with by means of question and answer, but he was collecting the desired information, and would be happy to show it to Major Hunt when it was ready.

Naval and Military Pensions (Mesopotamia).—Colonel Yate asked what pension the widows and children of officers who died during the siege of Kut would be entitled under the new Royal Warrant; and to what pension the widows and children of officers who died of cholera and other diseases during the operations in Mesopotamia previous to April of this year would be entitled. Sir A. Griffith-Boscawen replied that in cases where the illness causing

the officer's death was directly traceable to fatigue, privation, or exposure incident to active operations, whether under the first or the second part of the question, the pensions to the widows and children would be, before April 1st, on the scale known as the "intermediate," and after April 1st on the scale known as the "highest." The rates were fully set forth in the scale of the new warrant. The rates for the family of a captain or subaltern would be £75 for the widow and £20 for each child before April 1st, and £100 for the widow and £24 for each child after that date. Colonel Yate asked whether it was to be understood that the dependants of those who died in Kut and in the epidemics about the same time in Mesopotamia would not come under the benefits of the new warrant. Sir A. Griffith-Boscawen replied certainly not. If the death is due to fatigue, privation, or exposure incident to active operations, they will come under the provisions of the new warrant, but the new warrant dates, as regards the scale, from April 1st. The pension, therefore, will be at the old rate up to April 1st, and at the new and higher rate after April 1st. Colonel Yate: Then as Kut happened before April 1st this year, the persons concerned will not get the benefit of the new warrant? Sir A. Griffith-Boscawen: Yes, they will.

Royal Army Medical Corps.—Mr. Arthur Samuels asked Mr. Macpherson whether attention had been called to the dissatisfaction felt by the temporarily commissioned officers of the Royal Army Medical Corps with the new form of contract for an indefinite term of service which they were now being asked to sign; and whether owing to such dissatisfaction temporarily commissioned officers had declined to continue their services under the new form of contract. Mr. Macpherson replied that renewal for the period of present emergency applied only to those medical men who came under the provision of the Medical Service Act, and the terms of the contracts brought them under only the same conditions of service as other civilians who were liable under this Act.

The Percentage of Tribunal Appeals.—Mr. Hayes Fisher, in a written reply to Mr. Ferens, states that 2,190 appeals in all have been received by the Central Tribunal since the first Military Service Act came into force. Full information was not available as to the proportion that such total bore to the number of appeals heard by the Local Appeal Tribunals. From information lately received, however, it appeared that an appeal had been made to the Central Tribunal in about 1 per cent. of the cases dealt with by the Appeal Tribunals.

The Growth of War Pensions Work.—Mr. Barnes, in reply to a question by Mr. Gilbert as to complaints of delay in fixing pensions for men discharged from the army and navy, has made a remarkable statement as to the growth of the work of the Pensions Board. He said that the weekly payments had now been authorized to close upon 750,000 men, women, and children. The number of renewals each month was reaching into tens of thousands. The new arrangements for treatment also involved much careful work in a great number of cases, and the preparation of cases for the new Appeals Tribunal promised to add still further to the burden. Mr. Barnes said he had a staff of 3,500, consisting almost entirely of women. None had any pre-war experience of the subject and most had little more than a year's service. The majority of cases of real delay were those in which the finding of the medical board on the man's discharge had not been favourable to him, and inquiries had been set on foot to make sure that no element of doubt in his favour had been left unconsidered.

Institutional Treatment for Invalided Soldiers.—Mr. Pike Pease, answering on behalf of the Pensions Minister, questioned by Mr. Jowett, said that under Article 6 of the new Royal Warrant special allowances equivalent to pension for the highest degree of disablement were payable during a period of treatment or training, and when such treatment was given in an institution a deduction from the allowance was authorized to be made towards the cost of an invalided soldier's maintenance. This deduction had been fixed at the uniform rate of a shilling a day whatever the actual cost of the man's maintenance and treatment might amount to. It left the man, if a private, 20s. 6d. a week for himself, and, in addition, allowances were paid to his wife for herself and the children, or to dependants. This appeared a generous provision, and the Minister was not, on the facts presented by Mr. Jowett prepared to increase it.

Enemy Alien Doctors.—Mr. Macpherson stated, in reply to Mr. King, that enemy alien doctors had been employed to some extent in doing duty in prisoners' camps, but not with very satisfactory results.

THE WAR.

PRIMARY EXCISION AND SUTURE OF GUNSHOT WOUNDS.

EVIDENCE that the plan of primary excision and suture of gunshot wounds, elaborated by British surgeons and practised by them during the last two years in a large proportion of cases, is finding favour with German surgeons is afforded by a recent report by Oberstabsarzt Dr. Hufschmid and Dr. Eckert based on an experience of 207 cases.¹ They explain that the method rests on the fact, clinically and experimentally established, that infection is for at least six hours after wounding a purely local process limited to a few millimetres beneath the wound surface. They consider that this period may safely be extended to forty-eight hours, and they have successfully operated even as late as ninety-six hours after the infliction of the wound. In the earlier cases comparatively simple and readily accessible superficial wounds were chosen, but the method was soon extended with equal success to deep and complicated wounds. The suffering of the patient was greatly reduced, the healing process shortened, and a linear scar obtained in most cases. The chief objection made against simple wound excision has been that the resulting large wound surface greatly lengthened the period of healing; the addition of primary suture has more than neutralized this objection. The technique was simple in principle, the essential point being that in excising the wound the knife should throughout be kept strictly to the healthy tissues, and an endeavour made to separate the whole wound surface entire, as in the excision of a growth. As a rule, the incision was made at least 1 cm. distant from the wound surface, but in the case of muscle 2 to 5 mm. sufficed, and in bone the practice was to chisel away 2 to 3 mm. only. The clean wound thus obtained was then closed, the muscle and fasciae separately with catgut, the skin with silk. As a preliminary to excision, the extent and direction of the track by a probe was ascertained as accurately as possible. In cutaneous and subcutaneous perforating wounds and wounds with retention of the projectile, after dividing the skin over the track with scissors the entire wound surface was separated as a whole by incision in the healthy tissue around. In deeper wounds involving the muscles, whether segmental or oblique, with lodgement of the projectile, it was often impossible to remove the wound in one piece. In such cases the skin and subcutaneous tissue were first incised over the track, and the incision then carefully continued through fascia and muscle, keeping parallel to the wound surface in the healthy tissues and avoiding the wound itself as far as possible. In more superficial wounds it was often possible in this way to carve out the wound entire in a shell of healthy tissue. When, however, the wound cavity was unavoidably opened the main bulk of the separated muscle was removed and the farther course of the track and smaller pockets of the wound isolated with scissors and forceps. In vertical wounds with retention of the projectile the aperture of entry was first enlarged in the direction of the muscle fibres, so as to open up the whole track in the form of a funnel; excision was then proceeded with. In deep perforating wounds of the extremities the track was not opened up, but the canal excised by working from the apertures of entry and exit, and the wound closed except for the insertion of a tube. In many cases of this kind primary suture was omitted; in other cases extensive loss of substance rendered complete closure impossible, and the wound was closed as far as possible at either end and left open in the middle. Where bone formed part of the wound surface a thin layer was carefully chiselled away or removed with the sharp spoon.

The method was not considered applicable to wounds in which phlegmon was already present, nor where the excision would involve injury to important organs. A wound of a flat bone, if not too extensive, was not a contraindication (the authors' observations did not include complete fractures of the long bones, nor injuries to joints), but in injuries of the hand and foot bones the radical removal of the wound surface was often difficult and

generally the skin remaining was insufficient for primary closure. Excision without primary suture was also adopted in situations, such as the distal parts of the limbs, where there was danger of infection of the tendon sheaths; and the same applied to wounds adjoining large vessels and nerves, complete excision of the wound surface being often impossible. In all cases where the musculature rendered immobilization difficult a drainage tube was inserted between muscle and subcutaneous tissue.

The following case illustrated the method:

Grenade wound of right buttock twelve hours previously, measuring 5 by 12 cm.; subjacent muscle lacerated; segmental wound of left buttock 15 cm. long; aperture of entry 2 cm., of exit 5 cm.; muscles extensively lacerated down to the bones. Segmental wound of left gluteal fold 20 cm. long; aperture of entry 1 cm., of exit 3 cm.; muscle lacerated for a depth of 3 cm. Segmental wound of left loin 11 cm. long; apertures of entry and exit 2 cm.; muscles of the back lacerated for a depth of 1 cm. Wide excision of all wounds after laying open the tracks; muscle, fascia, and skin sutured separately. Drainage tube inserted in one wound. Sutures removed on the tenth day. All wounds healed uninterruptedly, with smooth linear scars.

The following case, in which more conservative treatment was adopted in the first instance, was also of interest:

Segmental wound of buttock from anus to trochanter, received eight hours previously. On account of the thick layer of muscle covering the track division of the muscle, with excision and suture, was not adopted; the apertures of entry and exit were excised and drainage tubes inserted. Two days later gas gangrene developed. The whole thickness of muscle was then divided and the diseased tissues thoroughly excised. The infection was arrested, with loss of fully half the musculature of the buttock. After this experience the authors never hesitated to divide a muscular layer, however thick.

HONOURS.

A SUPPLEMENT to the *London Gazette*, issued on July 26th, contains a further list of honours for conspicuous gallantry and devotion to duty in the field. The list includes the following medical officers:

D.S.O.

Temporary Captain Harold Saunderson Sugars, M.C., R.A.M.C.
He showing magnificent disregard of personal safety in attending to the wounded under heavy fire for five days. On the fifth day his leg was broken, but this did not prevent him from going through heavy shell fire to save the life of a corporal whose main artery had been cut, and who required immediate attention. His fearlessness in crossing the open under continuous and heavy fire to save life or to alleviate suffering was most marked.

Second Bar to Military Cross.

Temporary Captain Allen Coulter Hancock, M.C., R.A.M.C.
He established his advanced dressing station in the village, although it was under very heavy shell fire. He attended and evacuated a very large number of wounded, working all night, finally going out himself along the front to see if there were any left. M.C. gazetted December 11th, 1916; first bar February 15th, 1917.

Bar to Military Cross.

Temporary Captain Clarence Randolph Young, M.C., M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty in attending to the wounded under heavy fire with the utmost disregard for his own safety. The trench in which he had established his forward dressing station was blown in in many places by intense hostile barrage, which continued for an hour. His example had a powerful effect on all the stretcher-bearers, and it was entirely due to his resource and coolness that all the wounded were safely evacuated. M.C. gazetted November 14th, 1916.

Military Cross.

Captain Arthur Chester Armstrong, C.A.M.C.
He displayed great courage and determination in tending the wounded under very heavy fire. His devotion to duty saved many lives.

Lieutenant Ivor Aubrey, R.A.M.C.(S.R.).

He led a party of bearers through heavy shell fire, and collected and dressed wounded all night. This work he carried on in daylight under observation from the enemy and fire, carrying back an officer on his back from the enemy wire.

Temporary Captain John Dorrington Batt, R.A.M.C.

For conspicuous gallantry and devotion to duty in digging out a number of men who had been buried by a shell. Whilst doing so another shell killed and wounded all who were there, and he was partially buried himself. He continued his work of rescuing other men and dressing their wounds regardless of all danger.

Captain William Mervyn Biden, M.B., R.A.M.C.(S.R.)

His organization for the evacuation of the wounded was admirable. With total disregard of danger he personally supervised the stretcher parties, who worked in daylight in full view of the enemy.

Temporary Captain Maurice Smith Bryce, R.A.M.C.

On three occasions he walked through the enemy barrage to the captured trenches, where he treated the wounded and took them back to the field ambulance. He set a splendid example by his fearlessness and devotion to duty.

¹ Bruns's *Kriegschir.*, Heft 36, 1917, p. 147.

Captain (acting Major) Harold Buck, C.A.M.C.

He led his bearers with great gallantry and was responsible for the evacuation of a large number of wounded men. He set a fine example to all ranks.

Captain Alva Burton Chapman, C.A.M.C.

One of our planes being shot down he went to the assistance. On his way he was wounded in the head. He continued on his way to the machine, which was being heavily shelled, attended to one of the occupants, and had him carried away.

Temporary Captain Claude Norman Coad, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in proceeding alone, under intense enemy barrage, to the aid of a wounded officer, whom he brought safely back under circumstances of the greatest personal risk over ground swept by enemy fire. He spent the night in No Man's Land, displaying the highest courage and devotion to duty in evacuating the wounded under continual heavy fire.

Captain Waring Gerald Cosbie, C.A.M.C.

He led his bearers into the open under heavy fire, and rescued many wounded men. He worked continuously for forty-eight hours under very heavy fire.

Captain William Creighton, C.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. He took command of a party and searched for wounded for six hours under heavy shell fire, bringing in all our wounded as well as those of the enemy. His gallantry was most inspiring to his men.

Captain Robert Scott Cumming, M.B., R.A.M.C. (S.R.).

For thirty-six hours he worked continuously in evacuating and dressing wounded under heavy shell fire. Throughout he set a magnificent example to those under him.

Temporary Captain Otto de Muth, M.D., R.A.M.C.

For conspicuous gallantry and devotion to duty whilst attending to the wounded under very heavy fire. His initiative and total disregard of danger enabled the evacuation of the wounded to be successfully carried out during a very trying period. No personal danger seemed too great for him to face in the performance of his duties.

Temporary Captain Herman Gerald Dresing, R.A.M.C.

After being shelled out of his dressing station, he took up another position, and continued throughout the day, and performed operations under heavy shell fire, which was causing continual casualties around him.

Temporary Captain Alexander Galletly, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in taking bearer parties forward under heavy fire to collect wounded from a front line trench. His conduct throughout was admirable. He was continuously on duty for forty-eight hours.

Temporary Captain James Gaston, M.B., R.A.M.C.

He attended the wounded of five other units beside his own throughout the day. The next day he led a party out in front and recovered twelve more wounded who were lying out. Throughout he set a splendid example to all.

Temporary Captain George Charles Gaynor, R.A.M.C.

He showed magnificent disregard of danger in going constantly through heavy barrage to fulfil his medical duties, greatly assisting and encouraging all ranks by his example. He has on previous occasions performed similar gallant work.

Temporary Captain Austin Charles Giles, R.A.M.C.

Though suffering severely from gas poisoning, and unable to stand without assistance, he continued for many hours to attend to wounded and gassed men, refusing to rest himself till all had received attention.

Captain William Hale (junior), C.A.M.C.

He established a dressing station in a forward area, and worked untiringly for sixty hours under fire, dressing the wounded. He set a fine example of courage and determination.

Temporary Captain Robert Hannah, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded under very heavy shell fire. He also made four journeys into No Man's Land, under shell, rifle, and machine-gun fire, and brought in the wounded and attended to them. He set a magnificent example of fearlessness to the men.

Temporary Captain Ronald Hodson, M.B., R.A.M.C.

When in charge of the bearers he ensured the rapid clearance of wounded by closely following the advance of shell fire. Throughout he set a fine example of coolness and courage.

Captain Edward Shapter Jeffrey, C.A.M.C.

Under continuous shell fire he directed and steadied the stretcher parties. His fine example and courage enabled all wounded to be cleared before daylight.

Captain Richard Wellington Kenny, C.A.M.C.

He unceasingly attended wounded in his dressing station. He improvised an additional station in an adjacent trench and carried on his work under shell fire. He has done previous good work in the same capacity.

Captain Charles Kerr, C.A.M.C.

He continually exposed himself to heavy fire, with the result that every wounded man was cleared as soon as his wounds were dressed. He has on several occasions shown most unselfish devotion in the care of wounded.

Captain Maurice Bertram Lawrie, S.A.M.C.

At great personal risk he established and carried on an advanced bearer post. He gave a fine example of courage to those under him in the face of heavy shell fire in clearing the forward area of wounded.

Temporary Captain William Leslie, M.B., R.A.M.C.

For six days he was at the A.D.S., which was shelled almost continuously. His work had to be done out in the open, where there was very little cover, owing to the accumulation of cases. His work throughout deserves the highest praise.

Temporary Captain Joseph Paterson Lusk, M.B., R.A.M.C.

He attended the wounded where they fell by the enemy trench under very heavy fire. His disregard of self and consideration for the wounded set a splendid example to all.

Temporary Lieutenant James Wallace Macfarlane, M.B., R.A.M.C.

He went through a heavy gas shell fire to dress a wounded man. Finding it impossible to perform this work with the gas mask on, he removed it at great risk and completed his task before putting it on again.

Temporary Captain Robert John Bowman Madden, R.A.M.C.

He worked continually for thirty hours under heavy fire leading and organizing stretcher-bearers. Throughout he set a splendid example.

Captain Robert Paul Scott Mason, R.A.M.C.

For conspicuous gallantry and devotion to duty in tending the wounded of several batteries. To do this he had to pass through very heavy shell fire, and on this, as on previous occasions, he showed absolute disregard of personal danger.

Captain Samuel McCausland, R.A.M.C.

Under very heavy and continuous shell fire he systematically searched from cellar to cellar of a village until he had successfully cleared his part of the village of all wounded. These included many who had been lying there for days, and who could not be moved owing to the intensity of the enemy barrage. He worked unceasingly amidst conditions of the greatest possible danger for thirty hours.

Captain Hugh Roy Mustard, C.A.M.C.

For conspicuous gallantry and devotion to duty in dressing the wounded of a battery in the open, exposed to heavy shell fire, for two hours. He then continued at an exposed post for three days dressing wounded, and he has on several occasions exhibited great courage and devotion of the same kind.

Temporary Captain Archibald Gladstone Naismith, M.B., R.A.M.C.

When supervising the erection of an A.D.S. he was knocked down and stunned by a shell which wounded most of the party. On recovery he at once attended to the wounded, and remained until this was completed.

Temporary Captain Kenneth Montague Nelson, R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded with the utmost fearlessness under heavy shell and machine-gun fire. He constantly went out to our most advanced positions in aid of the wounded, and his careful search of the battlefield resulted in most of the more serious cases being found and brought back to the dressing station. His unselfish devotion was directly the cause of many lives being saved.

Temporary Captain William Bentley Purchase, R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to a wounded driver, with whom he remained under heavy shell fire until he died, having ordered two of his men to go to a place of safety. He had previously showed exceptional bravery and promptness in responding to a call for medical help earlier in the day, when four officers had been killed by shell fire in the battery.

Temporary Captain Arthur Carlile Sturdy, F.R.C.S., R.A.M.C.

He attended wounded for many hours under heavy fire. He showed a complete disregard for danger in organizing search parties, and recovered wounded who had been left for several days.

Captain Donald George Kennedy Turnbull, C.A.M.C.

He showed continual fearlessness and splendid devotion in making his way under the heaviest fire to the most advanced parts of the battlefield to establish dressing stations and attend to the wounded. No undertaking seemed too perilous for him; he constantly dressed wounded in the front line, and the example he set to his stretcher-bearers and carrying parties was at all times beyond all praise.

Captain Joseph Stephen Wallace, R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of bearing parties, in so organizing and handling his stretch-bearers amidst heavy shell and gas barrage that a very large number of our wounded were brought into safety. His conduct was conspicuous throughout for coolness, good judgement, and total disregard of danger. He had been knocked out by gas the day before, but insisted on remaining at his post.

Captain John Rollo Noel Warburton, R.A.M.C.

He showed great courage and devotion in his treatment of wounded. The press of cases was very heavy, and he worked all night and the next day.

Temporary Captain John Victor Williams, M.B., R.A.M.C.

He took a party of bearers up, and, crossing the open under very heavy shell fire, dressed all the wounded and returned with them, going out later and coming in with the lost squads. He worked for four nights and days.

A bar to the D.C.M. has been awarded to one non-commissioned and one private of the R.A.M.C., and the D.C.M. to several non-commissioned officers and privates of the R.A.M.C.

A supplement to the *London Gazette* issued on July 23th, containing a further list of non-commissioned officers and men who have been awarded a bar to the Military Cross, includes a number of members of the R.A.M.C.

OFFICERS COMMENDED.

A supplement to the *London Gazette* published on July 27th contains a list of officers whose names have been brought to the notice of the Secretary of State for War for distinguished services rendered in connexion with the war. The following medical officers are included in the list:

Surgeon-Generals: J. C. Culling, A.M.S., R. H. Quill, M.B., ret. pay, late A.M.S.

Colonels (temporary Surgeon-Generals): R. S. F. Henderson, M.B., K.H.P., A.M.S., M. T. Yarr, C.B., F.R.C.S.I., A.M.S.

Colonels: Sir R. N. Campbell, K.C.M.G., C.B., C.I.E., ret. I.M.S., C. A. Hodgets, C.M.G., C.A.M.C., D. W. McPherson, C.A.M.C., Sir J. Magill, K.C.B., M.D., ret. pay, R. J. Millard, C.M.G., A.A.M.C., A. Peterkin, M.B., ret. pay, late A.M.S., G. S. Rennie, C.A.M.C., R. J. S. Simpson, C.M.G., M.B., ret.

pay, A.M.S., C. R. Tyrrell, C.B., ret. pay, A.M.S., D. Wardrop, C.B., C.V.O., M.B., ret. pay, A.M.S.

Honorary Colonel C. J. Bond, Consulting Surgeon, Northern Command.

Temporary Colonel James Galloway, C.B., M.D., F.R.C.P., F.R.C.S., A.M.S.

Surgeon-Lieutenant-Colonels and Honorary Surgeon-Colonels D. Hepburn, M.D., R.A.M.C., R. J. Reece, C.B., M.D., H.A.C.

Surgeon-Lieutenant-Colonel Sir W. R. Crooke-Lawless, C.B., C.I.E., M.D. (Res. of Off.).

Lieutenant-Colonel and Brevet Colonel Sir B.G. Seton, Bt., C.B., I.M.S.

Lieutenant-Colonels J. Chaytor-White, C.M.G., M.D., ret. I.M.S., J. M. Cotterill, M.B., F.R.C.S., R.A.M.C., Sir P. J. Freyer, K.C.B., M.D., I.M.S. ret., D. Harvey, M.D., R.A.M.C., W. T. Hayward, C.M.G., A.A.M.C., T. E. V. Hurley, C.M.G., A.A.M.C., H. Littlewood, F.R.C.S., R.A.M.C., J. N. MacLeod, C.M.G., C.I.E., M.B., F.R.C.S., ret. I.M.S., B. E. Myers, M.D., N.Z.M.C., F. F. Perry, C.M.G., C.I.E., F.R.C.S., ret. I.M.S., G. S. A. Ranking, M.D., R.A.M.C., late I.M.S., J. C. Robertson, C.I.E., M.B., I.M.S., S. B. Smith, C.M.G., I.M.S., T. H. Sweeney, C.M.G., F.R.C.S.I., ret. I.M.S., W. Turner, ret. R.A.M.C.

Temporary Lieut.-Colonels: W. N. Barron, M.V.O., R.A.M.C.; W. L. W. Marshall, R.A.M.C.

Temporary hon. Lieut.-Colonel M. H. Gordon, C.M.G., M.D., R.A.M.C.

Majors (temporary Lieut.-Colonels): H. T. D. Acland, F.R.C.S., N.Z.M.C.; D. S. Wylie, M.B., F.R.C.S., N.Z.M.C.

Major and Brevet Lieut.-Colonel (temporary Brigadier-General) A. C. Geddes, C.B., M.D. (Unattached List, T.F.)

Majors: G. A. D. Harvey, C.M.G., R.A.M.C.; P. S. O'Reilly, C.M.G., R.A.M.C.

Temporary Major A. D. Reid, C.M.G., R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Died of Wounds.

CAPTAIN W. A. SNEATH, M.C., R.A.M.C.

Captain Wilfrid Archer Sneath, M.C., R.A.M.C., was reported as having died of wounds in the casualty list published on July 26th. He was educated at the Victoria University, Manchester, where he acted as demonstrator of anatomy, and graduated M.B. and Ch.B. in 1910, also taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912, and the F.R.C.S.Eng. in 1913. After filling the post of house-surgeon at Manchester Royal Infirmary and at the Seamen's Hospital, Greenwich, he went into practice at Ashton-under-Lyne. He took a temporary commission as lieutenant in the R.A.M.C. on September 11th, 1914, was promoted to captain on completion of one year's service, and received the Military Cross on September 22nd, 1916.

Died on Service.

TEMPORARY SURGEON E. S. CALTHROP.

Temporary Surgeon Edward Spencer Calthrop, R.N., died in London on July 30th, of toxic neuritis. He was the second son of the late Mr. Edward Calthrop, and was educated at Charing Cross Hospital, taking the M.R.C.S. and L.R.C.P.Lond. in 1909, and the M.B. and B.S.Lond. in 1910. He took a temporary commission as surgeon in the Royal Naval Division in 1914.

LIEUT.-COLONEL F. J. C. HEFFERNAN, R.A.M.C.

Lieut.-Colonel Francis Joseph Christopher Heffernan, R.A.M.C., was reported as having died on service, in the casualty list published on July 26th. He was born on June 4th, 1874, educated in the medical school of the Royal College of Surgeons in Ireland, and took the diplomas of L.R.C.S.I. and L.R.C.P.I. in 1897, and the F.R.C.S.I. in 1902. Entering the R.A.M.C. as lieutenant on July 27th, 1898, he became captain on July 27th, 1901, major on April 27th, 1910, and lieut.-colonel on March 1st, 1915. He served in Africa in 1901, in the expedition on the Gambia river, and received the medal and clasp.

LIEUTENANT S. C. ELLISON, R.A.M.C.

Lieutenant Samuel Charles Ellison, R.A.M.C., was reported as having died on service, in the casualty list published on July 26th. He was educated at the universities of Belfast, where he gained a medical scholarship, and of Edinburgh, where he graduated M.B. and Ch.B. in 1902, and M.D. in 1904, after which he went into practice at Small Heath, Birmingham. He died, we understand, within a week of landing in Egypt. His death has caused

very great regret in Small Heath, where his qualities were highly appreciated. He had only recently taken a temporary commission in the R.A.M.C.

LIEUTENANT J. S. MUNRO, M.B., Ch.B., R.A.M.C.

A Correction.

The casualty list published on July 26th contained the name of Lieutenant J. S. Munro, M.B., R.A.M.C., and in preparing the list printed in our issue of last week it was unfortunately assumed that the notice referred to Dr. James Sutherland Munro of Pendleton, whereas it referred to his brother Dr. John Sutherland Munro, who graduated M.B., Ch.B.Edin. in December, 1916, and took a commission as temporary lieutenant in the R.A.M.C. on January 20th, 1917.

R. C. TWEEDY, M.D.

Dr. Reginald Carlyon Tweedy died at Newquay, Cornwall, on July 12th. He was educated at St. Bartholomew's Hospital, took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1892, and the degree of M.D.Durham in 1913. After acting as house-surgeon of Birmingham General Hospital, and senior resident medical officer of the Seamen's Hospital, Royal Albert Docks, he went into practice at Kenilworth, where he was honorary medical officer of Kenilworth Convalescent Homes, and certifying factory surgeon. During the present war he had served as surgeon to Lady Sykes's French Red Cross Hospital at Dunkirk, and held a commission as temporary major in the R.A.M.C.

Wounded.

Staff Surgeon E. L. Atkinson, R.N.

Lieut.-Colonel A. W. F. Sayres, R.A.M.C.(T.F.).

Captain P. W. Edwards, R.A.M.C.(S.R.).

Captain F. Ellis, R.A.M.C.(T.F.).

Captain E. L. Graves, Australian A.M.C.

Captain H. H. Hepburn, R.A.M.C. (temporary).

Captain R. A. Ireland, Canadian A.M.C.

Captain J. W. Linnell, R.A.M.C. (temporary).

Captain E. Mansfield, R.A.M.C. (temporary).

Captain C. G. Skinner, R.A.M.C. (temporary).

Wounded and Missing.

Captain E. D. F. Hayes, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Browne, Arthur Davies Lang, Lieutenant Connaught Rangers, younger and only surviving son of Colonel A. Lang Browne, A.M.S., Ilminster, Somerset, killed recently. He received his commission in December, 1915, and had served in Mesopotamia and in France. His elder brother, Captain John Agnew Lang Browne, Queen's Royal West Surrey Regiment, was killed at Festubert on May 17th, 1915.

Dick, James Douglas, Captain R.N., commanding H.M.S. Vanguard, son of Sir James Nicholas Dick, K.C.B., Medical Director-General of the Royal Navy from 1888 to 1898, killed when the Vanguard was blown up on July 9th, aged 45. He joined the navy as a midshipman on January 1st, 1887; became captain on December 31st, 1908; and had commanded H.M.S. Black Prince for a year before he was appointed in January, 1916, to the Vanguard, which he commanded in the battle of Jutland on May 31st, 1916.

Fleming, Ernest Cole, Major Royal Field Artillery, youngest son of the late Dr. W. J. Fleming, killed July 18th. He was born in May, 1834; entered the R.F.A. from Woolwich in July, 1903; became captain on January 30th, 1914; and had recently been promoted to major. He received the Military Cross last January.

Jefferson, Ingleby Stuart, Lieutenant R.N., elder son of Dr. W. D. Jefferson, Medical Officer of Health, Ripon, killed July 21st, aged 24. He was educated at Aysgarth School, Yorkshire, and had received the Royal Humane Society's medal for rescuing a soldier from drowning.

Laxton, Archer Benjamin, Second Lieutenant Royal Field Artillery, second son of the late Mr. T. L. Laxton, formerly surgeon-major Staats Artillerie, Pretoria, killed July 21st, aged 19. He received his commission in August, 1916.

Pasteur, William Raymond, M.C., Captain Royal Field Artillery, only son of Colonel William Pasteur, A.M.S., killed July 10th. He got his first commission on November 17th, 1914.

Welsh, C. C., Captain Royal Field Artillery, elder son of Dr. Welsh of Biggleswade, killed July 17th, aged 27. He got his first commission on February 27th, 1915.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

England and Wales.

HEALTH AND EYESIGHT OF LONDON SCHOOL CHILDREN.

IN 1915 the London County Council decided, as a matter of war economy, that instead of all children being subjected to a thorough medical examination on entering elementary schools, only those specially selected by the teachers, and those who from their general appearance were considered by the inspecting doctor to need detailed examination, should be so examined. At the meeting of the Council on July 31st the Education Committee reported that the annual report of the school medical officer for the year 1916 had made it plain that the new methods of inspection had proved unsatisfactory, and that a certain number of children suffering from hidden defect had escaped notice. The school doctors also experience a certain amount of strain in examining thirty children during a session. The Council decided to revert to the former methods of medical inspection, and authorized the appointment of additional school doctors to meet the need. In 1915 the Council decided that no further action should be taken with regard to the provision of additional schools for children suffering from high myopia. It was now reported that 325 children were awaiting admission to such schools, and it was decided that the provision of further accommodation for myopic children was a matter of urgent importance, that the former resolution be rescinded, and that special accommodation for myopic children be provided in thirteen classes in eleven different centres.

HEALTH OF LONDON IN 1916.

The medical officer of health for the county of London, Dr. W. H. Hamer, has issued his report for the year 1916, together with his report as school medical officer for the same period. The health of London during 1916, when more water in a literal sense flowed under London Bridge than in any year since 1883, compares favourably with that during 1915, in which the weather was almost as wet. The unusual rainfall of the past seven years, Dr. Hamer states, has unquestionably exercised a considerable influence upon the public health. The two reports are as usual bound together in the familiar orange cover, but the number of pages is greatly reduced. We hope to consider the more noteworthy conclusions in an early issue of the JOURNAL.

Scotland.

PARLIAMENTARY REPRESENTATION OF EDINBURGH AND ST. ANDREWS.

SIR WILLIAM WATSON CHEYNE, F.R.S., has accepted the invitation of a representative committee of the constituency to become a candidate for the vacancy in the parliamentary representation of the universities of Edinburgh and St. Andrews, caused by the elevation of Sir Christopher N. Johnston, K.C., to the judicial bench. In his address, published in full in our advertisement columns, Sir Watson Cheyne states that he has always belonged to the Conservative and Unionist party in politics, and will continue to associate himself with that line of political thought; but he adds that at the present time, when we are struggling for our very existence, party politics must be put completely in abeyance, and all must devote their energies to the task of defending the country from an utterly unwarranted attack, and of retaining our most cherished freedom. He will therefore give his whole-hearted support to the present Government in the noble struggle in which we are engaged. Sir Watson Cheyne graduated M.B., C.M. at Edinburgh in 1875. He had been Lister's house-surgeon at the Edinburgh Royal Infirmary, and when Lister became professor of clinical surgery at King's College, London, in 1877, Sir Watson Cheyne became his first house-surgeon there. Sir Watson Cheyne has remained connected with that institution ever since, and is now Professor of Clinical Surgery in King's College. Since the outbreak of war he has been Consulting Surgeon in the Royal Naval Medical Service, with the rank of Surgeon-General. He relinquished only the other day the position of president of the Royal College of Surgeons of England.

Correspondence.

ON T.N.T. POISONING, WITH A REQUEST FOR INFORMATION FROM MEDICAL OFFICERS AT THE FRONT.

SIR,—Whilst thanking you for your reference in last week's issue (July 28th, p. 119) to the work of myself and colleagues on trinitrotoluene poisoning in munition works, will you kindly allow me to correct one unguarded statement which might lead into error?

Our experiments show that T.N.T. is just as readily absorbed, and just as poisonous, when taken by the mouth as when taken in through the skin or by any other channel.

The real point is that careful analyses show that the amounts available for absorption by mouth and nose are so minute under actual conditions of labour in the workshops that no danger is to be apprehended from them. On account of the extremely bitter taste of the powder and its irritant action on nasal mucous membrane the wrong impression was produced that poisoning arose from swallowing or inhaling dust and fume. By drawing off measured volumes of factory air, trapping all dust and fume out of it, and weighing these, we were able to show that the amount swallowed by a worker during a shift was infinitesimal (about 6 mg.), that we could ourselves swallow double or treble this quantity for days without any ill effects, and only one of us got a certain amount of cyanosis with a daily dose for a fortnight, at least eightfold the calculated absorption in the factories. Next we showed that when we thoroughly protected our hands we could carry out the same operations in the workshop as the workpeople for the same periods and absorb only traces of T.N.T., although we wore no respirators to prevent swallowing. Then, avoiding the workshops and all sources of dust or fume, we rubbed T.N.T. into the palms of our own hands, and later of those of some hundreds of volunteers, amongst oncoming T.N.T. workers, and proved that there is a certain percentage of individuals who possess skins which allow easy passage to the substance, while a large proportion possess considerable resistance.

As a result, we were enabled to prevent the semi-suffocation of many thousands of T.N.T. workers, and save hundreds of pounds weekly in the cost of respirators. Also, to show that cotton gloves were quite useless, and only made the hand soft and more permeable.

Attention could also now be turned from forced ventilation of these open sheds in the country, which had so been shown to be needless, towards methods of keeping shells and workshops clean, and the rapid introduction of mechanical contrivances.

At the same time observations were made by us in the workshops for the first indications of T.N.T. absorption in dangerous amount, and in September last we were able to describe a T.N.T. "facies" antecedent to jaundice, by which a worker could be detected in the early stages of poisoning and removed to other work. This we recommended should be accomplished by the factory doctor patrolling the workshop and picking the cases out. The appearances we then described we now know to be due to cyanosis and dearth of oxygen supply, as are most of the symptoms complained of by patients, such as giddiness, breathlessness, drowsiness, nausea.

The typical appearances in a person who ought to be removed were given as "a pale face lacking in expression and like anaemia but peculiar in itself, lips that can scarcely be described as cyanosed but of an ashen-blue colour, similar gums, and perhaps a faint trace of yellow on the conjunctivae, the rest of the skin showing no icterus."

As a result (1) of this early detection in the actual workshops at the pre-jaundice stage, and (2) of the discovery that the most important channel of entry is the skin having led to improved cleanliness of workmanship, both minor T.N.T. illness and toxic jaundice have now shrunk to a fraction of their former magnitude, and T.N.T. operations are now almost as safe as any other. The savings in labour and money, and the improvement in health and workmanship, have been enormous.

At a certain period when causation of T.N.T. illness was not understood, shells were turned out covered by a

film of T.N.T.; this is now largely obviated. It is known that a certain amount of dermatitis has been observed abroad amongst men handling shells. The cyanosis of minor T.N.T. illness, or even in a few cases toxic jaundice, may have passed without notice. I should be glad to hear from any one who has observed cases of jaundice of uncertain origin or cases showing the symptoms of minor T.N.T. illness detailed above.—I am, etc.,

8, Pembroke Villas, Richmond,
Surrey, July 30th.

BENJAMIN MOORE.

BRILLIANT GREEN AS AN ANTISEPTIC.

SIR,—In reference to the valuable and suggestive article on acriflavine, etc., by Messrs. Browning, Gulbransen, and Thornton of the Bland-Sutton Institute of Pathology, I should like to mention one aspect of the matter not dealt with—for obvious reasons. It is that of *economy*.

After experimental proof in every sort of case had convinced me of the value of brilliant green, I was interested to find that my surgical nursing staff was equally enthusiastic in spite of occasional stained hands and clothes. The extraordinary results, and the increased comfort of the patients, and the diminished number of dressings to be done had convinced them also. The wounded from Mesopotamia arriving at Cumballa Hospital, Bombay, differed in some degree from most of those arriving in England from, say, France. For geographical reasons it was usually three weeks before they got to Bombay, and wound infections were strongly entrenched. *B. pyocyaneus* in particular, especially in septic compound fractures, was hard to overcome.

After preliminary surgical treatment—in some cases already carried out in Mesopotamia—ordinary absorbent gauze, wet with 1 in 1,000 brilliant green (aqueous), was applied to the wound, inserted into sinuses, and covered with protective; even the foulest case was dressed not more than once daily, and surface infections often only alternate days. Cultures taken from the “pus” were used to control the clinical improvement, and even in the Bombay climate, so favourable to the growth of organisms, wound infections were overcome by the resistance of the patient aided by the brilliant green.

As regards the actual economy in dressings (apart from factors like the time occupied and the relief to patients' feelings due to less frequent dressings) it was found that during two periods of six weeks, with and without the use of brilliant green respectively, the quantity of material consumed was roughly as 1 is to 2. The average number of patients under this treatment at one time was 85.

I am grateful to my late commanding officer, Lieut.-Colonel J. W. Prescott, D.S.O., R.A.M.C., for much encouragement and advice.—I am, etc.,

ARTHUR F. COLE, Captain R.A.M.C.

Cambridge Hospital, Aldershot, July 28th.

DR. ADAMI'S CROONIAN LECTURES.

SIR,—Dr. Adami is suffering from an illusion. I have never had, and at present have not, the intention of discussing a scientific theory with him. His manners and methods render that impossible. My purpose in writing to you was to expose (as I explained in my letter of July 14th) the offences against the laws of social intercourse of which he has been guilty in making public use of a confidential communication from me without my permission and in using vulgar ridicule and rhetorical abuse when entrusted by a learned and dignified College with the privilege of addressing it. I also took occasion to show that Dr. Adami erroneously claimed novelty for the view that the activities of the bacteria are susceptible of change under changed environment—a view which forty years ago I was one of the first to advance, although Dr. Adami goes out of his way to declare “without rhyme or reason” that I am opposed to it. I showed that his confusion of thought on this and related matters of fact is due to his misapprehension of the significance of the words “variation,” “variability,” and “adaptation.”

Dr. Adami admits the offences and the blunders to which I have drawn attention; indeed he cannot deny the plain evidence of his own words. There is not (as Dr. Adami erroneously asserts) a “main issue” or “main argument” beyond these facts, in which I am concerned.

When a man stands convicted on his own confession, as

Dr. Adami does, he either has the grace to express his regret and offer an apology for his offences and blunders, or he has not. Dr. Adami has not shown that grace; until he has, I decline to pursue the matter any further. He writes airily about “registering hits,” and “outers,” and “a German naval victory” as though the College of Physicians and the columns of a great medical journal were a sort of children's playground in which he is at liberty to “run amok” with a pretence of importance accompanied by violence to bystanders, and then run away without apology or penalty.

Even after his exposure Dr. Adami continues to write with regrettable flippancy. He commences his letter to you of July 21st by stating that by “academic” he means a man who “is more concerned with upholding the teaching and tradition of the schools than with the advance of his subject.” And then he is so far reckless of his own reputation for discrimination and knowledge of character as to apply this description to me. He forgets that others can judge of the aptness of his definition and illustration, and also that in his first lecture he ventured to invoke “the shade of Harvey,” one of the greatest of “academic biologists.”—I am, etc.,

London, W., July 26th.

E. RAY LANKESTER.

THE CO-ORDINATION OF BRITISH MEDICAL POLICY.

SIR,—I am both a member of the British Medical Association and of the Panel Medico-Political Union, and I think there is need and room for both. The British Medical Association is much the older of the societies, and in the past it has done a great deal for the progress of the medical profession, but after everything has been said, it will be found that what has been done has been done when there was no serious opposition. The British Medical Association has no real strength behind it, and I understand that by its present constitution it never can possess strength. What is to be done? Dr. Coode Adams tells us a responsible member of the Government made it plain to his deputation that there is no hope for us without a very firm union of the whole profession, with strong and strict discipline behind it.

I venture to suggest that the British Medical Association should retire from its present undignified position, and be contented to accept the position of the great scientific association for the education and increased information of the profession, and leave to the Medical Union the business of looking after the material interests of the profession.

The British Medical Association has a considerable organization; this it could hire to the Union for such a sum as would maintain the Scientific Society in comfort. Both societies belong to the profession, and will be very long to the whole of the profession, but they will exist for different purposes, and I believe the officials of the British Medical Association will serve both. The BRITISH MEDICAL JOURNAL will then be the only journal of the profession, as it will probably become necessary to buy up the others, and the Union will have its place in the JOURNAL under some such conditions as the SUPPLEMENT has to-day. The managers will be different, as the Union will probably be governed by younger and more energetic men than the British Medical Association, and it will contain amongst the managers one or more purely business men.

I believe the Union will progress, and as its members increase it will be able to bring pressure which will bring in all consulting physicians and surgeons, etc., and all the newly-qualified medical men.

I am a practitioner of nearly forty years' standing, but I hope to live to see the day when the whole profession will be united in a firm union. I am not proud of the profession. Because of the complete want of cohesion and the absence of intimacy of the members, members are guilty of many shameful actions towards each other, actions which I believe would be impossible if there were a union which would necessarily hold meetings frequently in the larger villages as well as in the towns.

As the union increases in strength I would invite dentists and veterinary surgeons to join with us, for we are all concerned in the treatment of disease. I would even go further than that. After our union has been proved to be the great success that is, certain, the doctors

of other lands will follow our example. I would invite them all to affiliate with us. Then we would see the medical profession become the greatest, the most humane, the most beneficent, the most useful association of men the world has ever known.—I am, etc.,

Birtley, July 24th.

J. H. OGILVIE.

QUO VADIS?

SIR,—It is obviously high time that the officials of the British Medical Association published the evidence in their possession as to the truth or falsity of Dr. Fordyce's statement that in 1912 the Government had ready a whole-time service scheme—or any other *real* scheme—and was prepared to work it. One knows there are people who still believe that Lord Kitchener survives and that the "mysterious prisoner" still resides in the Tower of London, or that the Russians really did pass through England in 1914, but one smiles when Dr. Davies bases his very definite assurances on proofs "which cannot be stated" or on witnesses who "cannot be named." We all know those proofs and those witnesses.

I note that Dr. Davies does not attempt to meet the main point, namely, that the so-called *débâcle* of 1912 was due to the fact that the remuneration finally offered was good and sufficient, and the terms honourable and satisfactory. Surely the time has come when the story of the whole-time service men and the hordes of recently qualified Scotsmen and Irishmen enlisted by Mr. Lloyd George and his subordinates in 1912, should finally be exploded, lest, like the peripatetic Russians, it crops up again next year. I call upon the officials of the Association forthwith to publish the facts.—I am, etc.,

Hove, July 29th.

C. RAWDON WOOD.

*** Dr. Wood's comparison of the story of the whole-time service which was to break down the resistance of the profession at the beginning of the operation of the Insurance Act with the story of the Russian army which passed through England seems to us very apt. The comparison is, perhaps, the closer because the Government had perhaps a small number of men—say, one hundred—ready to go anywhere, while there were at the time of the rumours probably certain Russian officers in this country for consultation purposes, whose numbers were magnified by popular imagination.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—I should be glad if you would allow me to supplement and endorse the remarks of "J. A. A." in your issue of July 21st. My son, having finished his second year when war broke out, and fired with a generous patriotism enlisted as a private. On my advice he joined the R.A.M.C. He was so keen at his medical work that he had spent most of his vacations in 1914 doing dressings in the out-patients' and in the accident room. He was up to time with his various examinations. I therefore thought that he would find an opportunity of proving himself of real use in the army, as doubtless surgeon-probationerships would be established to utilize the services of medical students. He passed through all the grades up to sergeant-major, and was then actually sent back from France to this country for a commission in the fighting ranks. At the time—November, 1915, nearly fifteen months after he had joined up—I wrote to the Central Medical War Committee in London, and told them the facts, and asked if something else more in accordance with his desires could not be found for him. To that letter I have as yet had no answer, not even an acknowledgement that it was received. To-day he is in the front line, and as it is nearly three years since he opened a medical book I ask what can he do if he returns safe and sound when the war is over? Is he to begin his reading all over again along with a parcel of freshers? He knows well that the fellow students of his year are, as "J. A. A." says, benefiting in their work and in their appointments through having resisted the call of patriotism.

Moreover, owing to the demands of the War Office, many of these men are actually fully qualified—owing their degrees to an indulgent system of examination. Thus these shining patriots are benefiting by the self-denial of their brother students who thought first and only and all the time of the call of their country. In this way I can

assure your correspondents that patriotism *does* pay; it pays now and even more so in the future those who have turned a deaf ear to its call. I make bold to say that the British Medical Association has conspicuously failed its members in this important matter.—I am, etc.,

Manchester, July 29th.

BASIL W. CONWAY.

THE SELECT COMMITTEE ON ARMY MEDICAL RE-EXAMINATIONS.

SIR,—Our sincere thanks are due to Colonel C. R. Tyrrell, R.A.M.C., for his loyal and manly remarks before the Army Medical Re-examination Committee.

The overworked civilian medical men have from the earliest days of the war come forward freely to help the medical boards and the tribunals, and now their work is being abused by ill-informed persons. The civilian doctors have very rarely had anything to do with the classification of the men they have examined, and the presidents of the boards have been fettered, and neither are therefore responsible.

These re-examinations would never have been required if the Government had not been afraid of calling up all fit men up to 30 years of age irrespective of their work. How many Frenchmen of that age are there in civil life?—I am, etc.,

July 31st.

A VICTIM.

THE LATE DR. HACKMAN OF PORTSMOUTH.

SIR,—I take the opportunity of sending a return of the subscriptions I have received for the Hackman Memorial, (A) in reply to the letter published in the JOURNAL a month ago, and (B) in response to the appeal to the Annual Representative Meeting on July 26th:

(A)		£ s. d.	£ s. d.
Dr. Martland (Oldham) ...	4 4 0	W. T. Storrs (Tunbridge Wells) ...	1 0 0
Dr. A. Shepperd (Tulse Hill) ...	1 1 0	Lt.-Col. Crawford (Ealing) ...	1 0 0
E. F. S. G. ...	1 1 0	Capt. John Bain (Netley) ...	1 0 0
Dr. E. V. Phillips (Kibworth) ...	1 1 0	Dr. E. E. Brierley (Cardiff) ...	1 0 0
F. A. Brodribb (Yattendon) ...	1 0 0	J. W. Fox (Southampton) ...	0 10 0
			£12 17 0

(B)		£ s. d.	£ s. d.
Major D. F. Todd (Sunderland) ...	2 2 0	Mr. Jenner Verrall (Bath) ...	1 0 0
Dr. Evan Jones (London) ...	2 2 0	Lieut.-Col. R. H. Elliot (London) ...	1 0 0
Mr. Bishop Harman (London) ...	1 1 0	Dr. F. L. Pochin (Oldham) ...	1 0 0
Mr. J. B. Maxwell (Southend) ...	1 1 0	Mr. A. P. Trinder (Wadebridge) ...	0 10 6
Dr. Crawford Treasure (Cardiff) ...	1 1 0	Mr. J. E. P. Davies (Llanelli) ...	0 10 6
Major Wallace Henry (Leicester) ...	1 1 0	Dr. A. Fulton (Nottingham) ...	0 10 6
Dr. J. S. Darling (Lurgan) ...	1 1 0	Dr. Noy Scott (Plymouth) ...	0 10 0
Dr. Newman Neild (Clifton) ...	1 1 0	Lt.-Col. Hayward, C.M.G. ...	0 10 0
Mr. W. E. Hempsen (B.M.A.) ...	1 1 0	Mr. J. P. Cartwright (Oswestry) ...	0 10 0
Dr. Tennyson Smith (Bromley) ...	1 1 0	Fleet Surg. Lumley, R.N. ...	0 10 0
Dr. E. A. Starling (Tunbridge Wells) ...	1 1 0		£20 4 6

In addition to these—of which I have vouchers—the sum of £14 19s. 6d. was given at the door, and of the donors of this considerable amount I have not the names; I can, therefore, only ask them to take my statement (on trust) that it is an accurate account of the receipts.

I wish to thank the Chairman of the Representative Body and Drs. Sheahan, Treasure, and Brierley, for their valuable help, and this applies to the officials of the Association who have given me excellent advice. This brings me to my last point, namely, to ask each and all of the representatives to bring the case before their friends in the Divisions. We can find use for a lot more money yet, and I hope I may not be appealing in vain.

The following donations are promised, namely:

	£ s. d.
Dr. J. W. Bone (Luton) ...	2 2 0
Sir Thomas E. Flitcroft (Bolton) ...	1 1 0
Dr. C. O. Hawthorne (London) ...	1 1 0
Lieut.-Colonel M. O. Coleman (Surbiton) ...	1 1 0

—I am, etc.,

JAMES GREEN,
Honorary Secretary, Southern Branch.

Brandon House,
Mile End, Landport, Portsmouth, July 29th.

The Services.

EXCHANGE.

MEDICAL OFFICER to Base Hospital in France desires exchange with officer on home station (hospital or otherwise).—Address No. 2550, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Universities and Colleges.

UNIVERSITY OF DUBLIN.

SCHOOL OF PHYSIC, TRINITY COLLEGE.

THE following candidates have been approved at the examinations indicated:

FINAL MEDICAL, PART I.—*Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics, Pathology*: *V. M. Synge, *W. F. McConnell, *L. J. P. Murphy, *W. P. Elford, *A. J. Vorstex, Ethel M. Luce, F. W. Godbey, D. McElwee, B. Fitz-James Haythornthwaite, Gertrude Rice, R. B. M. Smartt, F. J. G. Battersby (Pathology completing examination), J. W. Scharif (Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene).

PART II.—*Medicine (M.B.)*: B. A. McSwiney, G. W. B. Shaw, H. Banks, A. H. Davidson and P. Rock (equal); W. J. Hamilton, H. J. Rice, H. Brill, W. L. Young. *Surgery (B.Ch.)*: *E. D'A. McCrae, *A. R. Barlas, W. P. Lubbe and H. H. Molloy (equal); J. R. Brennan, M. C. Dippenaar, S. A. Clark, C. P. Chambers, A. H. Davidson, F. W. P. Sullivan; J. J. Keatley and J. B. McGrahan (equal); Meta G. Jackson, A. G. Wright; W. J. Hamilton and P. C. Parr (equal). *Midwifery (B.A.O.)*: P. Rock, G. W. B. Shaw, C. G. Ambrose, R. W. Nesbitt, F. Gill, P. A. Dormer, T. M. Bentley, H. Brill, J. E. Hill, C. P. Chambers, G. Marshall.

* High marks.

M.Ch.—H. de L. Crawford.

M.A.O.—Mabel A. D. Crawford.

The following prizes have been awarded:

John Mallet Purser Medal (Physiology), Janie M. Cummins. Daniel John Cunningham Memorial Medal and Prize (Anatomy), E. H. C. Allen. Medical Scholarship (Anatomy and Physiology), J. H. Coolican. Stewart Scholarship (Anatomy and Physiology), N. Long. FitzPatrick Scholarship, E. D'A. McCrae.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates have been approved at the examination held at the termination of the fifty-fourth session:

*M. Erfan, P. M. Antia, P. A. Dingle, Miss S. Dolmer, R. R. Syquia.

* With distinction.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A COMMITTEE was held on July 25th, when Sir Frederick Taylor, Bt., presided. Dr. E. P. Poulton was admitted a Fellow of the College, and licences to practise physic were granted to ninety-seven candidates who had passed the necessary examinations.

Diplomas in Public Health.

Diplomas in Public Health were granted in conjunction with the Royal College of Surgeons of England to the following candidates:

Luis Gregorio Chacin-Itriago, M.D. (Venezuela), L.R.C.P., M.R.C.S., St. Bartholomew's and King's College; Herbert Davies, M.B., B.S.Lond., Middlesex and University College; Mostafa Dia, L.R.C.P., M.R.C.S., Cairo and St. Mary's; Muriel Ann Lloyd, M.B., B.S.Lond., Royal Free Hospital and University College; and Robert Septimus Walker, L.R.C.P. and S. Edin., L.F.P. and S. Glasg., Edinburgh and University College.

Election of College Officers.

The election of censors, other college officers, members of Committees, and examiners then took place. The censors elected were: Drs. Samuel Hatch West, Hector W. G. Mackenzie, Sidney Philip Phillips, and Frederick Walter Mott.

After-War Entente Conference.

A communication was received from the Local Government Board, enclosing communications from the Foreign Office, and asking the College to nominate a delegate to the proposed conference of representatives of the Entente States to be held at Monaco after the war. Sir Bertrand Dawson was nominated.

The late Dr. Todd.

A bust of the late Dr. Robert Bentley Todd, bequeathed by the late Miss Elizabeth M. Todd to the College, was accepted.

Appointments.

Dr. James Galloway was elected a member of the Committee of Management in place of the President, and Dr. Norman Moore expressed the thanks of the College to the President for his long services on the Committee. Dr. Hector Mackenzie was appointed a representative of the College upon the Medical Board of the University of Wales in the place of Sir Richard Douglas Powell, resigned.

The Mitchell Gift.

On the proposal of the President, a committee was appointed to report upon the method of application of the sum of £500 given to the College by Mr. F. W. Mitchell, through Dr. E.

Malins, for the investigation and treatment of tuberculosis. The President nominated the following Fellows to form the committee: Dr. A. Monckton Copeman, Dr. Hector Mackenzie, Dr. Horton-Smith Hartley, Dr. A. Chaplin, Dr. J. Calvert, Dr. J. Fawcett, and Dr. E. Malins.

Announcement of Awards.

The President announced that he had awarded the Bisset-Hawkins Memorial Medal to Sir Arthur Newsholme. The Baly medal was awarded to Professor W. M. Bayliss, F.R.S.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on July 26th, when Mr. Charteris J. Symonds, Vice-President, was in the chair.

Diploma of Membership.

Diplomas were issued to ninety-six candidates found qualified at the recent examinations.

Recognition of Schools.

The following schools were added to those already recognized in chemistry and physics: The Grammar School, Preston; the Intermediate Schools, Barry; the Royal Grammar School, Lancaster.

Preliminary Examination in General Education.

The regulations relating to the above were revised as follows: The Preliminary Examination in General Education must include the following subjects:

(a) English (grammar, paraphrasing, composition; questions on English history and geography).

(b) Mathematics (arithmetic; algebra, including easy quadratic equations; geometry, including the subject-matter of Euclid, books i, ii, iii, and simple deductions).

(c) One of the following languages, namely, Greek, Latin, French, Russian, German, Italian, Spanish, or Welsh. (The examination must include grammar, translation of English from unprescribed books, translation of a continuous English passage, and of short idiomatic English sentences.)

(d) A second language selected from the foregoing list or one of the following subjects, namely: Higher mathematics, experimental mechanics, chemistry, physical geography, physics, botany, biology, geology.

Court of Examiners.

Mr. F. F. Burghard was elected a member of the Court of Examiners, Mr. H. J. Waring a member of the Board of Examiners in Dental Surgery in the vacancy occasioned by the retirement of Mr. L. A. Dunn, and Mr. W. H. Dolamore was re-elected a member of the Board of Examiners in Dental Surgery.

Future Elections of Members of Council.

The Secretary reported that the new By-laws relating to the election of members of Council had been signed by the Home Secretary, the Lord Chancellor, and the Lord Chief Justice.

Donations.

The following were received with the thanks of the Council: From Mrs. A. H. Johnson, a bust by Noble of her father, the late Dr. Robert Bentley Todd, F.R.S. From Mrs. T. Gordon Stowers, a crayon portrait of Mr. Luther Holden.

CONJOINT BOARD IN ENGLAND.

THE diplomas of L.R.C.P., M.R.C.S. have been conferred upon the following candidates who have passed the final examination in medicine, surgery, and midwifery:

A. L. Abel, H. D. Apergis, R. D. Aylward, F. E. Bendix, H. R. Bickerton, J. E. A. Boucaud, A. G. Brett, E. H. Bryant, W. B. Buer, H. R. Buttery, O. C. Carter, Bodh Raj Chaudhri, W. E. Le G. Clark, A. B. Cocker, A. J. Cockkinis, E. J. Coombe, W. T. Cooper, A. J. Copeland, Dorothy T. Daintree, J. R. Dingley, Phyllis D. Dixon, H. B. Dodwell, H. W. Eddison, Constance M. Edwards, Florence M. Edwards, M. Edwards, W. Eidinow, J. S. Eloff, E. F. Fernando, Dorothy Gilford, E. H. Glenny, J. W. H. Grace, J. Hale, Joan Hardy, E. G. Harris, D. G. Higgins, K. R. Hill, Abdel Halim Hilmy, Bertha Hinde, E. T. Hoidge, J. F. Howells, J. B. Irving, Seka Marikar Mohamed Jabir, Theodora Johnston, H. C. C. Joyce, S. Kadinsky, Haji Hyderali Khan, C. H. Laver, F. R. Law, Hilda M. Lazarus, L. K. Ledger, H. M. Leete, A. G. F. McArthur, Ruby E. McBurnie, K. McFadyean, B. Maclean, N. H. S. Macleaz, W. H. Maudling, Ambadi Krishna Menon, Pathiyaveetil Narayana Menon, Palliyarallelage Don Jeronis Milapius, Farid Mohamed, H. C. Morris-Jones, Canapathy Pillai Nagamutti, M. H. Oldershaw, N. Olivier, S. W. Page, Eleanor J. Partridge, A. McL. Pickup, W. E. Powell, S. H. de G. Pritchard, Marianne O. Ramsay, S. Riddiough, Sophie S. Rosenberg, H. Rowan, Khurshedjee Jamsedjee Rustonjee, J. F. Ryan, S. Sacks, Ahmad Hussein Samy, T. W. Shaw, K. L. Singer, P. A. Smuts, J. R. W. Stephens, H. J. R. Surridge, R. Theron, B. Thomas, G. M. Titterton, D. J. Valentine, J. A. van Heerden, José Victoria, G. H. Ward, F. W. A. Watt, R. E. S. Webb, J. de S. Wijeyeratne, A. P. Wyatt, S. Yabluevitz, G. Zachariah.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have passed the final examination and have been admitted L.R.C.P. and S. Edin. and L.R.F.P.S. Glasg.

Jean M'M. Crawford, G. C. Cossar, A. G. O'Brien, W. Templeton, J. W. Morris, J. G. M'K. Macaulay, J. Michaelson, R. P. Crawford, E. A. Hamilton, C. S. Baxter, T. R. Wilson, F. C. J. Mitchell.

Obituary.

PROFESSOR THEODOR KOCHER, BERNE.

THE announcement of the death of Professor Theodor Kocher, of Berne, will be received with the deepest regret by surgeons all over the world. He had a serious illness some time ago, but had recovered sufficiently to resume some of his professional duties this spring. All through his long career as a surgeon he was ever among the first to take advantage of every advance and himself broke new ground in many directions. His practice was founded on the constant study of physiology and pathology, and his wide views over the whole field of surgery and his brilliant technique in the operating theatre had long made Berne a place of pilgrimage for the surgeons of Europe and America.

He was born in Berne on August 25th, 1841, and after his student days there spent some time in Berlin, London, Paris, and Vienna, where he was a pupil of Billroth's. He graduated at Berne in 1865, was called to the chair of clinical surgery in the University of Berne in 1872, and for forty-five years was head of the university surgical clinic there.

Professor Kocher was one of the last survivors of the pioneers of ovariectomy, and consequently of abdominal surgery as now understood and practised by surgeons all over the world. From a note contributed to this JOURNAL in 1882 (vol. i, p. 114) on ovariectomy in Switzerland, founded on material supplied by Sir Spencer Wells, it appears that the first ovariectomy undertaken in that country was performed by Wells. It was successful, and the operation was soon afterwards undertaken by Kocher, Reverdin, and other Swiss surgeons, but it is added that until Kocher and two or three other experienced operators began to insist on the importance of antiseptics in ovariectomy the results were not favourable. Afterwards the statistics showed marked improvement in the experience both of Kocher and himself, and of other Swiss operators, but it was stated in the article from which we have quoted that Professor Kocher then "had the advantage of greater experience in ovariectomy than can be claimed by any other Swiss surgeon." Kocher, in fact, established ovariectomy in Switzerland as a practicable and justifiable operation. He developed, like his British contemporaries, into a surgeon learned and skilled in more general abdominal work, and devised contrivances, such as clamps, of high value to the operator.

Kocher wrote on many subjects, including gunshot wounds. He was the author of a textbook of operative surgery, which was translated into French, English, Italian, and Russian. A subject with which his name will always be associated is the operative treatment of goitre, and he was among the first to recognize, in 1883, the condition of cachexia strumipriva following on total extirpation of the thyroid.

We are indebted to Sir BERKELEY MOYNIHAN for the following appreciation of Kocher's work and influence:

With the death of Kocher the world loses its greatest surgeon. He lived a long life of unceasing industry, he covered a wider range of subjects than any living surgeon, and all his work was marked by clear insight, profound thought, accurate and well-ordered statement, and wise judgement.

From his earliest days he was a sound anatomist. The first of his contributions to surgery to attract attention was that in which he worked out the method now known by his name for the reduction of a dislocated shoulder. On one memorable occasion, when he sat among the audience in Billroth's theatre, a case of old unreduced subcoracoid dislocation of the shoulder was brought in. Every method of reduction was tried and failed, and efforts were at last abandoned, when Kocher, who had just perfected his own procedure, asked to be allowed to try it. Billroth consented and the shoulder was at once replaced. Kocher, being asked, went on to describe the usual position of the rent in the joint capsule, the direction of movement of the head of the humerus as it escaped from the joint, and the final positions in which it might lie. He then showed why the manipulations which he proposed were sure to succeed if duly carried out, in the ordinary case.

Throughout a long life Kocher's devotion to anatomy and his operative work on the cadaver were unceasing. There were few days, in summer or winter session, when he did not visit the *post-mortem* room to demonstrate an old operation or try a new one. His book on operative surgery gives plain evidence throughout of his easy familiarity with the anatomy of every part.

Quite early in his career he realized the truth and the vast scope of Lister's teaching. In 1875, or earlier, he introduced the operation for carcinoma of the tongue, in which, for the first time in an operation upon the mouth, a strict attention to antiseptic principles was made essential. In later years Kocher himself abandoned this method in advanced cases for that which generally bears the name of Syme. His freedom from prejudice for his own intellectual progeny was shown also in his frequent choice of other methods than his own for the radical cure of hernia. The method he devised was excellent, and indeed, when first introduced, was almost universally acclaimed as the best; yet many surgeons who visited him saw Bassini's method practised more often than his own.

Kocher's name throughout the world was perhaps chiefly associated with his work on the thyroid gland. His contributions to our knowledge of the diseases of this gland and their treatment are of course unrivalled, and he has probably left little or nothing for anyone else to say. His operations numbered many thousands, and as occasions for a scrupulous and minutely careful technical display they were unsurpassed; every tiniest detail was arranged, every difficulty most gently overcome; there was no haste, no untidiness, no shedding of one drop of blood that could be spared. Infinite accuracy, infinite care, infinite patience, gave him results as near to absolute perfection as it is possible for surgery to go. As one retraced, in afterthought, every stage in a difficult and tedious, and perhaps prolonged operation, it seemed impossible to find a fault or to discover where anything could go wrong. From the treatment of the simple cumbersome tumours of the thyroid he was led to the study of Graves's disease, and was the first to urge, and with increasing success to practise, the surgical treatment of this condition. No one who saw him operate in a case of severe Graves's disease would ever forget his tender care, his exquisitely gentle touch, and the deft, light movement of every finger. When everything was finished, the stainless towels round the wound failed to reveal the fact that an operation had taken place. Such an operation—indeed, every operation Kocher ever did—was a supreme exhibition of what perfect anatomical knowledge, a blameless aseptic conscience, the most practised technical efficiency, unflinching courage, unruffled calm, and the most exquisite gentleness could accomplish. Many of the great surgeons of to-day will frankly admit that in all these things Kocher taught them more than any other man. He was a slow operator, but there was never a moment wasted. To do an operation as he thought it ought to be done time was necessary. Those who were privileged to see his patients, in his private clinic or in the public hospital, will agree that no patient suffered from such an expenditure of time as Kocher found necessary. His whole work demonstrated the folly of those who operate with the single desire for speed. His method was the perfect one. He never wasted an instant; he never had to hurry; everything fell out according to plan, and the most sensitive tissue could hardly have been conscious of anything but a caress.

His literary work was amazing in quantity and in its high value. He published many years ago his work on diseases of the male generative system, which younger surgeons have too soon and too easily forgotten. His books on diseases of the spinal cord and on cerebral compression displayed his capacity for the most laboured inquiry into the details of difficult problems or cases and for original experimental work of the highest order.

His work in almost any department of surgery would alone have made him a reputation as a surgeon of great gifts. He devised methods, whether entirely new, or wise sound and timely modifications of older methods, with amazing fertility, for operations upon the lungs, the stomach, the gall bladder, the intestine, upon hernia, upon cranial nerves, and so on. He invented instruments and appliances innumerable—tables, scissors, clips, clamps, screens, and towels. These were mere incidents in his daily work. Every artist must have the right instruments

for his handicraft. Kocher's new methods, practised for new conditions, required new implements, and he was not slow to design them.

As a teacher he was greatly painstaking, diligent, and earnest. For two hours, 8 to 10 a.m., in the sessions he would teach in the theatre. Cases were brought in, examined and discussed. Some skill as an artist helped Kocher to make his teaching easy to acquire. He was never impatient with an honest, if stupid, effort; his voice grew high pitched and querulous when a student would try to deceive him with a clumsy bluff.

His life was one of unceasing activity. He began work early, teaching and operating at the hospital nearly every morning, and occupying the afternoons either in his private clinic, or in his study, going with great labour through the careful records of his cases.

What is the chief legacy a surgeon leaves behind him? Personal reputation however exalted is soon forgotten, and the name of a distinguished surgeon may not be long remembered even in his own country. Books which at the time of their appearance are striking in new thoughts, or in the fresh presentation of old ones, cease soon to be read. Even in the long survivors new editions change not only their contents, but perhaps the title also. The spoken word, whether by the bedside or in the theatre, is apt to slip from the memory or to be imperfectly recalled. A few characteristic sayings may chance to be handed down, but their authorship is soon lost. Wealth is, of course, rarely attained by any member of our profession, and for itself has happily no value among us.

The chief legacy which a surgeon can bequeath is a gift of the spirit. To inspire many successors with a firm belief in the high destiny of our calling, and with a confident and unwavering intention both to search out the secrets of medicine in her innermost recesses, and to practise the knowledge so acquired with lofty purpose, high ideals and generous heart, for the benefit of humanity—that is the best that a man can transmit.

Though Kocher trained no great men in his own school, as Billroth did, there are surgeons all over the earth who can say that in larger or smaller measure it is their pride to claim some humble share in this great inheritance, which Kocher, above all others, has nobly bequeathed to them.

To Lieut.-Colonel LYNN THOMAS, C.B., C.M.G. (Cardiff), we owe the following personal note:

By the death of Professor Kocher, one of the outstanding modern masters of surgery has been removed. He was undoubtedly one of the great makers of surgery of the nineteenth and twentieth centuries. I had the great privilege of knowing him for over twenty years, and during a visit he paid Cardiff and South Wales I had the opportunity of realizing how many interests he had in life apart from that of surgery.

As a surgeon he was unsurpassed in the observance of detail in technique, and during the many visits I paid to his operation theatres at the Inselspital and his private hospital I never saw a single occasion upon which one could criticize adversely, or went away with a feeling that somebody else who had specialized in departmental work could have done the work he had in hand in a more masterly fashion. I have seen surgeons on the Continent and in America who could operate with more speed, but I have never seen one whose judgement was so sound in the performance of daring operations where risk to life arose. He had one speed, which I designated the "Kocher speed"; it was uniform whether he performed the simplest or the most complex operation, either upon the extremities, the abdomen, the neck, or the brain. There is hardly a branch of modern surgery in which he has not left a valuable and permanent impress, but his name will always be connected with a revolution in the treatment of goitres, and as an illustration of the amount of work he did in this department alone I may quote from a letter I received from his son, Albert Kocher, dated March 12th, 1912, the following sentence: "My father yesterday performed his fifth thousandth goitre operation."

I have never seen him use spectacles for operations, and in talking this matter over he said that Nature had been very good to him in giving him two eyes, the one for the enthusiasm of early age, and the other for the maturity of

vigorous but advancing years. He had an extraordinary energy for work, and I have seen him working from 8 o'clock in the morning until 1 o'clock at the Inselspital, then in the afternoon perform three thyroidectomies for Graves's disease (upon a Russian, a German, and an American) at his private hospital, and afterwards pay visits and hold consultations, and turn up at 8 o'clock in the evening to dinner without any appearance of fatigue. He had an old-world courtesy, and in his home circle was always affectionate, pleasant, and humorous. The last occasion on which I visited Berne was in June, 1914, and at that time he was as alert and as keen in his work as he was the first day I met him.

Surgery all over the world has lost a great figure by the death of Professor Kocher, and it is pleasant to record that in his own native town, so dear to him and Mrs. Kocher, his genius was long ago recognized; one of its main streets is designated by his illustrious name.

We learn that the death of Captain IAN MACFARLANE, M.B., Ch.B. Edin., R.A.M.C., announced last week (p. 131), was due to typhus fever. Soon after graduating in 1911 Dr. Macfarlane went to assist Dr. Scrimgeour, who was in charge of the Edinburgh Medical Missionary Society's Hospital, Nazareth. After some two years there, during which he had a very severe attack of typhoid fever, he was, when the war broke out, on his way to assist Dr. Mackinnon at Damascus. Returning to this country in August, he acted for a time as resident surgeon in the Edinburgh Royal Maternity Hospital. He then volunteered for service at the front in connexion with the R.A.M.C., and was sent for more than a year to France. Great was his joy when he was transferred to Egypt, in April, 1916, and foresaw an opportunity of making use of his knowledge of Arabic and of getting near again to the sphere of his former work in Palestine. In a brightly written letter of June 28th he spoke of his work in charge of a hospital for military labourers and of a typhus isolation camp as well as a camp for refugees. It was doubtless through the service he was thus so freely rendering that he fell a victim to the fever which proved fatal. Captain Macfarlane had a particularly winning nature, and was devoted with his whole strength to the medical missionary work to which he had dedicated his life. A memorial service was held at Juniper Green on Sunday, July 29th, at which Colonel C. W. Cathcart, Dr. J. W. Ballantyne, and Dr. James Ritchie spoke.

Medical News.

THE London Insurance Committee, on July 24th, appointed Dr. Noel Dean Bardswell, M.V.O., to be medical adviser for sanatorium benefit to the committee in place of the late Dr. J. E. Squire.

THE honorary secretaries of King Edward's Hospital Fund for London have received at the Bank of England the sum of £35,000, being a contribution from a donor who desires his gift to be so acknowledged.

MISS EILEEN PEEL has been appointed head of the National Hospital and University College Hospital School of Massage and Electrical Treatment, Queen Square, London, W.C.1, which will open in October next.

FROM January 1st to June 16th the cases of cerebrospinal meningitis in London of which information was received numbered 307 (including 10 military cases) with 164 deaths. The number of cases notified during the same period last year was 295.

THE temporary permission granted to persons engaged on July 28th, 1916, in the bona fide practice of dentistry, but not registered under the Dentists Act, to purchase preparations containing not more than 1 per cent. of cocaine for use solely as local anaesthetics for dental work, has been extended by the Home Secretary until further notice.

AT an inquest at Hull upon a man who had died after taking 2 oz. of supposed barium sulphate in bread and milk prior to x-ray examination, the evidence showed that tartar emetic had been supplied by the pharmacist in mistake. The bottle was labelled "barytae sulphas," and the pharmacist stated that the label must have been incorrectly applied by someone at least thirty years ago. He could not recall any previous order for barium sulphate

during the past forty years, which would explain why the mistake had not been discovered. The jury found that death was due to misadventure.

The American Electrotherapeutic Association proposes to form a unit to furnish facilities and men to carry out the treatment by electrotherapeutic and other physical means of various war injuries, including, among others, delayed repair, sprains, contusions, atrophies, arthritis, and neuritis. Its equipment, which it is intended shall be provided by subscription, will include transformers, diathermic apparatus, x-ray apparatus for therapeutic use, static machines, therapeutic lamps, sinusoidal machines, and constant current apparatus. It is hoped to obtain the recognition of the Council of Defence of the United States of America.

KING GEORGE'S Fund for Sailors has been founded to obtain fuller and more sustained support for the great marine charities of the country, upon whose resources the stress of war has made heavy and increasing calls. These charities minister to the needs of sailors of every kind, including mine-sweepers and fishermen, and their dependants. The chairman of the fund, H.R.H. the Duke of Connaught, appeals to the public for generous support at the present time, when the safety of our shores and the existence of the empire depend so largely upon the bravery, endurance, and self-sacrifice of British seamen of the navy and mercantile marine. Contributions may be sent to him, addressed to King George's Fund for Sailors, Trinity House, London, E.C.3.

At a recent meeting of the Association for Promoting the Training and Supply of Midwives, Dr. E. W. Hope, M.O.H. Liverpool, gave an address on the best means of increasing the supply of practising midwives. The need for the midwife, he said, was not likely to diminish in view of the shortage of doctors, the lack of maternity homes—to-day whole counties were without a single maternity hospital bed—and the large increase in the birth-rate which would follow the war. The intending midwife should find it possible to gain a longer and more adequate training at smaller cost to herself. He suggested that after an entrance examination to test the general fitness of the candidate, free or subsidized professional training for perhaps two years if necessary should be provided by the State. At the close of the training a professional examination would give evidence of fitness to practise. The small pittance which the patient in many cases was only able to afford should be made up by a Government contribution to not less than a guinea for each birth attended. He believed that this guarantee could be given and safeguarded from imposition. One advantage of such a system would be the supervision of midwives direct from a Government department. Such a scheme, he thought, would cost something like £80,000 a year.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are: (1) **EDITOR** of the *BRITISH MEDICAL JOURNAL*, *Aditology, Westrand London*; telephone, 2631, Gerrard. (2) **FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate, Westrand London*; telephone, 2630, Gerrard. (3) **MEDICAL SECRETARY**, *Medisecra, Westrand London*; telephone, 2634, Gerrard. The address of the Irish Office of the *British Medical Association* is 16, South Frederick Street, Dublin.

The address of the *Central Medical War Committee* for England and Wales is 429, Strand, London, W.C.2; that of the *Reference Committee of the Royal Colleges* in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the *Scottish Medical Service Emergency Committee* is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the *BRITISH MEDICAL JOURNAL* are devoted will be found under their respective headings.

QUERIES.

INCOME TAX.

W. A. S. R. explains that he has recently obtained repayment of income tax for 1916-17 in respect of "small income relief," and inquires whether a similar claim can be made for 1915-16.

*. Our correspondent does not state the amount of his total income for 1915-16, and a categorical answer cannot therefore be given. It may, however, be sufficient to say that for 1915-16 there was no "small income relief" where the total income exceeded £500, and that it was comparatively small even where applicable.

LETTERS, NOTES, ETC.

THE Oxford University Press has published a biography of Ingram Bywater, one time Regius Professor of Greek in the University and for thirty-five years an active member of the board of the Press and a diligent contributor to the great dictionary. The *Periodical* for July quotes from the biography some of his sayings. Once in reply to a remark on the lack of interest in scientific research displayed in general society, Bywater said, "The desire to know the reason of things is quite exceptional, and always has been. Plato said that philosophers must always be few." Another saying was that modern education seemed to be "a conspiracy on the part of schoolmasters and dons to keep men babies until they are four-and-twenty." Having gone so far we may be excused for quoting a story he used to tell in defence of his own habit of smoking. "Pio Nono, when in conversation with Cardinal Antonelli, lit a cigarette and handed the case to the Cardinal, who said, 'You know, Holiness, that I have not that vice.' 'You know, Eminence,' replied the Pope, 'that if it were a vice you would have it.'"

THE ROWAN BERRY: A TOPICAL SIALAGOGUE.

DR. JOHNSON SMYTH (Bournemouth) writes: Rowan berries are very plentiful just now. I can find no record of their use as a sialagogue, yet they act as such most powerfully. I found this out by accident when suffering from enteric fever thirty years ago. Can anyone inform me as to what the acid or other constituent is that acts so promptly?

A TOO-PUNGENT MOUTH-WASH.

H. W. writes to confirm from his personal experience the opinion that an aqueous solution of thymol is not a suitable mouth-wash for daily use. A saturated solution caused intense smarting; it was considerably diluted, but after two months the gums were tender and bled when brushed, and there was slight marginal ulceration. The teeth were sound and the gums previously healthy. On discontinuing the mouth-wash the condition cleared up in about a week.

STATUS LYMPHATICUS.

DR. JOHN HADDON (Denholm, Hawick, Scotland) writes, with reference to Dr. Cameron's contribution to the *JOURNAL* of June 9th on status lymphaticus, to suggest that he should, in the treatment of such cases, confine them to one food at a time so as to be sure of its action one way or another. We know, Dr. Haddon continues, more now about the physiological action of drugs than we do about that of foods. I find that each food has not only an action on the several emunctories, but gives rise to some special symptom. Dr. Cameron blames carbohydrates generally, but I find that the several cereals have different effects on the emunctories. Wheat causes not only intestinal, but renal stasis, and throws a strain on the skin and lungs. I also find that each cereal seems to have some injurious item, and that a mixture of cereals is especially bad, the combined bad item having more effect.

THE PURITY OF FOOD.

DR. ARTHUR T. TODD-WHITE (Leytonstone) writes: I would venture to suggest that if a great and important department such as a Ministry of Health is created it must do more than co-ordinate existing work. It must be responsible for maintaining the health of the people in every way. The proposals of the Association deal principally with the cure and prevention of disease. I am of opinion that the first and most important duty of the Ministry of Health will be to take absolute control of the food of the country; as we cannot exist without food, so we cannot keep fit and resist disease unless we are properly nourished, and at the present day (I do not refer to the war period) it is impossible to get pure food or drink; possibly in many cases the added foreign matter is harmless, but in others this is not so. The bad effect of adulterated food is in some cases obvious, and the effects immediate, but in others the deleterious effects are slight and unnoticed at the time, but gradually the system becomes badly nourished and the man or woman who should be absolutely fit finds they are "worn out." The Minister of Health should get a bill passed imposing imprisonment without the option of a fine for selling an article of food or drink knowing that article is not entirely what it is sold as. At present a man who has made thousands of pounds by selling rubbish to the public as food, gets off with a trivial fine which probably amounts to about one per cent. of the profit he has made by his swindle.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

THE INSTITUTES OF SURGERY.

AN HISTORICAL REVIEW.

BY

SIR BERKELEY MOYNIHAN, C.B., M.S., F.R.C.S.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF LEEDS;
TEMPORARY LIEUTENANT-COLONEL R.A.M.C.

MEN, it is said, are apt to be taken at their own valuation. What is true of a man may be true of a nation. It is beyond dispute that Germany, as a result, in part, of the arrogant repetition of her claim to intellectual superiority over all nations, and in part, of a tolerant and sometimes disdainful silence or acquiescence by others, has been accepted almost universally as the pivot and centre of the world's thought. My own realization of this, in regard to surgical matters, was dramatic in its suddenness. I had been a student in Germany years ago, had lived with German students, and followed closely the work of German surgeons in several clinics. I had formed my own conclusions as to the value of the German contributions to surgical advancement, and nothing that has happened since the war began has altered in any way the opinions I then held. About five years ago one of the most distinguished of the Scandinavian surgeons, who had made a yearly pilgrimage to Germany of some weeks' duration, came to spend his surgical holiday in England. He lived with me for more than a month. I had always known him as a warm advocate of Germany's methods in surgical literature and practice, and of his intellectual contempt for most of the things which other nations had done. Of the work of these other nations he had learnt nothing at first hand; the little he knew had been distilled through the minds of German interpreters, and had been conveyed to him verbally on his frequent visits, or had been taken from the easily accessible German journals and textbooks. At our first breakfast meeting he told me of his immense obligations to Germany, of his schooling in her methods, of his devoted attention to the debates of the German Surgical Association; and he went on to say that he felt it almost an act of treachery to spend his surgical vacation in any other land. And then he gravely announced that "Of course all surgical advance in the last fifty years has come from Germany." To that kind of fervid unrestrained assertion the most fruitful denial is given by a questioning assent. I answered: "Of course; tell me of one." Whereupon I had to learn from him that the introduction of the antiseptic system into practice was wholly to be attributed to German research, adoption, and advocacy. Now this claim so confidently made, and, I hope I may say, so utterly shattered in the debate which followed, is precisely the type of claim which Germany herself has always made. Most of the great ideas, she tells us, originated with her; those that by chance arose elsewhere would never have come to fruition but for her acceptance, and for the authority with which thereby they were endorsed.

ANTISEPTICS.

Of the facts as to the discovery of the antiseptic system there is, of course, no dispute. They begin with the discovery in 1836 by Latour of the living character of the yeast cells by which fermentation was produced. This discovery, it is interesting to recall, was denied both by Liebig and by Helmholtz. The confirmation and extension of this work by Pasteur in 1856 showed that putrefaction and fermentation were the result of living particles, and that for each type of fermentation a specific particle was necessary. "The most far-reaching of my researches," said Pasteur, "is simple enough; it is that putrefaction is produced by living ferments." He asserted that the oxygen of the air was not the cause of putrefaction, as every one hitherto had supposed; that, indeed, some of the causes of decomposition could thrive only in the absence of oxygen. This observation, too, which distinguishes "aërobic" from "anaërobic" organisms, is of the first importance. It was these discoveries which suggested to Lister the thought that the putrefactive changes in wound discharges might be due to living organisms, and that the exclusion of these would enable wounds to heal without the formation and corruption of purulent discharges.

In 1867 Lister wrote: "When it had been shown by the researches of Pasteur that the septic property of the

atmosphere depended, not on the oxygen or any gaseous constituent, but on the minute organisms suspended in it which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided, without excluding the air, by applying as a dressing some material capable of destroying the life of the floating particles."

A discovery is rarely the work of one mind. It is one observation added to another that makes the super-saturated solution from which the crystal of truth at last precipitates. Lister never ceased to give credit to Pasteur for his share in the work that led finally to the development of the antiseptic method. The exploratory work, the pioneer work, all that was original, was done therefore by a French observer and an English surgeon. The exploitation of this work, it is true, was almost at once eagerly and widely carried out by the surgeons of Germany. The system was examined, appraised, and adopted throughout the whole empire of Germany; but so it was elsewhere. Lister never had a more ardent, a more scrupulous and conscientious pupil than Lucas-Championnière. Up to his death this veteran French surgeon carried out with meticulous care exactly those procedures which he had learnt from Lister. But the loud shouting in support of the antiseptic treatment came chiefly from Germany. When in 1875 Lister visited that country his progress was a triumph. It is notorious, however, that in carrying the Listerian principles to their logical conclusion in practice, Germany fell far behind other countries. In recent times has any surgeon visited Germany to learn a good technique? Is it not true to say that those surgeons of whom one heard most in the world, great teachers and writers as they doubtless were, were lacking in the very rudiments of a sound and careful method? There was not, I truthfully believe, one surgeon in the whole German empire who looked upon an operation as an experiment in bacteriology, and who to avoid infection in his wounds used scrupulous care in the preparation and manipulation of his instruments and materials, who avoided chance contamination, and who used extreme gentleness and delicacy of touch as modes of avoiding that form of trauma which makes infection easy. And the average display of a technique called aseptic or antiseptic was something immeasurably below the standard of some surgeons in England and of many in America. Even in the method they so ardently exploited, and in a field they claimed as their own, they fell far short of the best. This example is typical of many. All modern surgery, as we know, dates from Lister. The difference between the surgery of ancient days and the surgery we practise to-day is expressed in one word, "Lister."

Of all the advances made in surgery the most fruitful and the most interesting is that which depends upon a study of the "pathology of the living." Lister made it possible to operate with safety upon conditions which threatened life, or made it almost unendurable—such, for example, as ovarian cyst. And by degrees, as methods were perfected and experience widened, other diseases could be attacked, at first in their terminal or more dramatic manifestations, as in the perforation of gastric or duodenal ulcers; and later in their pathological career as disturbers of function or of health, before the later complications had had time to develop. It is interesting to note that the first surgical attack upon many diseases afflicting the abdominal viscera has been made when terminal events have rudely developed, and when therefore the surgical hazards were greatest. It was only in later days that the deliberate operations for initial stages of the same disease were brought within the province of the surgeon.

THE APPEAL TO NATURE.

When we review the wonderful and varied achievements of medicine it is not easy to fix a time at which the science and the art of surgery, as we think of them to-day, began to develop. As we look back we realize that it is because of the work of Vesalius the anatomist, of Harvey the physiologist, of Morgagni the father of pathology, and later of John Hunter, the first of scientific surgeons, that all subsequent advances were made possible. From the rude efforts of the early and mediæval surgeons the first real step forward was made by Ambroise Paré, who stands conspicuous above all his contemporaries at the time of the Renaissance. Between Paré and Hunter probably only one surgeon was of serious consequence in the progress of our

art. This was Richard Wiseman, a man "given to the observation of nature," who was the first to advocate and practise primary major amputations. Till the days of Hunter surgery produced, it is true, great or successful individual practitioners, but there was little or no progress in the scientific work upon which the craft must always be based.

It was Hunter in England, and Bichat in France, who went to original sources for their knowledge. Hunter wrote of himself, "I am not a reader of books," and "I believe nothing I have not seen and observed myself." His prodigious industry, his intellectual rapacity, his vast store of first-hand observation, and his simple attitude as a student all his life, are not equalled in the history of Medicine. Harvey had said of himself that he felt it in some sort criminal to call in question doctrines that had descended through a long succession of ages and carried the authority of the ancients, but he "appealed unto Nature, that bowed to no antiquity, and was of still higher authority than the ancients." With Hunter it was quite different. His eager inquiry was always for the story as it was written by disease upon the tissues of the dead body. His information was always first hand, gleaned from every source, with unwearied patience and untiring zeal. His disregard of written words and of ancient authors was deplorable no doubt, but a striking and authentic characteristic nevertheless. His reply, when taunted with ignorance of the classics, is famous: "Jesse Foot accuses me of not understanding the dead languages, but I could teach him that on the dead body which he never knew in any language, dead or living." He was the born collector, possessed of an insatiable appetite for knowing rather than wondering, and for seeing rather than reading or hearing of another's work. No man ever suffered less from the tyranny of the written word; no man ever searched more diligently or in humbler mood for those eternal sources of the truth upon which alone a science of medicine can be founded, and from which alone it can be continually refreshed. Hunter realized, as Paré and Franco before him had done, as every great original thinker since has done, that the foundations of true progress in scientific work are laid deep, that it is "from the depths, not from the heights, that medicine is fed; from the springs, not from the sky." The impetus and the authority given to surgical work by the researches of Morgagni, of Bichat and of Hunter were incalculable. The time was gone for ever when a pure and dangerous empiricism could be practised; surgery became a rational procedure, and its new ventures were held in restraint, as we now realize, only by the fear, or rather the certainty, of inflammatory complications more immediately dangerous than the disease from which relief was sought.

For the groundwork of medicine and of surgery, therefore, Germany was in no degree responsible. It was Vesalius of Brussels who laid solid the foundation of anatomy, in a treatise remarkable alike for the accuracy of the descriptions and for the beauty of the illustrations, which came perhaps from the studio of Titian. It was Harvey, our own countryman, who, by his immortal discovery, swept away the decaying fragments of Galenism, and made possible all later researches in physiology. It was Morgagni, the Italian, who brought together the statics and dynamics of medicine, who founded pathology, the science of the causes of error in the working of the human machine, and who explained symptoms by assigning them to structural alterations in the several organs of the body. It was Hunter who changed surgery from a handicraft to an art based upon an accurate knowledge of diseased tissues, who first made of surgery a science. It was Pasteur, the Frenchman, who guided Lister to his discovery of antiseptic surgery, which has changed the whole history of our science and craft. It was Morton and Warren of Boston, and Simpson of Edinburgh, who, by the discovery of ether and of chloroform, robbed surgery of its agony and horror and made it accessible as well as possible. To all these weighty matters, to all the indispensable achievements without which medicine could have made no advance, it is the simple truth to say that Germany gave nothing.

ABDOMINAL SURGERY.

The first great surgical adventure of modern times was concerned with the removal of ovarian cysts. The history

of ovariectomy is well known, but will bear at this moment a brief repetition. Removal of the ovaries in animals and in aborigines has been practised from prehistoric times. In the literature of the middle ages several curt references were made to "dropsical ovaries"; and opinions were expressed that operative measures might sometimes be undertaken with a remote chance of cure. The first successful case was operated upon in 1701 by Houston of Glasgow; the patient lived till 1717. John Hunter wrote in 1785: "I cannot see any reason why, when the disease can be ascertained in an early stage, we should not make an opening into the abdomen and extract the cyst itself." Before this William Hunter had written, in 1762: "It has been proposed by modern surgeons, deservedly of the first reputation, to attempt a radical cure by incision or suppuration, or by excision of the cyst." The first surgeon, however, to whom the world's credit and applause are due for establishing the operation as a proper and safe procedure was McDowell of Kentucky, an old pupil of John Bell in Edinburgh, by whose teaching he was inspired. McDowell's first case was operated upon in 1809; the patient lived till 1814. Between 1809 and his death in 1830 McDowell operated upon ovarian tumours in thirteen cases, and it is known that eight patients recovered. After his day the operation fell into disrepute, and the failures were so many that Baker Brown abandoned the operation, saying: "It was of no use, peritonitis would always beat one." It was after his return from the Crimea that Spencer Wells, an old pupil of the Leeds Infirmary, upon his appointment to the Samaritan Hospital, began, in 1858, that series of operations which firmly established the surgical treatment of ovarian tumours in favour, and by its success, and by the influence it had upon the treatment of other intraperitoneal conditions, opened up the whole field of abdominal surgery. The opposition to the surgical treatment of ovarian cysts was, as is well known, of the most bitter and inveterate kind, but Spencer Wells, by his simplicity of character, his unwavering integrity, and his sweet reasonableness in argument, wore down all antagonism. In the year 1880—that is, in twenty-two years—he had operated upon 1,000 cases, of which 768 recovered. During the first five years one patient died in every three operations; in the last two years one patient died in every ten. Writing in 1882 Spencer Wells said, "In Germany until quite recently ovariectomy was scarcely talked or thought of." Billroth, in a lecture on ovariectomy, said of Spencer Wells, "I shall willingly regard myself during my lifetime as his scholar." It is astonishing to recall that Spencer Wells's early success was achieved before the introduction of antiseptic surgery. In the edition of his work on *Ovarian and Uterine Tumours*, published in 1882, he endeavoured to estimate the difference in the mortality and morbidity of his cases as a result of the introduction of Lister's methods. It is therefore true to say that the whole of the immense progress that abdominal surgery and internal medicine have made in the last thirty years has been due to the impulse and the investigations of these two English surgeons, Spencer Wells and Lister. In all the pioneer work which made possible the infinite achievements of modern abdominal surgery, the contribution of Germany was precisely nothing. What part has she played in the later progress?

Let us take for a first inquiry the surgery of the gall bladder. The fullest account of the history of this extraordinarily interesting adventure in surgery is given by many German authors, of whom Langenbuch is, perhaps, the chief. On page after page of the story as told by him reference is made to the priority of German surgeons, and pride in German achievements is openly and frequently expressed. A chapter of this author does duty not only as a contribution to the history of surgery but as a political pamphlet also. And, like much in the literature of politics, it is found on close examination to be acutely controversial, when it is not false. What are the facts? The first attempt to deal surgically with the gall bladder was made experimentally by Zambecari in 1630. This observer ligatured the cystic artery and duct in a dog and removed the gall bladder. Two months later the dog was killed, and to the ligatured stump omentum and small intestine were found adherent. To Jean Louis Petit in 1743 is to be attributed the first suggestion of the surgical treatment of a distended gall bladder, and the first considered attempt to deal operatively with it during the life of the patient. Over a century later, in 1859, Thudichum, in a paper on

the "Pathology and treatment of gall stones," wrote: "In decided cases the surgeon should consider the propriety of planning and performing an operation for the extraction of these foreign bodies either in a direct manner or by forming a biliary fistula and adopting a lithotriptic proceeding." In 1876 Thudichum and Maunder again broached the subject, and in 1878 Handfield Jones also proposed operation to a patient suffering from cholelithiasis. In the year 1867 an American surgeon, Dr. Bobbs, operated upon a case of abdominal tumour, diagnosed as probably one of ovarian cyst. The tumour proved to be a gall bladder, upon which Bobbs performed "lithotomy," removing several stones. But it is to Marion Sims that the credit is to be given for the first formulation of the operation of cholecystotomy; the deliberate planning and the practical accomplishment of a procedure so carefully designed and so thorough that Lawson Tait wrote, "The entire possibilities of the treatment of gall stones and distended gall bladder are exhausted in Dr. Marion Sims's original paper."

The first operation successfully performed in two stages is to be credited to Kocher, who in 1878 opened the abdomen, packed round the gall bladder with Lister's gauze, and six days later, when a barrier of adhesions had formed, opened the gall bladder and emptied it of stones.

An examination of all the lengthy literature of this subject, however, leaves one in no doubt that the most conspicuous merit for the pioneer work attaches to Lawson Tait. It was he who, basing his work upon the case of Marion Sims (a case of common duct obstruction, with jaundice, which proved fatal in a few days from haemorrhage), made of cholecystotomy a safe operation. Probably no operation of equal difficulty and severity was ever ushered into the world with so marvellous a series of successful cases. In 1884 Tait wrote: "I have performed the operation thirteen times, and all recovered." Up to the end of 1884 there had been performed in all the world twenty-eight operations, of which Lawson Tait did thirteen. Of the first 104 cases, he had operated upon 56; the whole of Germany then claimed 9 cases.

Cholecystectomy, the safe possibility of which had been shown experimentally two and a half centuries before, was first performed on July 15th, 1882, by Langenbuch. This is a very valuable addition to the resources of the surgeon, and its originator may well have had a legitimate pride in its inauguration. We cannot, however, hope to pay to his memory the luscious compliment he paid himself in the arrogant Prussian fashion and at inordinate length. If it is the only original contribution of Germany to the surgery of the biliary system, it is in truth a considerable one.

In the later developments France, England, and America may claim that they have played the greater part. To them are due not only those advances along the frontier of medicine which have disclosed to us the early symptoms of cholelithiasis, but also those technical perfections which have made precocious interference the safest and most prudent of all modes of treatment. Over against this recent work what has Germany to show? She has one man of large experience to put forward—Kehr, and he is, indeed, a typical representative of his country. Kehr has been a prolific writer and has published very full accounts of his technique and results. Kehr advises operation where there is obstruction of the cystic duct, infection of the gall bladder or ducts, or when stones are arrested in the common bile duct. A great many of the indications accepted by surgeons in other countries are omitted. For the purpose of access to the parts he has devised an incision, the *Wellenschnitt*; of great length, it begins in the epigastrium below the ensiform cartilage, extends downwards towards the umbilicus, then across the right rectus transversely for 2 in., and, finally, vertically down the rectus for 3 in. to 4 in. A very free exposure results. In all cases, or almost all, the gall bladder is removed, and the hepatic duct drained, often by a tube of T-shape, one arm of which goes upwards to the liver, the other downwards to the duodenum. The methods throughout are crude, coarse, heavy-handed, lacking everything in the way of daintiness and refinement. This is expressed in the results, in which the mortality and morbidity are excessive. So far as the purely intellectual side of the work is concerned, in all Kehr's writings there is nothing at first hand. The

inquiry as to the inaugural symptoms of cholelithiasis, the question of the early recognition of the presence of stones, the association of gall stones with other abdominal diseases, appendicitis, intestinal stasis, in the relation of effect and cause—of these matters there is rarely an original observation. There is the same academic completeness of exposition which we find in all German work; full, indeed tedious, accounts of anything and everything wearisome prolixity; but the facts and records are there in full. The only original piece of work done in the whole realm of cholelithiasis, in recent years in Germany, is that upon the formation of gall stones, by Aschoff and Bacmeister; it is important and accurate, but it touches only the fringe of the larger question of cholesterinaemia, in which the chief work has been done by the French.

What is the history of the surgery of the stomach? The earliest account of gastric ulcer was given by Matthew Baillie in 1793. It is true that the disease is mentioned both by Galen and Celsus, and that there are records of probable cases, when haemorrhage or perforation occurred or fistula into the stomach developed, as early as the sixteenth century. But the first clear and illustrated anatomical description, accompanied by clinical histories, was given by Baillie. It is, however, to Cruveilhier, who wrote in 1829 and 1830, and up to the year 1838, that we give credit for the first full and accurate descriptions of the pathology and clinical manifestations and treatment of this disease. These descriptions are in the tenth and twentieth parts of his splendidly illustrated work on pathological anatomy. To Cruveilhier the famous German physician Ewald attributed the first careful and comprehensive description of gastric ulcer, and said that he "was the first to raise the gastric ulcer from a curiosity of the autopsy table to the dignity of a definite and recognizable pathological condition." In the year 1835 Cruveilhier gave the first suggestion of the development of cancer from a simple ulcer.

The earliest records of duodenal ulcer are found in connexion with stray cases, or in those where perforation or haemorrhage had occurred and caused death. The earliest mention was by Travers in 1817. Abercrombie in 1830 gave the first connected account of the disease, and recorded a few cases. In 1894 the first successful case of operation for a perforated ulcer was recorded by H. P. Dean of London. In 1900 Weir of New York gave an excellent summary of all the cases of perforation then on record. But of duodenal ulcer as a cause of continued or recurrent dyspepsia, or as a pathological lesion to which were attached a series of symptoms capable of recognition during life, there is nothing. The first ascription of a group of symptoms to the definite structural lesion in the duodenum is to be placed to the exclusive credit of English medicine.

The development of the surgery of the stomach has been one of the most brilliant and most fascinating of all the recent conquests of our art. So long ago as 1810 it had been shown by Merrem that the removal of a part of the stomach in dogs could be followed by recovery. This experiment was repeated and multiplied in 1876 by Gussenbauer and Winiwarter. It is, however, to a French surgeon, a most dexterous operator, that the credit is due for the first attempt, albeit unsuccessful, to remove a part of the stomach for cancer. On April 9th, 1879, Péan of Paris carried out the first pylorotomy for malignant disease. The operation was repeated, again with a fatal result, by Rydygier in 1880. It was on February 8th, 1881, that Billroth in Vienna performed the first successful gastric resection for carcinoma. I have seen the specimen, which consists of the pyloric end of the stomach; it measures about 3 in. in length in its present state. It was the work of Billroth and of his assistants Mikulicz and Wölfler that proved the surgical treatment of carcinoma of the stomach to be feasible. Billroth clearly laid down the principles and the technical details to be observed in all gastric operations. All later work was made possible by his work, and we may safely reckon his contribution to this branch of surgery as the finest of the many notable achievements in the life of this great surgeon. It fell to Wölfler, while assistant to Billroth, to perform the first operation of gastro-enterostomy, on September 27th, 1881. The patient suffered from a malignant obstruction of the pylorus, and it was Wölfler's intention to perform resection. This was found impossible, and the abdomen was about to be closed when Nicoladoni, who was assisting, suggested

that the jejunum should be united to the stomach and an opening between the two viscera made to relieve the pyloric obstruction caused by the growth. The original operation was of the "anterior" type. Union of the jejunum into the posterior surfaces of the stomach was first suggested by Courvoisier of Basle, and von Hacker of Innsbruck.

The great surgical accomplishments in the last quarter of a century have been concerned with the simple diseases of the stomach, with chronic ulcer and its complications. The first gastro-enterostomy for chronic obstructive ulcer was performed in 1892 by Doyen of Paris. It is to the advocacy and to the marvellous technical skill of this surgeon that we must attribute the general recognition of the value of surgical measures in cases of chronic gastric disease and the recognition of gastro-enterostomy as a "drainage operation." The surgery of perforating ulcer of the stomach began with Mikulicz, whose first suggestion dates from 1880. Between the years 1885 and 1893 Mikulicz operated upon thirty-five cases with thirty-four deaths. This is to be considered, taking into account the early period of this work, as the saving of one life, rather than the loss of many.

The literature emitted by Germany upon the subject of gastric diseases is vast in quantity, prolix and turgid in style, lacking insight and interest, and almost utterly devoid of inspiration or original thought. It is, however, a complete record of the progress made and of the knowledge gained by all the workers in every corner of the field. The Germans are seen in their most characteristic phase as gleaners and harvesters. The seed has been sown by others; it is they who have guarded the crop, garnered it, gleaned every straw of it, and stored it in vast and ugly chambers. Gastric ulcer is a comparatively rare disease, of few but clear-cut symptoms. Around this simple matter the German clinicians have weaved a web of rhetoric which has encumbered it and swathed it beyond recognition. And they have borrowed freely from a riotous but rank imagination bereft of facts, and have insulted the intelligence of those who could not agree with them. The literature of Germany on such a subject as gastric ulcer reminds me irresistibly of Hans Andersen's delightful story of the "Emperor's New Clothes." Around this simple disease their physicians weaved, with unceasing industry, garments of a material every thread of which they declared to be of the rarest and finest quality, they told all the world of the beauty and superb texture of these royal robes; so confident and magisterial were their loud assertions and so complete the trickery by which they imposed upon all spectators, saying that only those of virtue could see the wonderful garments, that, as in the story, the crowd was humbly acquiescent. But at last the little child, the surgeon, came along and cried: "But he has got nothing on." And the whole artificial fabric was torn away, and the imperial ulcer was seen for what it was in all its naked ugliness.

SURGERY OF THE BRAIN AND CORD.

The development and progress of cerebral surgery in the last century would certainly be considered by the older physicians, could they learn of it, as the most incredible achievement of all. To them the skull and its contents were sacred and inviolable. Aristotle had spoken disparagingly of the brain, saying it was a mere cooling apparatus, and trephining operations had been not uncommon even in prehistoric times. But by the mediaeval physicians the brain was looked upon as the seat of the soul, and no profane hand might be laid upon it. When, however, the Renaissance came, with its astonishing development of physical science as well as of art, the work of Mondinus and Vesalius opened the path for all later explorers. What Harvey achieved for physiology was almost equalled by the work of Thomas Willis on the nervous system. As Victor Horsley said, these researches "exhibit an extraordinary grasp of the function (and its corresponding relation to structure) of the nervous system generally." Willis's work ought to have abolished for ever the old mystical beliefs as to the function of the brain. He was the first to allocate definite functions to distinct parts of the nervous system and to assert that the excitation of the cerebral cortex passed into the substance of the brain and thence into the spinal cord and nerves. The work of Thomas Willis was, unhappily, ignored completely,

though as we look back upon it we are inclined to agree with Horsley, who wrote "that it was due to Willis that probably the greatest advance gained in psychology ever since it became a science, the localization of function to distinct parts of the nervous system," was made. The first of those who sought by the method of experimental research to discover the secret of the functions of the brain was Flourens in 1826. His investigations dealt both with the cerebrum and the cerebellum, and were of high value, not only as examples of a new method, but also because of the positive, though limited, conclusions upon many matters, which as a result of his work he was entitled to draw. But even he, writing more than a century and a half after Willis, asserted that the brain worked as a whole, and that separate specific functions could not be allotted to its several constituent parts. Indeed, the universally accepted opinion up to the year 1861 was that the brain acted as other organs acted, its function being carried out by an equal working of all its parts. In this year Broca, as the result of his inquiries into the pathological anatomy of certain cases of aphasia, came to the conclusion that the faculty of articulate speech depended upon the integrity of a definite and limited area of the cerebral cortex. Broca's discovery was revolutionary; it involved a complete reversal of former opinions and judgements, and it opened up afresh the whole question of the function of the cortex of the brain. Hughlings Jackson in 1869 was the first to assert that the convolutions of the brain could be divided up into separate areas, each having its own restricted and unchangeable function. He based his opinion upon observations made to correlate the clinical symptoms manifested during the life of the patient with the organic lesions of the brain discovered after death. In 1870 Fritsch and Hitzig demonstrated by animal experiments that by the electrical stimulation of certain areas upon the cortex co-ordinated movements, in distinct groups of muscles, on the opposite side of the body, could be produced. These observations were important, but the work of supreme significance in cerebral localization was done by Ferrier, and published in 1873. Ferrier's researches were undertaken to test experimentally the conclusions reached upon clinical and pathological grounds by Hughlings Jackson. The result is known to all the world. Ferrier's investigations established firmly and finally the knowledge that there are points in the cortical matter of the brain definitely related to the motor and sensory functions of certain parts of the body. The way now was cleared for the surgeons, for Lister had afforded them safety, and Hughlings Jackson and Ferrier gave them guidance. The pioneer work in this direction was exclusively of British origin. One of the most dramatic occurrences in the whole history of surgery must surely have been the reading on August 9th, 1888, of a paper on the "Surgery of the brain and spinal cord" by W. Macewen of Glasgow. Cerebral surgery seemed to spring Minerva-like into the world, complete at every point. Macewen told of his first case in July, 1876; it occurred in a boy who developed an abscess in the immediate vicinity of Broca's lobe, as the result of an injury to the skull. Consent was not given to the operation urged by Macewen, notwithstanding the assumption by himself of the sole responsibility of advising and performing the operation; and the boy died. Macewen tells how "after death the friends acquiesced in the proposal to have the operation performed just as it would have been had permission to do so been granted during life. The skull was trephined, the brain exposed, and an instrument was introduced through the third frontal convolution for half an inch, when pus flowed through the incision, proving the accuracy of the diagnosis and giving poignancy to the regret that the operation had not been permitted during life. The abscess, about the size of a pigeon's egg, was situated in the white matter of the bases of the second and third frontal convolutions." In this case the precise spot in the brain which the abscess occupied was accurately determined from the localizing phenomena induced by the focal lesion.

Macewen's first successful cases—one of abscess and one of tumour of the frontal lobe—occurred in 1879. In the paper to which I have referred there were recorded 21 cerebral cases (exclusive of fracture of the skull with brain lesions), with 18 recoveries and 3 deaths. Of those who died all were in *extremis* when operated upon. At the time the paper was read 16 of the 18 were still alive;

one had died eight years after operation, and one forty-seven days after operation of tuberculous enteritis.

The record of the work achieved by this surgeon, working alone upon new problems and in a new field long before other minds had begun to stir, is one of the greatest triumphs in the history of scientific surgery. In the year 1884 Bennett and Godlee reported a case of cerebral tumour treated by operation, and in 1886 Victor Horsley reported three cases of cerebral surgery to the British Medical Association.

Great Britain may therefore make an undeniable claim to priority in respect both of the scientific work which made operation upon the brain possible and purposeful and of the procedures by which such operations were carried out with safety and accuracy. Germany here also has been a follower, not a founder. Her entrance into this field was of later date than that of the British, French, and Italian physicians and surgeons, but her work in it has been arduous and helpful.

The development of the surgery of the spinal cord was also dependent upon early experimental research. Galen, as is well known, had shown that there must be nerves of sensation and nerves of motion. Willis had made it certain that the nerves did convey sensation "and instincts to movements," but, as Sir Victor Horsley says, "no further determination as to the particular part of the nervous system which might be occupied in providing for such transmission of sensations and movements was made until 1811, when Sir Charles Bell, by his numerous investigations, was led to believe that separate parts of the brain and spinal cord subserved these two functions." Sir Charles Bell knew, of course, that the spinal nerve had two roots, anterior and posterior; he found by experiments that it was irritation of the anterior roots only that gave rise to the movements of the muscles. He says: "I now saw the meaning of the double connexion of the nerves with the spinal marrow." Bell's work was the first to prove that there was undoubtedly a principle of localization of function in the nervous system. When it had once been shown that this localization of function existed in the conducting nerve channels it was not difficult to see that the same difference must exist in those central parts to which, and from which, the nerves must pass. The surgery of the spinal canal was inaugurated by Sir Victor Horsley, who in 1887 was the first to open the spinal dura mater and to remove a tumour of the cord. In December, 1888, Bennett first divided the posterior nerve roots in a case of inveterate sciatica. In 1889 J. L. Faure performed the same operation for the relief of agonizing pain in a case of cancer of the uterus. Foerster's operation, the division of the posterior spinal nerve roots for the treatment of gastric crises and spastic paralysis, based largely upon the work of Sherrington and Head, dates from 1908.

CONCLUSION.

What, then, has been Germany's part in all the astounding progress of modern surgery? It has been the same in surgery as in every other science. Almost all fundamental discoveries in science, Dugald Clerk tells us, have originated in England, France, and Italy. In capacity for original thought the German mind is lacking. The brilliant and happy inspiration, the penetrating insight, the new vision are things for which we seek almost in vain in all German scientific literature. The fertile new thought giving a fructifying impulse to the work of others is rarely indeed of German origin. The German mind is of quite a different order. It is avaricious, industrious, methodical; it collects, if it does not accurately appraise, the work of others. It tabulates and registers and explains; it furnishes an intricate analysis, and illustrates by copious reference any subject with which it may deal. The new idea, originating almost always elsewhere, is given eager hospitality, is dissected and discussed at inordinate length; it may be put into practice with various alterations of technical procedure, and before long be claimed as a home product. For this act of intellectual dishonesty many of the German writers were not to blame; for a study of the literature of almost any subject in medicine chosen at random will show the amazing infrequency of any reference to the English or American literature, and very few indeed to the French. Thus in Riegel's work, the article on ulcer of the stomach has four and a half pages of references, seven references are to English writers, five are to papers by Riegel himself.

The name of Brinton is not even mentioned in this list, and yet it is probable that in his small book there is more of the truth of the matter of gastric diseases than in all the interminable treatises published by all the German physicians since his death. This almost exclusive reference by German writers to the works of their own countrymen was greatly helped by their publishers. In the last few years I have heard more than once from friends of my own in the medical profession in Italy, in Spain, and in Norway, that it was impossible to obtain from an English or American publisher a copy of any medical work on approval. A surgeon, desirous of seeing a new work in any special department of surgery, could only do so by purchasing the book outright and taking his chance as to the contents being to his liking. Any German publisher would send him all the books or journals he desired to see on approval. The copies of new German works on medicine were always sent to the editors of foreign journals for review. A new medical work in English was rarely, if ever, sent to Scandinavian countries, to Spain or to Italy, and to France or to Germany only in the case of a work of outstanding importance. To put this matter quite briefly, reference could always and quite easily be made by foreign physicians or surgeons to works published in Germany. It was difficult to hear of English works, and almost impossible to obtain them except by a speculative purchase. To the claims which Germany makes for intellectual supremacy we may therefore, speaking of scientific surgery, retort by a firm and flat denial. Not one single discovery of the first importance in the science or in the art of surgery can be placed to the credit of Germany. Nor, if we omit the Semitic element in the Germany of to-day, should we expect this to be the case. For the German mind is deductive; it is patient, laborious, massive; but it is not original. The German is not an innovator, but a renovator; not an explorer, but an exploiter; not a creator, but a collector.

A RECONSIDERATION OF THE PRINCIPLES AND METHODS OF HUGH OWEN THOMAS.*

II. SOME REFLECTIONS ON THOMAS'S SPLINTS AND PRACTICE.

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I INDICATED in my first communication (July 15th, 1916) some of the many new resources which the genius of Hugh Owen Thomas devised for the improvement and advancement of a branch of surgery which since his time has failed to get its proper place in the sun owing to the birth, rapid growth, and brilliant youth of modern abdominal surgery. Nevertheless, Thomas's boots for the prevention and the correction of flat feet, Thomas's wrench for dealing with congenital and acquired deformities, such as club feet, neglected or unreduced Colles's fractures, and Thomas's "splints" for treatment of injuries, deformities, and diseases of the lower extremities very slowly but surely found a place in the records of the progress of orthopaedic surgery.

One of the factors which made Thomas's success in this department so unique was the personal attention he gave to every detail in the construction of the many devices or machines which he invented; it would have been impossible for him in his busy life in pre-telephone days to follow the orthodox but ineffectual fashion of resting dependent upon the services of a surgical instrument maker living at a distance from his consulting-rooms. He solved the problem by what appears to be a true inspiration—he had workshops built closely attached to his consulting-rooms. It was only by this means that he was enabled to carry out the enormous amount of experimental work entailed in working out the models of orthopaedic appliances; when he had perfected them he was able to recommend them with confidence to the profession. Orthopaedic surgery owes a lasting debt to Thomas for this bold if heretical act; for him it was the only way

* Continued from vol. ii, 1916, p. 72.

to reach a practical solution of daily perplexing orthopaedic problems. The majority of the Liverpool leechcraft of the eighteen-seventies treated him as a prophet is traditionally treated in his own country. However, it is pleasant to record that the names of Dr. A. F. Ayerton and Professor Rushton Parker are to be remembered as disciples in the local wilderness.

Although Hugh Owen Thomas's name is associated with some of his own orthopaedic inventions, nevertheless in justice to him it must be recorded that, as a historical fact, neither English nor American authors of books on surgery have down to the present time given him credit for evolving an epoch-making contribution of another kind to surgery. Not only have they omitted to do this, but they have committed the additional and extraordinary blunder of attributing it to a man who was a medical student when Thomas published his method! I refer to Thomas's method for the treatment of delayed union of fractures and disease of joints by what is known to-day as "Bier's method," but which was called by its originator "damming the circulation."

In a book published in 1886 by Thomas on the *Principles of the Treatment of Fractures and Dislocations*,¹ he wrote (pp. 29-30) as follows:

"During the early part of my practice I invariably interfered with the instances of delayed repair by either rasp, saw, wire, or pegging, operating upon an average of eight to ten cases annually, but during the last ten years I have better succeeded without direct interference although most of the cases submitted to treatment were less hopeful of success than any of my earlier cases. My change of opinion and practice commenced March, 1874."

In a footnote he adds:

"My view on the treatment of delayed union first appeared in the Liverpool and Manchester Surgical Report issued 1876."

It is worth while to give here an abstract of one of the many cases Thomas recorded in his book as evidence of the value of "damming." The story of one particular case and the drawings by which it is illustrated are in themselves enough to convince the most sceptical that the claim made for Thomas is well founded. This is the remarkable case of J. W. Jones, Wisconsin, U.S.A. The full story is given on pp. 46-47 of the book from which I have already quoted. The drawing with which Thomas illustrated the method is reproduced in Fig. 1, and his report of the case is as follows:

"Three years previously he was driving in a double horse wagon down a hillside road. The load proved more than the horse could control, and the wagon began to descend at a rapid pace, which so alarmed the driver that he attempted to leave the wagon, and while trying to do so fell and fractured the left humerus. He was attended to by a neighbouring practitioner, but the result of six months' treatment was failure of repair. From this defect several surgeons of repute in his own State tried to cure him, but they failed to remedy the fault and also declined resection. Consequently, he remained contented with the defective and useless arm, the condition of which much hampered his usefulness. In the early part of May, 1881, having ascended an elevation on his farmyard, the helpless condition of his arm caused him to overbalance himself and he fell down. This so annoyed him that he immediately left home, and arrived at my surgery sixteen days after the mishap. The forearm being placed at a right angle to the arm, as seen in Fig. 1, was slung by the wrist from his neck, and subjecting the points of fracture to mild percussion every four or five days, and the keeping up of a prolonged tumefaction for a distance around, above, and below the fracture, by means of india-rubber bands. No method of fixation was employed. This treatment was

watched daily for about three months, when the patient visited the Principality and spent some weeks with his friends, continuing the treatment; and on his return there was apparent progress towards consolidation, which gradually improved, so that after eight months of treatment repair was perfect and the patient returned home. He, in March 1882, reported his arm as now useful and gaining in muscular power."

In commenting upon the above, Thomas says, "This case, I think, may be accepted as testimony that we can, in the treatment of delayed repair, introduce a little more physiology with gain."

Any one who reads the first fifty-three pages of the book from which I have quoted would, I am sure, feel astonished that British surgeons should have allowed credit to be given to any other man than Thomas, and also would be surprised to find, considering how unsparingly he criticized American surgeons such as Sayre and Hamilton, that the same fiction has become established in the States. In the *History of Medicine*, by Garrison, Thomas's name is not even mentioned; but to Bier, who qualified two years after Thomas published his book, is given the

credit of introducing passive hyperaemia as an adjuvant in therapy (1903). In the same book Bier is also credited with introducing intraspinal anaesthesia with cocaine (1899), although in a later paragraph it is added that in this method he was preceded by Corning of New York City (1885). In dealing with this aspect of professional blindness of the old London school to advancements made in the provinces, I venture to quote Thomas's views from Part III of his *Contributions to Surgery and Medicine* (December, 1883):

"But the fact that the details of treatment, advised by me, have in a short space of time become so widely accepted . . . gives me presumptive evidence that my theories are correct, and will in time become generally accepted . . . indeed, in some instances my opinions have been adopted but in a manner I did not expect. For example, I have this day received a reprint of a lecture in which the whole of my teachings relative to diseased articulations have been adopted. The lecture is a skilfully condensed epitome of my writing upon the subject, and which I know the lecturer to be conversant with, and which are opposed to the views published by him

in the *Medical Record*, July 7th, 1883. To remove from the minds of his audience any suspicion of retailing second-hand information, the lecturer informs them: 'I have none of my fellow workers in view. We have all been followers of Dr. H. G. Davis.' This informed me that while the lecturer could ignore the source of the information he was circulating, yet he could lug forward a surgeon whose teaching has so injuriously influenced the practice of the surgery of diseased joints, and from whom he now joins me in dissenting. . . . Some six years back one of our Gallic neighbours published my views as his own, and they were thought so meritorious that a watchful foreign correspondent of an English medical journal gave us a reimportation. I could point out more examples of the 'by night' sort of compliment, but refrain lest my readers should suppose I believe that the most intelligent among us are also the most unscrupulous plagiarists."

Thomas's patience in resolving surgical and medical problems was of a rare type. I indicated in a previous communication that he had utilized an invention over a thousand times before recommending it to others. Thomas, dealing with problems of peace deformities, warned innovators to study and master his appliances before proceeding along a path in which he spent weary years of experimenting before perfecting and recommending them. And a further example may here be quoted as a warning to those who modify his inventions to refrain from so



FIG. 1.—Thomas's method of damming the circulation in a case of ununited fracture.

doing until they are sure that they have mastered the principles guiding the construction of his original surgical appliances. He relates that "the club-foot shoe, simple as it appears, was not adopted in a day; it is the outcome of thirty-two years' experience."

The tragedy of a summer scene (1916) of this war with over six battalions of disabled sailors and soldiers in their prime (30,000 to the end of May, 1916) is a thrilling logical reply to men who lack prevision and even now somewhat scornfully animadvert upon the new term, "military orthopaedics." Many of our soldiers who have been placed on the scrap-heap by medical boards are either curable or can be made more useful citizens; the permanent disabilities of a still larger number could have been prevented if the principles and practice advocated by Thomas had permeated our medical schools a generation ago.

The creation by the War Office of military orthopaedic centres, embodying Thomas's plan of establishing workshops in direct connexion with hospitals, is a development full of potentiality for good.

As an apt illustration of the value to me of new light from the Liverpool School of Orthopaedics, I would instance the treatment of ischaemic, or Volkmann's, paralysis. By appropriate treatment founded on Thomas's principles the patient's hand can be restored to full use and prevented from becoming a withered, shiny, atrophic, almost useless appendage. In connexion with this matter, I may quote from a letter received from Dr. A. A. Warden, Paris, dated March 2nd, 1916, as it reminds me of the occasion upon which I first gleaned information upon this subject. "It was a great disappointment to me," he writes, "not to see you and Robert Jones on your flying visit to Paris. I was reminded of you both the other day by a young Chasseur d'Afrique fresh from the trenches. Do you remember a good many years ago (1901) you and Jones were lunching with us and I got a small boy to show you a nasty fracture of the humerus involving the elbow-joint, with wrist-drop, trophic ulcers on his knuckles, palmar contracture, etc., and Jones told me about the hyper-extension of the wrist? Well, this was the boy; a strapping young fellow of 24, come back from cowboy life in America to serve his time..." My own advice had already been given to my friend according to the orthodox treatment of the day with the proviso that he should warn the parents as to the disappointing end-results of these cases. Since that time I have cured many such cases upon the lines he then indicated, and which have recently been published in the *BRITISH MEDICAL JOURNAL* by Colonel Sir Robert Jones, C.B., Inspector of Military Orthopaedics.

Such a fact encourages me to recall other methods initiated by Thomas which have proved exceedingly useful in the treatment of injuries, some of which under the treatment usually followed involve varying degrees of permanent disability. The war has made this matter doubly urgent. Modifications of Thomas's methods have to my knowledge been followed by results which, from an economic and wage-earning point of view, have been unsatisfactory, not to say disastrous. Most of the subject-matter to which I draw attention has already been referred to in the series of valuable articles recently contributed to the *BRITISH MEDICAL JOURNAL* by Robert Jones, but the particular items I would venture to add or to amplify have reference to:

1. Fracture of the femur.
2. Thomas's method of reducing simple backward dislocation of the ankle-joint.
3. Thomas's method of setting a Pott's fracture.
4. Thomas's method of reducing dislocation of the hip.
5. The after-treatment of amputations at or above the knee-joint.
6. Thomas's diagnostic method for detecting flexion deformities at the hip-joint.

1. Fracture of Femur.

Treatment of fracture of the femur in any situation except in the upper third is readily and efficiently carried out by following all the details of the method introduced by Thomas.

The time has come for an expression of opinion as to the safest and the best method of dealing with fractures of the femur. Every one who has had the opportunity of seeing

the complicated nature of such injuries in this war appreciates the difficulties with which the surgeon has to contend. After seeing some of the end-results one is nevertheless forced to state that there is no shadow of doubt that if those who were responsible for the treatment had appreciated the use of Thomas's methods, useful limbs would have been the result with normal gait in ordinary boots instead of an ungainly hobble in surgical boots with the assistance of sticks and crutches. I have seen many cases plated by different—not indifferent—surgeons in which the end-results have not been equal to those obtained by non-operative treatment by splinting.

From a fairly extensive personal experience of the use of screws, plates, and Lambotte's appliances, I have come to the conclusion that Thomas's method is better, safer, easier, and speedier. As in the case of open operations, however, the principles which govern the method must be carefully studied, and their application mastered in every detail, before the excellently good results achieved by Thomas can be obtained.

It is necessary to remember that Thomas maintained that extension alone could not be trusted to obtain proper alignment in a fractured femur. In his opinion it was also essential that the limb should have further support either at the back, the side, or front, or a combination of them according to circumstances. It was through these additional supports that proper forces were directed in order to keep the ends of the bone in correct alignment, consequently Thomas's knee-splint was made with lateral iron rods of sufficient strength to withstand the forces acting on the broken limb in three directions, namely, (1) longitudinal, (2) transverse, and (3) antero-posterior.

In order to appreciate how antero-posterior forces more especially act and counteract each other through the lateral bars of Thomas's knee splint, I have reproduced Figs. 2 and 3, with the explanatory letterpress from his book (Part VII).²

"Fig. 2 is a plan of the method of reduction. The fulcrum points are A E, the applied leverage force C D, and the fixed extension is shown at G, F being the adhesive gaiter with

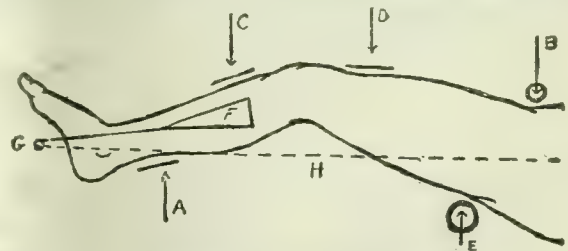


Fig. 2.—Knee-joint flexion deformity; method of reduction.

cord attached to G, a sectional view of the lower end of a bed-splint, just as A is such a view of the lower supporting leather; E and B are also sectional views of the groin ring of a bed-splint, the B part having no duty to perform, as all leverage is gained by the resistance at A and E to the force C D; the dotted line is the supposed external rod of a bed-splint. C D are the reversible pads, which are the points of application of force."

"Fig. 3 shows reduction effected and the joint arrested by B from descending beyond strict extension. In both diagrams the direction of the travel of the arrow points

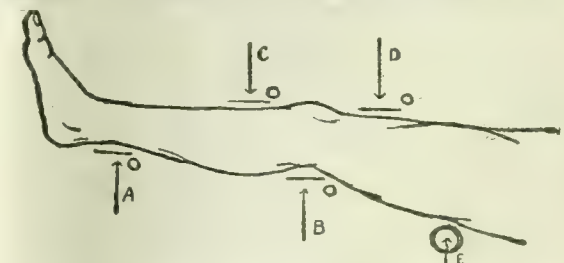


Fig. 3.—Knee-joint flexion deformity: reduction effected, the joint being arrested by B from descending beyond strict extension.

indicates the direction of force. In Fig. 2 the popliteal support B is absent; consequently the joint descends by the employment of force at the points C D, until the popliteal space comes in contact with the point of rest,

the cross mid-leather at B, the joint can have no rest, nor the sufferer ease from pain, the B support being the key to the position of 'greatest ease' and the reversible pads secure invariability."

Having effected the reduction of the deformity, the knee is fixed and the whole limb is in repose; the muscles, finding their conservative efforts needless, cease their action.

I have seen many tragic cases of preventable disabilities following treatment based on modifications of Thomas's practice.

It is not yet generally realized what an extraordinary amount of force is often required to overcome the shortening of a femur. It is also not yet universally realized that sagging deformities of fractures of femurs can be prevented by the application of antero-posterior forces acting upon the side bars of Thomas's splints according to methods he adopted.

In the whole range of unsatisfactory end-results of treatment of fractures I know of none so lamentable as those of the femur.

Shortening of a lower limb from one to five inches, accompanied by sagging deformities, are grievous calamities; they can almost invariably be prevented, or can often be remedied at a later stage by the application of powerful forces applied through pulleys. Thomas's knee splint made according to his instructions is infinitely the best means of dealing with such cases; its side bars are strong enough to stand a force exceeding that of the weight of the patient in the longitudinal stress; they are strong enough also to withstand the transverse and antero-posterior forces necessary to maintain the limb in the line which ensures absence of sagging or latero-angular deformities. The want of appreciation of the part played by the side-bars is a contributory factor to failure in treatment.

The aluminium splinting which has been used by some surgeons in the treatment of fractured femurs is too weak and pliable to withstand the requisite forces, and it must be condemned as a trap for the unwary in treating the type of cases I allude to; it is easy to demonstrate the relative strength of aluminium splints for the thigh and Thomas's. Once a lateral bar of the aluminium splint is bent its resistance to a powerful longitudinal force is gone—it has no resiliency, an essential point in the maintenance of efficiency—whilst it is never strong enough to withstand the transverse forces which have frequently to be applied to the lateral bars of a Thomas's splint. Any one can satisfy himself of the truth of what I state, and measure the strain by applying the forces mentioned to either type of splint appropriately fixed to a spring balance; a more homely demonstration is obtained by trying to bend both across the knee in order to test the give of the metals to transverse strain; the longitudinal strength of an aluminium or iron splint can easily be tested by pushing against the ring when the foot-end is placed in the corner of a wall. Thomas's knee-splint gives confidence and safety; aluminium splinting neither.

Even Thomas, with his perfected knee-splint, regretfully records that "in the upper third of the femur on several occasions, during an experience extending over thirty-two years, it has been my lot to fail in 'restoring' several fractures of the femur close to the trochanter." It is interesting to observe that this special difficulty which baffled Thomas's ingenuity has since been overcome by the introduction by Robert Jones of the "abduction frame" by which proper alignment of the broken bone can be maintained and the normal length restored.

2. Fractures about the Ankle.

Thomas's method for the reduction of simple backward dislocation of the ankle-joint is shown in Fig. 4. Thomas states that "where delayed extension to two or three weeks in the reduction of the backward dislocation of the ankle-joint, or in cases where no skilled assistance is at hand, the illustration shows how the surgeon can much

increase his individual powers, and succeed without the aid of an assistant or of an anaesthetic. From the illustration it will be seen that the power of the surgeon's arms is assisted by the efforts of his trunk muscles, through the medium of a bandage passing behind his neck and under the patient's heel; a counter force is gained by attaching the patient's leg to the surgeon's foot with a bandage. The surgeon, as he finds best, may employ both hands to the patient's heel, or, as in the illustration, one hand to the heel and the other to the leg."



FIG. 4.—Method for the reduction of simple backward dislocation of the ankle-joint.

3. Setting a Pott's Fracture.

Thomas's method of reduction of a Pott's fracture is illustrated in Figs. 5 and 6. Fig. 5 shows the fracture with the common valgus deformity. Fig. 6 shows how Thomas reduced such a deformity six or seven weeks after date of injury. He states "that the reader will notice that the manner of employing the necessary force and counter

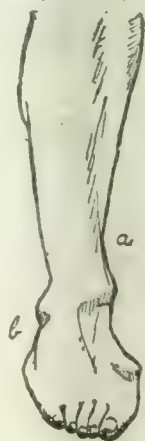


FIG. 5.—Pott's fracture, showing common valgus deformity. a, Inside of leg. b, Outer aspect of foot and heel. The lettering in Fig. 6 corresponds.

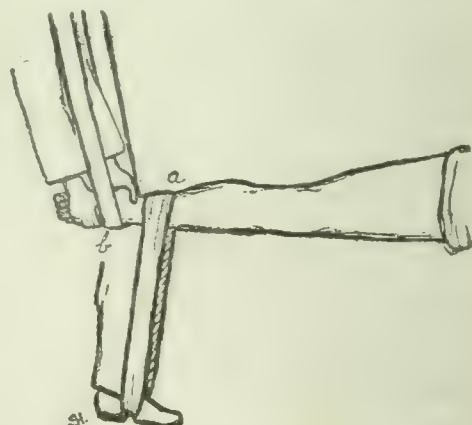


FIG. 6.—Thomas's method of reduction. a, Site of counter force. b, Site of opposing force.

force, is similar to that for the reduction of an ancient dislocation of the ankle, but with this difference, the counter force attached to the surgeon's foot acts upon the inner aspect of the patient's leg, while the opposing force, the towel over the surgeon's neck, is applied to the outer aspect of the patient's foot and heel, being further supplemented by the surgeon's hands applied to the same locality."

4. Method of Reducing Dislocation of the Hip.

Thomas states, "My general method of reduction is shown in sketch by Fig. [7]. By a glance at that figure, the reader will perceive that the pelvis is fixed to the ground by a looped towel, passing over the patient's groin and under the arch of the operator's foot, while the flexed knee of the patient is drawn over the operator's thigh, who, grasping the patient's leg, flexes the knee more, also using the leg as a lever to strain the fixed point, the groin towel. By this arrangement the operator is personally able to apply an amount of force approaching that to be gained by the use of the 'tripod,' which is probably seldom

procurable. By this plan the operator is free, though aided by extra force, to perform his flexion, rotation, abduction,



FIG. 7.—Method of reducing dislocation of the hip (Thomas).

and sudden extension without interruption. It may happen that the patient to be operated upon may be a very tall man and the operator a short person; the disparity between their respective limbs would much lessen the leverage—extending power of the operator. This hitch can be easily arranged; the operator should pack the upper surface of his thigh, the fulcrum point; this act practically lengthens his leg for the purpose intended."

5. Thomas's Frame for Treatment of Amputations at or above the Knee-joint.

Fig. 8 shows a frame Thomas² found to be "labour saving" in the after-treatment of amputations at or above the knee-joint. I have introduced this frame into several military hospitals, and it has given every satisfaction; it is constructed of five-sixteenths inch iron wire, and its mode of application is shown in Fig. 9. The wings of the frame can be altered to fit different limbs, and the angle of fixation can also be altered. The wide lower wings cover a large area of soft bed and do not sink into it, and on them a weight can be fixed to anchor and to steady the frame.

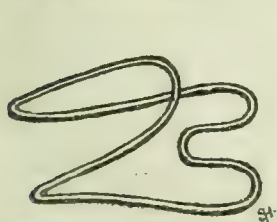


FIG. 8.—Frame for supporting thigh stump.

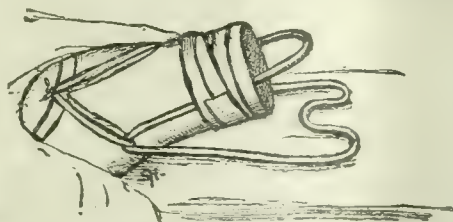


FIG. 9.—The same applied.

6. Thomas's Method of Detecting Flexion Deformities at the Hip-joint.

I think it desirable to reproduce a diagram (Fig. 10) illustrating the method Thomas introduced over forty years ago for detecting flexion deformities. My reason for doing so is that I have seen a large number of thigh amputations on the Continent with artificial limbs fitted on to the deformed stumps. In this country a large number of stumps with similar troubles are sent by well-known surgeons to be fitted for artificial limbs. There is one factor in determining flexion deformities at the hip which is not perhaps fully recognized. I refer to the posture of the amputated limb in bed; it is almost invariably propped up on pillows during convalescence. Some of the most difficult deformities to correct occur in amputations in the upper third of the thigh. Dr. Mennell very kindly showed me a most ingenious and simple appliance which he has introduced at the Military Orthopaedic Hospital, Shepherd's Bush, for correcting this deformity,

but it is important to prevent the occurrence of this deformity, and Thomas's frame is valuable in attaining this end.

In conclusion I desire to emphasize a fact which is not yet generally realized by the profession, that the amount of force used by Thomas and Robert Jones in the treatment of orthopaedic cases is enormous—far greater than that in general use. For example, the force of the pull reducing dislocations of the ankle or of a Pott's deformity after the method referred to in this paper easily exceeds 300 lb. weight. In wrenching a foot a Thomas's wrench 12 in. long and applied in the way that Robert Jones uses against his hip, I have without much strain raised a dead weight of over a quarter of a ton (564 lb.).

The strength of the side bars of Thomas's knee splints even for children is at least four times as strong as the aluminium splint which is used for adults, whilst Thomas's adult splint will stand more than ten times the force which renders the aluminium rods perfectly useless.

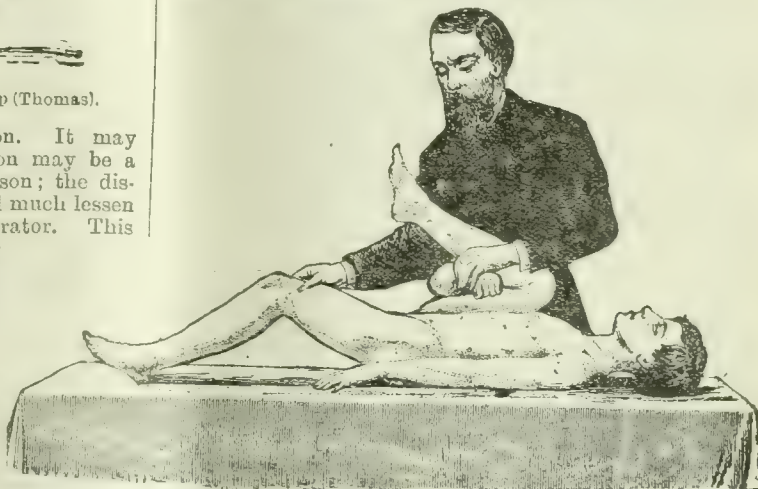


FIG. 10.—Thomas's method of ascertaining the amount of flexion deformity at the hip. The forearm of the sound side is used as a means of fixing the sound lower limb to the trunk during examination of the diseased side, in order to correct the compensating kyphosis.

CONCLUSIONS.

By setting a fractured limb Thomas meant that the limb was to be restored to perfect symmetry, that is, proper alignment and length.

In order to do this he employed forces which ran into hundreds of pounds at the time of the setting, by means of pulleys, levers and special appliances constructed for the purpose. This mechanical treatment is founded upon principles which Thomas published in 1875.

I desire to express my gratitude to my friend Colonel Sir Robert Jones for valuable gifts of books published by Thomas, and I am also grateful for having had so many opportunities of seeing his work, which convinced me that the vogue of operations for plating fractures and for tenotomy is only a passing fashion and will, as soon as the Liverpool School of Orthopaedics is fully appreciated, die a natural death.

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- ¹ *Contributions to Surgery and Medicine*, Part VI, June, 1886. *The Principles of the Treatment of Fractures and Dislocations*, by Hugh Owen Thomas. London: H. K. Lewis.
- ² *Contributions to Surgery and Medicine*, Part VII, May, 1890. *Fractures, Dislocations, Deformities, and Diseases of the Lower Extremities*, by Hugh Owen Thomas.
- ³ *Ibid.*

THE annual meeting of the British Dental Association was held on July 28th, in the hall of the Medical Society of London, under the chairmanship of Mr. Norman G. Bennett. The annual report showed that the present membership of the association is 2,600, of whom 600 are serving with the forces, either as dental surgeons, or as combatants. Mr. W. H. Dolamore was re-elected President of the Association, and in his address referred to the excellent work performed by the Canadian Army Dental Corps, which encouraged him to suggest the advisability of instituting an army dental corps for the British army.

THE ORIGIN OF ORTHOPAEDIC SURGERY.

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SURGICAL REGISTRAR, THE ROYAL NATIONAL ORTHOPAEDIC HOSPITAL,
LONDON.

THERE WAS a work, in two volumes, entitled, "*Orthopaedia; or, The Art of Correcting and Preventing Deformities in Children*," translated from the French of M. Andry, Professor of Medicine in the Royal College, and Senior Dean of the Faculty of Physick at Paris." It was printed by A. Millar at Buchanan's Head in London in 1743. M. Andry explains his choice of the term as follows:

As it is not within the reach of every Reader to understand the Title of Orthopaedia, which is affixed to this Book, I shall begin with explaining it: after which I shall give an Account of the Book itself. But in the first place I must take notice of two Pieces which have been published upon a subject akin to this, though they differ a good deal from it; the first in the year 1584, by Scèvele de Saint-Marthe, and the second in the year 1656 by Claude Quillet. As to the Title, I have formed it of two Greek Words—namely, *ὀρθος*, which signifies straight, free from Deformity, and *παῖδιον*, a child. Out of these two Words I have compounded that of Orthopaedia, to express in one Term the Design I propose, which is to teach the different Methods of preventing and correcting the Deformities of Children.

The expression seemed to me the more allowable, that the two celebrated Authors above cited, have made use of Terms of the same kind: the first in giving the Title of *Paedotrophia* to a Treatise upon the Manner of suckling Infants; and the second that of *Callipaedia*, to a Poem upon the Method of getting beautiful Children: both which Titles are likewise taken from the Greek: the first from *παις*, an Infant, and *τροφή*, Nourishment; and the second from *καλός*, beautiful, and *παῖδιον*, a Child.

In a supplement at the end of the second volume mention is made of a series of critical articles, published weekly, by the Abbé Desfontaines, under the title of "Observations upon Modern Writings," and Andry says that, "In this particular one of October 14th, 1741, he (Desfontaines) confines himself to my *Orthopaedia*." The term "orthopaedia" was, therefore, probably used for the first time in 1741, a view corroborated by William Adams, who states that Andry published his book in Paris in that year.

Hippocrates used bandages for the cure of varus, and the only advance on this method, for centuries, was the employment of mechanical appliances. Orthopaedic surgery can only be said to have really begun with the introduction of tenotomy. The first record of tendon cutting was that performed by Lorenz, on the advice of Thilenius, in 1784. He cut the tendo Achillis through an open wound for talipes equino-varus. The first account of subcutaneous tenotomy is by Petit in 1799, who cut the tendo Achillis for a retraction of the heel after Chopart's operation. In 1816 Delpech, of Montpellier, conceived the idea of treating talipes equinus by cutting the tendo Achillis subcutaneously after first transfixing the leg just in front of the tendon. Owing to a mishap in his first case he did not pursue the operation, although in his work, *De l'Orthomorphie* (Paris, 1829) he lays down very sound rules for the operation and subsequent treatment. Stromeyer, who greatly benefited by Delpech's rules, divided the tendo Achillis by subcutaneous puncture in 1831, and by a series of successful cases established the division of tendons on a secure basis, and ensured its reception as a standard operation in surgery.

Stromeyer published his results in his book on operative orthopaedic surgery (Hanover, 1838). A young English physician in London, W. J. Little, who had talipes equino-varus following infantile paralysis in early childhood, had consulted Sir Astley Cooper and most of the approved surgical authorities in London, but from none did he receive the slightest prospect of cure. In June, 1836, he went to Hanover, and his tendo Achillis was divided by Stromeyer, who later afforded Little the opportunity of practising the operation himself. Going afterwards to Berlin, he taught the operation to Dieffenbach, and treated upwards of thirty patients in that city; Little was therefore the first to introduce subcutaneous surgery into the Prussian capital. Through Johannes Müller's kindness he was also allowed to dissect numerous deformed fetuses contained in the Berlin Museum. In Stromeyer's own words, Little became "the apostle of subcutaneous surgery," for until the conversion of Dieffenbach the German universities regarded the operation with dis-

favour, although afterwards Stromeyer himself was elected professor of surgery at Erlangen.

On his return home Little at once introduced the operation, performing his first tenotomy in London on February 20th, 1837, and a few weeks later attended a discussion at the Royal Medical and Chirurgical Society on this new surgical procedure. The following year he was instrumental in founding the Royal Orthopaedic Hospital, the first public meeting of which was held in 1840 with the Earl of Eldon in the chair. This was the beginning of orthopaedic surgery in this country. In 1839 Little, who was now assistant physician and lecturer on comparative anatomy at the London Hospital, published the first English book on this branch of surgery, *A Treatise on the Nature of Club Foot and Analogous Distortions*, and dedicated it to Sir Astley Cooper, who had displayed a warm interest in what Little had been able to demonstrate. Little continued to write much, and in 1853 published another important work, *On the Nature and Treatment of the Deformities of the Human Frame*. His description of spastic diplegia in infants reveals his power as a clinician, this affection being often referred to as Little's disease.

Of the many workers who have appeared in this field since Little, two stand out prominently—William Adams and Hugh Owen Thomas. William Adams followed closely in Little's steps, and did as much as pre-antiseptic days would permit to advance the subject. He joined the Royal Orthopaedic Hospital as assistant surgeon in 1851, and did much good pathological work. His book, *Club Foot: its Causes, Pathology, and Treatment*, based on his Jacksonian Prize Essay of 1864, was published in 1866. He devised operations for ankylosis at the hip-joint, and for Dupuytren's contraction, and introduced several ingenious corrective appliances. Among other works published by him was one on *The Reparative Process in Human Tendons*, based on post-mortem examinations and experiments on rabbits. John Hunter and Paget had previously studied tendon repair in animals, the former, it will be remembered, being induced to do so through rupturing his tendo Achillis when dancing.

Hugh Owen Thomas of Liverpool was practically a contemporary of Adams. He was a man of extraordinary originality of view. In 1869 he published a well-illustrated monograph on *A New Method in Applying the Wire Ligature in Compound Fractures of the Lower Jaw*, in which he anticipated much of the present day method of dealing with this lesion. His now famous hip and knee splints were figured for the first time in *Diseases of the Hip, Knee, and Ankle* (1875). In this book Thomas adopted the great principle of mechanical and physiological rest, in the treatment of surgical diseases, laid down by John Hilton in his famous lectures at the Royal College of Surgeons, 1860-1862. Hilton very successfully applied his principle to diseases of the hip-joint by means of a splint, which consisted of a leather case from the pelvis to below the knee, with a posterior steel extension and foot-piece to fix the rest of the limb. The Thomas splint was an improvement on this, in that it was simpler and could be variously modified for correction purposes in cases with flexion.

It took many years, however, for Hilton and Thomas to change surgical opinion upon the treatment of joint tuberculosis. Thomas was the first to point out the cardinal principle of relaxing paralysed muscles, and thus preventing over-stretching; he carried it out in practice with his metal splint for dorsiflexion at the wrist, and with his caliper for maintaining extension at the knee.

THE USE AND ABUSE OF BONE GRAFTS.

BY

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THE operation of bone grafting for non-union of fractures is by no means a new one, and it is one which has undergone many alterations since its inception.

The first bone-grafting operation was done in 1809, when Mercet obtained successful healing of bone plates in the skull after a trephine operation.

A great number of substances, such as solidified milk,

have at various times been suggested which should replace bone tissue and act as a scaffolding for the formation of new bone, but all of them have fallen into disrepute, as the great majority were either quietly discharged as foreign bodies or else led to sepsis being started or restarted.

In 1881 Macewen wrote a paper explaining his method of bone grafting in a case of ununited fracture. In this case he used wedges of bone removed from rachitic tibiae broken up into very fine pieces and placed between the freshly chiselled ends of the broken bone; thus new bone was formed.

The modern technique follows that of Albee, and aims at obtaining a long solid unbroken graft consisting of periosteum, compact bone, and marrow which will unite on each side with the two fractured ends, and which will increase in size until it is as large as the receiving bone.

The causes of non-union are many and varied, and unfortunately some or all are present in a large majority of the cases of fracture now reaching the military hospitals.

The first and in all probability the most common cause of non-union is want of fixation of the fracture. This is usually due to the fact that the splints are so placed that they control the region of the fracture alone, and do not extend so as to control the joints on either side. Without this there can be no proper fixation.

The second cause is the presence of foreign bodies, either metal or cloth, or pieces of tissue such as muscle or fascia between the fractured ends, or the occurrence of virulent suppuration, which inevitably causes a localized sclerosing osteomyelitis, and so shuts off the medullary cavity with its powerful osteogenetic function.

The third local cause of non-union is loss of bone tissue, either due to the destruction and loss of bone tissue caused by the missile, or else to the removal by operation of apparently loose pieces of bone which, if left *in situ*, would in the large majority of cases unite firmly in position, and so form a sound thickened bone.

Delayed Union and Non-union.

The first question in regard to fractures which have not united is to distinguish between delayed union and non-union. A large number of cases are met with in which, for some cause other than the interposition of tissue between the fractured ends, there is delay in the union of a fracture. The cause may be local, such as we have just mentioned, or it may be some general debilitating process, and if this is treated and cured the fracture will unite readily. Apart from these, however, there are a number of cases in which no local or general cause can be found for the want of union. It would almost seem as if there was a definite idiosyncrasy on the part of the patient, or, indeed, on the part of the particular bone, so that one fracture may not unite, whilst another in the same patient at the same time may unite firmly and rapidly.

There is no time limit beyond which it can definitely be said that a fracture which has not united has passed the stage of delayed union and is in a state of non-union. That a fracture is ununited can only be said when it has undergone proper treatment by fixation, venous congestion, and the administration of thyroid extract for a period of at least three months without the occurrence of union at the site of fracture.

If non-union of a fracture has definitely occurred one must then decide, "How long should the interval be between the cessation of all discharge and the time of operation?"

It has been found by experience that if the intervening period is less than six months many of the cases operated on will become septic even when the wound has remained soundly healed without any signs of infection for some time before the operation, and where the strictest asepsis has been carried out at the operation.

This recurrence of sepsis has been attributed to a change in the condition of the blood, which, instead of being, as it normally is, a germicide, becomes instead a culture medium for bacteria, but the most probable explanation is that in shell or bullet wounds, especially in those which have produced a fracture, a large amount of fibrous tissue is formed owing to the extensive wounding and opening up of the neighbouring tissues and the spreading of the sepsis along the fascial planes.

As healing takes place small localized patches of sepsis are found which are completely surrounded by their fibrous

tissue wall, and are thus to all intents and purposes completely shut off from the blood and lymph stream; these foci are opened up during the course of the operation, and lead to a recurrence of the sepsis. This I have found to be the case in several patients in whom small pieces of metal were present apparently perfectly aseptic; when cut down upon they were found to be localized in a fibrous capsule, in which they lay bathed in pus.

In one case on which I operated recently, intending to do transplantation of bone, a small abscess was found in the centre of one of the broken ends; it was only after opening into the shaft of the bone that the abscess with its central sequestrum was seen. This case had remained soundly healed without any discharge and with no sign of redness or inflammation for a period of four months.

The fixing of the interval at six months is due to the fact that in the eighteen cases of bone grafting which I have done and in which this interval had been left there has been no instance of a recurrence, but in the first cases operated on without this interval there were two cases of recurrence of sepsis.

The operation of bone grafting should, then, be performed after the proper interval has elapsed since the cessation of all discharge. There are certain principles about the graft which should be rigidly adhered to.

1. The Graft should be Autogenous.

In one case which came under my care a piece of rabbit's bone was transplanted into an ununited ulna. There can, however, be no advantage from these exogenous grafts; they complicate the operation to a very marked degree, and lead to great increase in the risk of sepsis at the time of operation.

In this particular case there was no possibility of success owing to the fact that the operation was performed and the exogenous graft implanted whilst the wound was still actively discharging, and that the bone transplanted had an outer covering of compact bone on all sides which left no possibility of expansion of the transplant to the size of the receiving bone; lastly, the transplant had been fixed in position by means of wires which caused marked loss of bone tissue.

2. Situation from which Graft is Removed.

The graft may be removed from one of two positions: (a) Either from the subcutaneous surface of the tibia, which on account of its extent and its accessibility is the site usually preferred, or (b) from the upper or lower ununited fragment, by what is known as the sliding graft.

In all cases in which the patient has no objection to what may be called the double operation the graft should be taken from the tibia. This is not because the grafts may be removed from the tibia much more easily and of much larger size than from any other bone, but also because in the case of every ununited fracture there is a condition of osteo-sclerosis at the ends of both the fragments, which is greatly increased in the case of an actively suppurating compound fracture such as a gunshot fracture. If sections of the ends of the fragments are made the medullary cavity will be found to be lost for a space of half an inch or an inch on either side of the fracture, and the density of the bone is greatly increased, so that it here becomes very much harder than normal, and frequently it is almost impossible to use an ordinary chisel. Thus any bone graft removed in this region will have to extend so as to pass beyond these thickened portions and reach the healthy bone on either fragment.

3. The Graft should Consist of Periosteum, Compact Bone and Marrow.

In several cases in which the graft has been used without periosteum, the graft has united firmly, showing that this membrane is not essential. Periosteum stripped from the bone in its course, but attached at the two ends, can throw down a layer of new bone on its inner surface, so that the structure raised from the surface of a bone by means of an elevator, whether it is periosteum alone or periosteum and attached bone cell, can undoubtedly form bone.

Union of a bone graft consisting of compact bone and medulla can undoubtedly occur, and has done so on many occasions, thus showing that the periosteum has at best

only a subsidiary part in bone formation, but a graft consisting of compact bone and periosteum alone will in the large majority of cases not unite, thus proving the great importance of marrow.

One case of non-union of the radius which I had under my care illustrated this point. A graft of bone had been taken from the subcutaneous border of the tibia consisting of compact bone and periosteum alone without marrow. This graft remained in position in the arm for three months without any sign of union, and was then quietly discharged through the skin.

4. Size of Graft.

The graft should be at least two inches longer than the space between the fractured ends which it is going to fill. The older method of bone transplanting or grafting as used by Macewen aimed at freshening up the fractured ununited ends of the bone and filling up the space between them with the chopped up pieces of bone which naturally consisted chiefly of compact bone, and which lay in contact with each other and with the freshened bone ends. But the chief power of union in a bone graft comes from the presence of the bone marrow and the adjacent more porous bone which is completely absent from the fractured ends for a distance of half an inch to an inch, owing to the obliteration of the medullary cavity; therefore the transplanted bone fragments came into contact only with the sclerosed ends of the bone in which the blood supply is markedly diminished, and the osteogenetic power almost absent. Any bone graft which is taken should be long enough to extend beyond this sclerosed area on both fragments.

5. Preparation of Graft.

The graft may be obtained from the tibia or from the fractured bone itself at a higher level in two ways.

(a) By means of a circular saw, with either one or two parallel blades, driven either by a small motor or by hand by means of a large wheel turned by an assistant at some distance from the table. With this the bone is sawn down to the medulla for the required distance, and then transferred to the site of the operation.

(b) The other method is by means of chisels and a bone drill. If an attempt is made to remove a bone graft by means of a chisel alone it will be found that the bone becomes splintered and almost useless for the purpose in view. If, however, the bone is first drilled down to the medulla along the line of the proposed bone graft, then the subsequent use of the chisel is without danger, as the bone breaks between the drill holes.

When the graft of sufficient length has been obtained a bed should be made for its reception in the two fragments at the site of fracture by removing from these broken ends a wedge of bone equal in breadth to the graft and so placed that the graft lies on either fragment for a distance of at least $1\frac{1}{2}$ in. When the graft has been placed in the bed prepared for it it should be anchored there by means of catgut or small bone pegs. No metal, such as plates or wires, should ever be used in its fixation, owing to the fact that metal of any description placed in a bone acts as a foreign body and leads to atrophy of the bone round the site of the metal, thus hindering bone formation which would otherwise occur between the fragments.

It has been shown that in a plated fracture bone is thrown out on all sides except at the site of the plate or screws. There is atrophy of bone which can frequently be seen in the x-ray photograph as a light area round each of the screws.

The osteogenetic action of the bone graft should not be opposed by the inhibitory action of the screws. As regards the after-treatment the newly implanted bone graft should be kept in position without any stress or strain for a period of at least two months.

Many forms of splints may be used for this purpose, but the most efficient method of fixation is to apply a plaster-of-Paris case to the whole limb, so that all the joints which by their movements could in any way act on the transplant are completely fixed. This case should be put on immediately after the operation. It is not at all necessary to leave its application over until the stitches are taken out, as they can be easily removed through an opening made in the plaster directly over them. This is a marked advantage, as the surgeon has in his mind at the

time the exact position of the limb in which the graft lies most snugly in its bed.

When the plaster has been removed after two or three months the transplant will probably be found to be firmly united, but in case the union is not firm the limb should be immediately replaced in plaster or splints and treated by fixation and venous congestion, with the administration of thyroid extract, which undoubtedly tends to promote the deposit of callus and so to hasten the union.

The failures of bone-grafting operations which I have seen have been due to (1) want of proper interval since the cessation of discharge, (2) insufficient length of the graft, (3) inefficient fixation, (4) the use of the sliding graft.

A POSSIBLE ELECTRO-CARDIOGRAPHIC SIGN OF MYOCARDIAL CHANGE.

BY

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DURING the last few years the attention of those interested in diseases of the heart has been increasingly directed towards the signs and symptoms by which impairment of the myocardium can be diagnosed. The importance of the heart muscle in the prognosis of cardiac disease is no new discovery; the pioneers of cardiology fully realized that grave valvular lesions could be compensated for by efficient heart muscle, but while their methods of examination permitted surprisingly accurate diagnosis of valvular defects, there was by no means the same precision in their means for determining the state of the heart muscle.

Though modern methods of investigation have somewhat increased our knowledge in this direction, it is not possible, as yet, to say that we can as accurately visualize in any individual case the condition of the myocardium as we can, for instance, that of the aortic valves. Any method of investigation, therefore, which tends to throw light on this problem is worthy of serious consideration.

Numerous attempts have been made to arrive at a just estimate of the condition of the myocardium in regularly acting hearts, such as the careful consideration of the subjective symptoms, the response of the heart to exercise, the relative intensity of the first apical and the aortic second sounds, the length of the A.V. or P.R. interval, and the inversion of the second ventricular or T wave of the electro-cardiogram in at least two of the usually employed leads. No doubt all of these methods have their uses.

We have had during the last few years the opportunity of examining several thousand cardiac cases and of comparing the clinical findings, and in a large proportion the subsequent histories as well, with the electro-cardiograms. As a result of these observations we have become increasingly convinced that the height of the second ventricular or T wave affords some indication of the efficiency with which the ventricles are functioning.

The second ventricular wave marks the end of systole, and it is generally agreed that it is produced by some portion of the base remaining in a state of contraction after the contraction of the apex has ceased. There is not, however, the same agreement as to the exact site of this residual contraction. Sherrington considers it to be the aortic base; other observers are not disposed to localize it so definitely. From the point of view under discussion this is immaterial; the essential question is whether very low or absent T waves in an electro-cardiogram indicate myocardial impairment or not.

With a view to bringing our opinion in some measure to the proof, it seemed to us that if we could get cases in which there was clinical evidence of myocardial change, and in which the electro-cardiogram showed small or absent second ventricular waves, and if on treatment these waves increased or reappeared in electro-cardiograms concurrently with an improvement in the clinical condition, it would, to a certain extent, support our contention.

Unfortunately, marked myocardial degeneration is not a condition which, as a rule, easily or rapidly yields to treatment, so that suitable cases for such an observation are by no means common. It seemed to us, however, that cases of syphilitic myocarditis might afford the required material, and we now think two such cases may be worthy of being put on record.

CASE I.

Mr. W. X., aged 45, was seen in consultation with Mr. Allport by one of the writers (J. S. G.) in June, 1915. He contracted syphilis in 1901; the symptoms were severe, ulceration of the tongue being practically continuous until 1905, when he

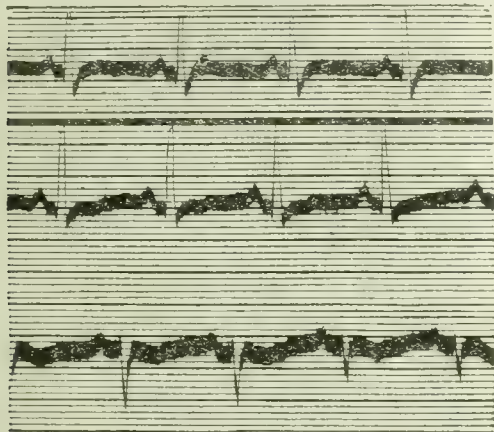


FIG. 1.

went to Aix and had mercurial inunctions; the tongue healed. In 1912 he complained of pain in the chest, flatulence, and occasional vomiting; his Wassermann reaction was strongly positive. Salvarsan and mercurial injections were given; his condition, however, got worse, and he suffered from pain radiating down the right arm and a systolic murmur was audible at the apex. A series of neo-salvarsan injections was given, which was followed by a long course of mercury and iodides; the murmur disappeared after the first injection. In 1914 he had a very bad attack of typhoid fever, being laid up from January to April; the tongue again became ulcerated, but cleared up under iodides. He nearly died of heart failure.

In June he underwent another course of inunctions at Aix. An x-ray examination of the heart showed slight enlargement,

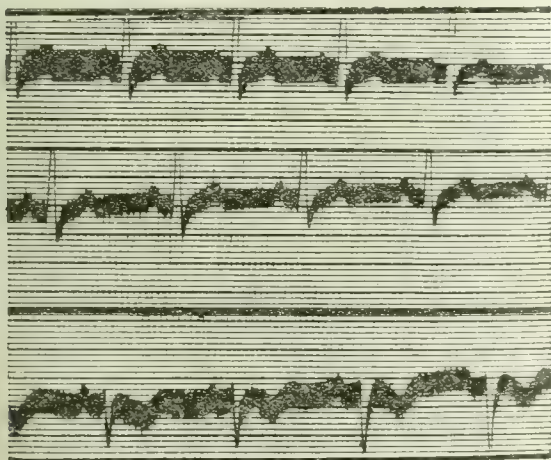


FIG. 2.

both to the right and to the left, no aneurysm, but enlarged glands in the mediastinum; the finger nails were corrugated.

When seen in consultation in June, 1915, he complained of pain in the left side, only being able to sleep when lying on the right side, pain over the sternum, slight dyspnoea, and a sensation of sickness over his heart on exertion, which was increased by exercise and after meals; there was no cough nor oedema. The area of cardiac dullness was lightly enlarged, the apex beat being in the fifth space near the nipple line; the first sounds were weak but no murmur was audible; the pulse-rate 100, blood pressure 140, he did 10,107 foot-pounds of work in two minutes, there was a poor reaction to work and he showed signs of collapse.

The electro-cardiogram (Fig. 1) showed an absence of second ventricular or T waves in leads 1 and 2 with inversion in lead 3.

He was treated by mercurial inunctions and steadily improved. When examined again in 1916 his pains had disappeared, the cardiac dullness was still slightly increased, but the apex beat was well within the nipple line, the first sound at the apex was flapping and short, the second reduplicated, the aortic and pulmonary second sounds were audible, the blood pressure was 118, the electro-cardiogram (Fig. 2) showed well marked second ventricular waves in leads 1 and 2 with inversion in lead 3. It will be observed that figures 1 and 2 show the sign attributed to left-sided preponderance.

CASE II.

Mr. Y. Z., aged 30, was seen July, 1916, in consultation with Dr. Green, of Finchley, by one of the writers (S. R. W.); he had had scarlet fever when 13 and contracted syphilis in 1903; he was treated for two years. Beyond occasional sore throats he had

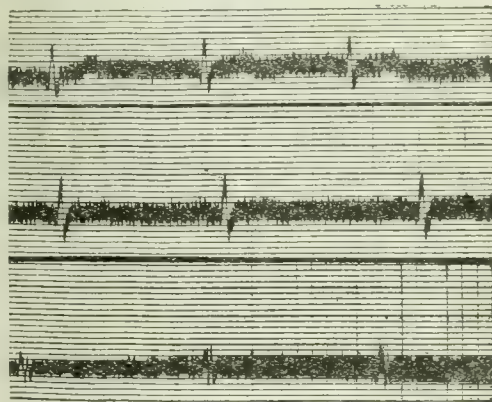


FIG. 3.

suffered from no other illness. He complained of dyspnoea and palpitation on exertion and a constant feeling of lassitude, and said that he fainted on excitement or any over-exertion. He was markedly anaemic, the pulse-rate was 60, volume very small, the apex beat was diffuse and almost impalpable, the area of cardiac dullness was greatly enlarged, extending from 2 in. to the right of the mid-sternal line to over 5 in. to the left; x-ray examination revealed a very large heart, the shadow agreeing with the limit as defined by percussion; it was obviously soft and atonic as it was horizontally placed and seemed to be lying on the diaphragm. The first sound at the apex was very faint and flapping in character, the second sounds were audible at base and apex, no murmurs could be heard; he was not exercised nor was his blood pressure taken as he fainted twice during examination; the urine had a specific gravity of 1024 and contained no albumin. On account of the patient's nervous condition and the ease with which severe

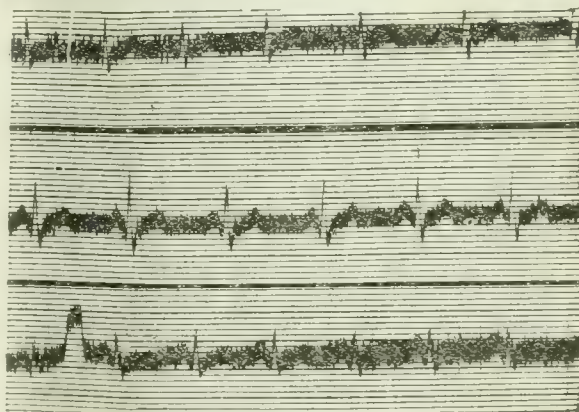


FIG. 4.

fainting attacks were provoked the blood was not taken for the Wassermann reaction. His electro-cardiogram (Fig. 3) showed very poorly marked second ventricular waves in lead 1, almost absent in lead 2 and completely so in lead 3.

He was treated by Dr. Green with mercurial inunctions, and examined again in consultation in September, 1916, when his general condition was distinctly improved; the cardiac area now measured 1½ in. to the right of the mid-sternal line and 4½ in. to the left; this was confirmed by x-ray examination. The electro-cardiogram (Fig. 4) showed definite T waves in the first and second leads, and indications of them in the third. Antisyphilitic treatment was continued, mercury and iodides being given. He was seen again in March, 1917, when there was a marked improvement. The cardiac dullness was now 1½ in. to the right of the sternal line and 3½ in. to the left;

this was confirmed by x-ray examination. The shadow of the heart, besides being smaller, was of much more normal outline. The electro-cardiogram (Fig. 5) showed well-marked T waves

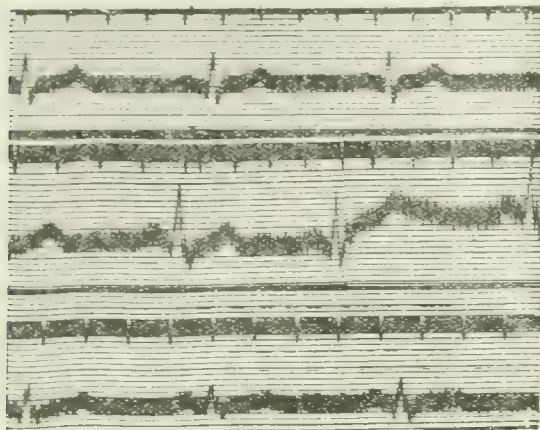


FIG. 5.

in leads 1 and 2 and distinct T waves in lead 3. Unfortunately he moved somewhat when lead 2 was being taken, so the record was not as neat as could be wished.

While it is not contended that these two cases in themselves are conclusive proof that absence of the second ventricular waves in the electro-cardiogram indicate myocardial change, they are certainly suggestive, and tend to confirm many other curves in our possession. It is to be hoped that other observers will put on record their experiences, not only in syphilitic cases but also in other forms of myocardial involvement, since it is only by numerous observations, and above all by electro-cardiographic observations, carefully correlated with the clinical findings at various stages in the history of the same patient over prolonged periods, that anything like certitude can be reached.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TONSILLECTOMY.

As I pointed out in a paper read at the International Congress in 1913, surgeons are prone to debate the merits of this or that technique for tonsillectomy simply from the standpoint of the removal of the tonsil. Some of the remote after-results, elicited by examining a large number of patients from one to eight years later, are of the greatest practical relevance. As regards technique, each man should, of course, use the method and instruments with which he gets the best results. Considered broadly and without detail, operators range themselves into three groups: (1) Those who use nothing but some form of guillotine, claiming that by this method every tonsil is removable in its entirety, capsulated; (2) those who dissect the tonsil out, claiming that with any form of guillotine no one can be certain of entirely removing any tonsil; (3) those who combine partial dissection with the use of a guillotine.

To my mind the existence of this third group is evidence that groups (1) and (2) are both in error, in that they go to unjustifiable extremes. The truth lies between, and I venture to submit that the following view is hardly available.

A certain proportion (which I will not here attempt to specify) of tonsils are removable, complete in capsules, by certain guillotine methods. The remainder are not, and have to be removed by some form of dissection, which requires more practice and dexterity than the former. No one, therefore, should claim to be prepared to deal with any and every tonsil with which he is confronted, unless he is practised in enucleation by dissection.

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Captain R.A.M.C.(T).

POISONING DUE TO BELLADONNA PLASTER.

T. C., aged 37, a strongly-built, muscular labourer, was first seen at 11 a.m. complaining of pain in the back. Nothing abnormal was discovered, and as the pulse and temperature were normal and he was anxious to continue his work, a belladonna plaster about 6 in. by 4½ in. was applied, and he went back to his employment.

At 2 p.m. he was carried in on a stretcher, struggling and being held by two men. The skin was harsh, dry and reddened, pupils dilated, pulse 130, and respirations 40; he was delirious and semi-conscious; the temperature was unobtainable on account of his movements. The plaster was immediately removed and he was admitted to hospital, where he remained more or less in the same condition until 9 p.m., when he became quieter and sank into an uneasy sleep, the pulse then being 115 and respirations 30. The temperature was 97.5°. The following morning he was much better, though the tongue and lips were dry and furred, and he was still slightly incoherent in speech. He had no recollection of what had occurred, and though he declared that he felt quite well he refused solid food, and was with difficulty persuaded to take any nourishment. The bowels responded to an aperient, and the urine passed naturally contained no albumin, blood, or casts.

Two days later the only sign remaining was slightly enlarged pupils responding slowly to accommodation; the patient left feeling perfectly well—pulse, respiration, and skin condition being normal. There was no history of any previous fits or similar illness, and I have no doubt that the symptoms were directly due to an overdose of atropine absorbed through the skin from the plaster. The case is of interest in showing the danger which may arise from this cause in susceptible persons.

Chester.

B. G. R. CRAWFORD, M.B.

HALAZONE FOR WATER STERILIZATION.

(Report to the Medical Research Committee.)

In the *BRITISH MEDICAL JOURNAL*, May 26th, Dakin and Dunham describe a new chlorine compound, *p*-sulphondichloraminobenzoic acid, suitable for sterilizing small individual quantities of drinking water. For convenience they call the new substance halazone. The chief advantage claimed is that it can be put up in tablets, which, when kept in amber glass bottles, lose strength only very slowly. The dose for ordinary water is given as one tablet to an imperial quart, and for heavily polluted water two tablets to a quart, the time of exposure in both instances to be thirty minutes. Samples of halazone tablets supplied by the Medical Research Committee were subjected to various tests.

Weight of Tablets.—From Dakin and Dunham's article it appears that the tablets are intended to weigh approximately 0.1 gram each. The weight of tablets from three lots was found to vary: the weight of tablets from lot K was 0.075 gram each, from lot M 0.098 gram, and from lot N 0.104 gram. The variation in the weight of the tablets is an error which should be corrected.

Solubility.—One or two tablets in 38 oz. of water contained in an aluminium water bottle, carried by a marching soldier, were always found completely dissolved within ten minutes: with an enamelled water bottle holding 40 oz. of water complete solution required twelve minutes.

Taste.—Taste experiments were conducted with tap water only. One tablet to a quart was not detected by any one of three observers. Two tablets to a quart were detected as taste by two observers, and as taste and smell by the third. In respect to taste halazone seems to be identical with chlorine from other sources, and with certain waters would no doubt form chlorine compounds, having an objectionable taste.

Keeping Qualities.—Tablets kept in a bottle under ordinary laboratory conditions were tested at the end of six weeks, and were found quite as effective as usual in sterilizing various types of water, the ordinary doses being used.

Mode of Action.—Water treated with this compound gives the ordinary starch iodide test for free chlorine, and the efficiency of the sterilization may be forecasted from the amount of free chlorine remaining after thirty minutes' exposure, as judged by the depth of blue colour with starch and iodide. Ordinary tap water treated with a double dose smells and tastes of chlorine. Hydrogen sulphide and organic matter interfere with sterilization by halazone as by chlorine from bleaching powder.

From these considerations it seems probable that halazone, when added to water, liberates free chlorine, which

acts for sterilizing purposes in the same way as chlorine from other sources.

Bacteriological Tests.

The efficiency of halazone was tested on soft, moderately hard, and very hard waters, on tap water polluted with urine, fresh sewage, and stale sewage, and on a contaminated surface water, to all of which cultures of *B. coli* and *B. typhosus* were added.

It was found that one tablet of halazone per quart is sufficient to render safe a clear water of low organic content. Two tablets per quart will, in most cases, render safe any water likely to be consumed. Hardness does not appear to interfere with the sterilizing action.

Conclusions.

1. Halazone is a satisfactory chlorine compound for the sterilization of small individual quantities of drinking water. Its mode of action is the same as that of chlorine from other sources.

2. The tablets are readily soluble and do not lose strength rapidly.

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Reports of Societies.

MADNESS AND UNSOUNDNESS OF MIND.

At the seventy-sixth annual meeting of the Medico-Psychological Association of Great Britain and Ireland on July 25th, in the rooms of the Medical Society of London, under the presidency of Lieut.-Colonel DAVID C. THOMSON, M.D., R.A.M.C., Dr. CHARLES MERCIER recalled that it was little more than twenty-five years since he first promulgated the doctrine that madness and unsoundness of mind were not the same thing; that madness included more than unsoundness of mind, and that unsoundness of mind very often occurred in the sane; indeed, that it was one of the most frequent disorders of the sane. It was only about twenty-seven years since he first published this view, and already the Medico-Psychological Association was beginning to grasp it! Yet the remainder of the profession looked upon the alienist branch as obscurantist and unwilling to adopt new ideas, a view that he hoped Dr. Steen's recent paper on hallucinations in the sane would do much to dispel. Dr. Mercier said that the last time he brought his view before the association it was practically laughed out of court; he was told it would mean handing over the treatment of madness to the police. Three years ago, when he brought his view before the Royal Society of Medicine, it met with a similar fate. In spite of the fact that he had clearly defined it at the meeting of the Royal Society of Medicine already referred to, and no worthy argument had been urged against it, in the third edition of Dr. Craig's *Psychological Medicine* the doctrine was not even mentioned, and its author stated that insanity could not be defined. To regard insanity as disorder of mind was an imperfect, inadequate, lopsided, halting, superficial, ignorant, childish, belated, obscurantist, and stupid view to take. Those who contended that madness was a disorder of mind alone did not perceive the difference between mind and conduct, between thinking and feeling on the one hand, and talking and acting on the other. To regard madness as disorder of conduct was as great an advance upon regarding it as disorder of mind, as viewing it as disorder of mind was an advance upon regarding madness as a possession of the devil. Dr. Mercier's next thesis was that there were many disorders of mind which were quite compatible with sanity. Dr. Steen showed in his recent paper that hallucination was a disorder of mind, and could occur in the sane. There were many other disorders of mind which could not be regarded as insanity. One was tinnitus, which was, in fact, an aural hallucination; it was a perception of sound arising in the mind without any justification in the shape of an impression on the organs of sense. Tinnitus was a disorder of the mind. It was true that a physiological basis for it could often be found in disease of the middle or internal ear, but disease of those parts was not tinnitus. Madness was not the same thing as disease of the brain; cerebral tumour and

cerebral haemorrhage were diseases of brain, but they did not constitute madness; they might exist without discoverable trace of madness. It was not provable, but it might be that in every case of madness there was disorder or disease of mind, but madness was certainly not the same thing as disorder or disease of mind; even if it were, we could never examine it; but it was proved that in every case of madness there was disorder of conduct. When a man was certified as mad, it was because of something he had said or done, and saying and doing were conduct. In the absence of any failure or defect in conduct, attention was not called to him. Whatever the state of a person's mind might be, he was not considered mad if he behaved in every respect like a sane person. It was upon conduct that the alienist founded his judgement, and behaviour could be directly observed. The alienist put into his certificate "facts observed by ourselves at the time of examination." A disorder of brain or a disorder of mind could not be observed; the delusion a person suffered from could be neither seen nor heard. All that could be done was to hear the utterance of it, and that utterance was conduct.

Sir GEORGE SAVAGE thought the author had one or two obsessions on this subject; for instance, he considered that the association, as a whole, did not agree with him that insanity and unsoundness of mind were not the same thing. But Sir George, in his article in Allbutt's *System of Medicine*, urged the same point. There was much unsoundness of mind which did not seriously affect the relation of the individual to his circumstances. Mandsley, years before, expressed much the same view. Moxon, when asked for a definition of insanity, retorted, "How can you define a negation?" One could define sanity, but not insanity. Hughlings Jackson's writings made one realize that any one of the factors of mind could be disordered without producing a corresponding disorder of conduct, and so long as a modification of the cerebral condition did not interfere with conduct it must be admitted that insanity was not present. Swinburne could scarcely be said to be of sound mind; he was an epileptic, and yet he had a brilliant intellect. Persons with a double personality might be very insane in one of the states.

Dr. HAYES NEWINGTON, though he did not agree with Dr. Mercier, did not feel capable of giving a definition of insanity. In the certificate, insanity and unsoundness of mind were not regarded as convertible terms, as shown by the important word "or," meaning that the person concerned might be suffering from either; there was a choice between them. When the milder term "unsoundness of mind" was used, it was held to mean a state not so advanced as to merit the term "insanity." He preferred the old phraseology, that insanity was a disorder of mind.

Dr. JAMES STEWART agreed that the word "insanity" implied a negation, and thought it was impossible to hope to include the various forms of mental disorder in one definition. Alienists were agreed on the point so strongly emphasized by Dr. Mercier, that a person declared insane was one who showed a disorder of conduct; but the term implied more, and the extent to which it did so was thoroughly well understood by the practitioners of the speciality.

Sir BRYAN DONKIN expressed his agreement with the contention of Dr. Mercier, and did not consider that he regarded disorder of conduct and insanity as convertible terms. Dr. Mercier's contention was that disorder of conduct was a necessary element in the concept of insanity, and that without such disorder of conduct the person could not be pronounced insane.

Dr. E. S. PASMORE contended that the first indication of the advent of insanity was an alteration in the person's conduct; that had been a guiding principle in his own practice as an alienist. It was a matter of comparison—the contrast of present conduct with what was observed at an earlier date. A person with an hallucination of hearing or of sight might lead a quite normal life, and it was not until the hallucination was believed by the person to concern himself intimately that alteration of conduct commenced.

Dr. J. G. SOUTAR said the subject had been debated ever since insanity had been discussed. All alienists were agreed as to what insanity was when they encountered it, but the difficulty was to put into words an adequate

definition. The practical point to be determined with regard to a person whose sanity was in question owing to antisocial conduct, was whether such conduct was the result of mental disorder. That was to proceed beyond the mere consideration of the person's conduct. Histories showed that patients fell into certain mental attitudes which tended to result in certain types of conduct. For a long time patients struggled against the logical outcome of their mental condition. He believed that a considerable time before a patient would admit it in words, and long before he committed any antisocial act, he was subject to a definite mental attitude, and it was the duty of the physician, by watching small indications, to detect this tendency and seek to obviate the impending evil by suitable treatment. The alienist did not focus his attention and his decision on the saying of a wrong word or the doing of a little wrong thing, but studied the patient as a whole. The feature on which Dr. Mercier had insisted was only one of the criteria; it was not the whole matter.

Dr. MERCIER promised to send a full reply to the association's journal.

Rebelsus.

WAR NEUROLOGY.

Oorlogsneurologie (War Neurology),¹ by T. VAN SCHELVEN, is a summary in five chapters of much of the recently published neurological experiences of German and French military doctors. From the chapters on injuries of the peripheral nerves, spinal cord, and brain, we are left with the impression that in Germany not much advance has been made in treatment, and but little in diagnosis, in spite of the large amount of material which the war has provided. It is stated that the variety of injuries of the peripheral nerves has been extraordinarily great, and that there is much risk of nerve injury being overlooked unless definitely sought for. Nerve injuries may be followed by nutritional disturbances (muscle degeneration, decalcification of bone, etc.), and by functional disturbances (vasomotor upsets and irregular action of sweat glands). These effects are more frequent and pronounced when a nerve is caught in scar tissue, and conduction is incompletely interrupted, than when it is completely divided. "In other words, trophic and vasomotor disturbances are rather signs of nerve irritation than of nerve paralysis." Accordingly, excision of the strangled part of the nerve and union of the divided ends might be followed in a few days by the disappearance of pain and of trophic and vasomotor symptoms. Complete recovery after suture may take eighteen months in the case of the sciatic nerve. The author holds that if a nerve is incompletely divided, the healthy nerve fibres must not be touched, and that suture is, therefore, out of the question, since it might "sacrifice" the sound fibres. Operation for freeing the nerve from compression gave good results. On the other hand, in more than 10 per cent. of cases nerve suture was not followed by regeneration. Clinical examination alone can determine whether operation is necessary. The nerve may be recovering spontaneously, though there is no indication of this. The difficulties of diagnosis are discussed at length. Of injuries of the spinal cord it is said that they remain as formidable as ever. Expert examination, even with the aid of radiography and lumbar puncture, often left it doubtful whether the condition was concussion, compression, or complete division of the cord. Therefore some surgeons performed exploratory laminectomy at once, risking sepsis; others waited three to four days or eight to ten weeks, risking permanent damage from removable compression. The worst complication is urinary decomposition, best avoided by sterile catheterization thrice daily, and the exhibition of hexamine. As a shot which grazes the surface of the skull may splinter the internal bony surface so as to tear the dura mater or penetrate the brain, an apparently trivial wound may have a disastrous effect, and in war practice trephining for slight grazes of the external table must be the rule. Different operations for the

removal of a foreign body from the brain are described, and it is asserted that after trephining the patient must wait at least fourteen days before being moved, or he will die. Results are unsatisfactory—cures are "surgical, not functional."

In the last chapter the possible effects, mechanical and psychical, on the nervous system of explosions which cause no visible external injury to the patient are discussed.

THE PREVENTION OF FUTURE WARS.

The settlement of personal disputes by force of arms is gradually giving place to more rational means, but national quarrels are still determined by methods of barbarism scientifically applied. Under modern conditions the loss, even to the victors, would seem to outweigh the gain. To seek for some system by which such a catastrophe may in future be averted is a task worthy of the best efforts of practical men of all shades of opinion and of all nationalities.

The formation of the American League to Enforce Peace has been followed by the establishment in this country of the League of Nations Society, the first meeting of which was held in Westminster, under the presidency of Viscount Bryce, last May. Simultaneously a series of *Proposals for the Prevention of Future Wars*² has been published, to which Lord Bryce and many other leaders of thought have contributed; the object is to start certain fundamental principles as a basis of discussion.

Briefly, it may be said that the first essential is the formation of a healthy public opinion throughout all civilized countries. An international agreement between all or most of the Powers of both hemispheres might through moral and economic forces lead to the establishment of arbitration. The anger of nations, like that of individuals, is apt to be cooled by delay. The establishment of an international moratorium would give time for anger to subside and for a better understanding on all lands of the points at issue.

The scheme, as outlined by Lord Bryce, is a further development of that of the Hague Conference, but tends towards definite action whereby the public opinion of the combined States could be enforced by other means than those of warfare. The time is not yet ripe for action. The difficulties of organization are many and call for the best thoughts of practical minds from every quarter of the globe.

NOTES ON BOOKS.

THOSE—and they must be many—who, while recognizing the value of the central aim of Pacifism,³ are impatient of the blindness of its typical adherents to awkward facts, may be recommended to study Dr. NORDENTOFF'S attempt to outline a practical programme for the gradual supersession of the appeal to force as a means of settling international disputes, as well as for the systematic study of the economic and other causes of war, with a view to their ultimate removal. No sane man will quarrel with Dr. Nordentoff's brand of pacifism, seeing that in the closing sentence of his book he frankly admits that "a just decision through war is to be preferred to an unjust decision through peace."

Dr. W. M. BARTON has brought together a quantity of useful information in his little book on the testing of vital functions.⁴ It contains readable summaries of the various clinical and laboratory methods that have been devised for testing the functional integrity of such organs as the liver, kidney, pancreas, heart, and the chief ductless glands. Naturally, such a book must partake of the nature of a compilation; the literature dealing with such tests as these has become very extensive during the last two decades, and Dr. Barton has made excellent use of much of it. He also gives in most cases some indication of the value that is to be attached to the results of the tests he describes, for which clinicians will be grateful.

² *Proposals for the Prevention of Future Wars*. By Viscount Bryce and others. London: George Allen and Unwin, Ltd. 1917. (Demy 8vo, pp. 55. 1s. net.)

³ *Practical Pacifism and its Adversaries*. By Severin Nordentoff. With an Introduction by G. K. Chesterton. London: George Allen and Unwin, Ltd. 1917. (Cr. 8vo, pp. 219. 4s. 6d. net.)

⁴ *Manual of Vital Function Testing Methods and Their Interpretation*. By W. M. Barton, M.D. Boston: R. J. Badger; Toronto: The Copp Clark Company, Ltd. 1916. (Cr. 8vo, pp. 255; 1 figure. 1.50 dollars net.)

¹ *Oorlogsneurologie: Ervaringen over Verwondingen van het Zenuwgestel en over Neurosen*. Door T. van Schelven. Amsterdam: Scheltema en Holkema's Boekhandel. (Pp. 164.)

British Medical Journal.

SATURDAY, AUGUST 11TH, 1917.

AFTER THREE YEARS: THE MEDICAL SERVICES.

THE Prime Minister last Saturday (August 4th), the third anniversary of the declaration of war between Germany and this country, said that the German leaders now realize that this time their plot has miscarried, and say, "there will be peace shortly, but the war will be resumed in ten years"; they desire a bad peace such as "goes on and on, staggering from one war to another." The Prime Minister appealed to us to be "the generation that manfully, courageously, resolutely eliminated war from among the tragedies of human life." The President of the United States has said the same thing in other words to his countrymen. So has M. Ribot to France. Mr. Gerard, who was the Ambassador of the United States to Berlin for the four years preceding the delivery to him of the six-hour ultimatum which precipitated the outbreak of war between his country and Germany, has a recent experience of the mind of Germans and their rulers which no one to-day can pretend to rival. In the foreword to the book of his experiences, which the *Daily Telegraph* is having cabled from New York, he says: "We are warring against a nation whose poets and professors, whose pedagogues and whose priests have united in stirring its people to a white pitch of hatred, first against Russia, then against England, and now against America." He tells his countrymen that they stand in great peril, and only the exercise of ruthless realism can win this war. If Germany wins it will mean, in his opinion, the triumph of those who believe not only in war as a national industry, not only in war for itself, but in war as a high and noble occupation. Unless Germany is beaten, every nation will be compelled to turn itself into an armed camp until the German autocracy either brings the whole world under its dominion or is for ever wiped out as a form of government. Finally, he warns us that no one should believe that Germany will break under starvation or make peace because of revolution.

We must assume, therefore, that these statesmen accept neither the prevalent peace talk nor the whispered pessimism of the last few weeks, both perhaps due to German intrigues, but look forward to a continuance of the war for some indeterminate but long period beyond Lord Kitchener's three years. It behoves, then, the whole community, and every section of it for itself, with open eyes candidly to take stock of the situation. Every calling has its own problems; those which confront the medical profession are serious; and every delay in taking steps to meet them renders it more difficult to find a satisfactory solution.

The Central Medical War Committee has now been compelled to take the serious step of notifying to the Secretary of State for War that after a careful survey of the whole of England and Wales it is of opinion that no more medical men can be called upon to take commissions in the R.A.M.C. without seriously endangering the supply of doctors for the treatment of the civil community, and that any further depletion can only be effected on the responsibility of the

Government after careful comparison of the military and civil needs.¹

The Central Medical War Committee has only made this notification to the War Office after full consideration and when it could no longer be delayed. It speaks from an accumulated experience which goes back before the first Military Service Act was passed, and we venture to express the hope that the Army Medical Department will realize that administrative action under the second Military Service Act, such as that taken in April last, will not meet the circumstances or be an efficient solution of the problem with which the country is confronted.

The Review of Exceptions Act, if it has done no other good, must have served to convince the public that, in respect of recruiting generally, Great Britain, as one witness said, has "got down very close to the bone," and may cause the readier credence to be given to the reiterated statement that it will not be possible to meet the demands of the army for medical officers if they are continued on the same scale as in the past. Already the civilian population is suffering, the middle class perhaps especially, but the industrial also, from a dearth of doctors. The long duration of the war has operated in two ways to deplete the ranks of the medical profession. The great armies the country now maintains are detaining a large proportion of the more active members of the profession, men young or in the prime of life. The elder men who remain to attend to the needs of the civilian population are striving each to do the work of two or three; many have broken down, and the proportion must increase. Each such breakdown should be reckoned a war casualty, and unhappily not a few would have to be added to the list of "died on service."

The military authorities know that their demands for combatant recruits must be limited, for though the reservoir from which they can be drawn was deep, the drain upon it has been so large that it is now becoming shallow. This must be one of the chief governing facts in their strategical plans. The analogous state of things with regard to medical recruits should equally be a governing fact in the strategy of our medical military administrators.

What are the courses open to the War Cabinet? It may take up the proposal for the mobilization of the profession on a principle analogous to that of substitution instituted by the National Service Department. It was a principle favoured by the professional committees six months ago, but it was even then realized that it would not achieve the desired end on a voluntary basis, and much has happened since to cause it to be regarded with less favour than at that time. The conference called last March by the Director-General of National Service to consider the organization of the medical profession with a view to meeting the needs of the military and civil population came, we understood, to the conclusion that legislation would be necessary for any compulsory scheme. Of any other result of the conference the public knows nothing, but the idea of making substitute service compulsory on other callings seems to have been dropped, and legislation to apply it to the medical profession would be certain to arouse strong opposition on political grounds--and not only within the profession.

Another course, and one which we hope will be taken by the War Cabinet, is to look carefully into the use now made by the army of the large number of medical men in its ranks. The Under Secretary of State for War, in declining to institute a departmental inquiry, said that the Army Council was alive to the

¹ The full text of the letter is published in the SUPPLEMENT, p. 35.

situation and that the Higher Command was satisfied that all medical practitioners were being used in the best way. This is not the impression or experience of many of the officers themselves, and we would ask whether the Higher Command has made any such thorough investigation of the military side as the professional committees have made of the civil. The time has come for a decision with regard to the respective demands of the army and the civil community for services essential to both.

This decision cannot be made by the army without consultation with representatives of the civil medical profession and with the government departments concerned. The Army Council is not in possession of information essential to a decision, but it has at its disposal, in the statutory professional committees, bodies which have accumulated information and experience. Our hope is that the Army Medical Department will realize that it is within its power, by consulting with these committees, to find a solution of the difficulty, by frank discussion between members, military and civil, of the profession itself.

THE MIND OF THE SOLDIER.

THE medical service on the Western front is automatic. Its operation is so quiet and easy that the movement goes almost unheeded. On June 7th, the day the Messines Ridge was carried, ambulance trains were entering Charing Cross at 2.15 in the afternoon. The action began at daybreak, and persons in London returning from luncheon saw the casualties from the battle being off-loaded. On Easter Monday Vimy Ridge was attacked at 5.30 in the morning. Within an hour the wounded were coming down. Shortly after noon the battle was over, and by 4 o'clock the field was clear. In one case the feat was performed by the Royal Army Medical Corps and in the other by the Canadian Army Medical Corps, both services working with internal and combined harmony.

Such events as these are merely a part, or rather an interruption, of the regular work of the medical service. Its main business is to keep the army in a state of health. As a result we are presented with the spectacle, for the first time in the history of war, of an army without sickness, save for those minor ailments to which the military as well as the civil population is prone.

Yet, as the years pass, and the war proceeds, new problems present themselves to the medical service. Those problems concern the mind of the soldier rather than his body; they are difficult because they are new, and have in them that element of subtlety which is always inherent in mental conditions.

This warfare itself is a new thing in its continuity and intensity apart from its duration. There have been longer wars. The Seven Years' War lasted seven years; the Thirty Years' War lasted thirty years, but in those days armies went into winter quarters; a siege was a leisurely affair; a battle was the business of a morning; billets were undisturbed by far-reaching artillery, and "reserve" meant rest. Behind the line there was an approach to civil life, and even certain domestic amenities were not wanting. On the night before Waterloo "sounds of revelry" were heard, and highly placed officers shared in revels such as are now reserved for subalterns, and then only upon the too rare occasions when they have leave.

Upon the soldiers whose home is within these islands this new warfare bears hardly, but when they have leave they go home to familiar scenes, to fields in which they played, to village streets in which every

house has a meaning, it may be to a club or even to a public-house reminiscent of innocent cheer in the far-off days of peace. Above all, they experience the soft compliance of their womenkind, which eases their labouring spirit from the hard control of military discipline. There is, in short, a break in the life of poverty, temperance, and obedience. But for soldiers who come from overseas there are none of these ameliorations. England to them is London, where they are lonely, in spite of the official hostels which are opened for their entertainment, and no private hospitality can charm away their longings for their own. They have only two happy moments: when their leave begins and when it ends. The German soldier is better off. When he has leave he, too, goes home.

Of these peculiar hardships there is no legitimate complaint. All enlisted for three years or "the duration." The three years are up, but the end is not yet. The military authorities are under no primary obligation to save a man alive. They are obliged to make the best of him whilst he is yet living, but they are not fulfilling that obligation when they permit an officer to continue at his post when his mind is overstrained to the point of breaking.

This war is carried on by civilians. Many of its problems are civil problems, such as arise in the conduct of any business. The nation is the army, and the medical service is face to face with precisely those conditions which confront it in private practice. The service itself is carried on by practitioners of medicine, who have by no means abdicated their functions merely because they wear uniform clothing. They, above all men, are aware that there is a point beyond which the mind must not be strained, if it is to recover its resiliency.

With the approach of a fourth winter a system should be devised by which officers shall have automatic relief, a system as simple as in civil life, under which a business man takes a holiday and returns regenerated to his task. The reasons are identical. He takes a holiday to save his business. Under present conditions an officer can go sick, but the system is so cumbersome that when he goes sick he is already dead. He applies to his medical officer; he passes through a field ambulance, he is evacuated to a casualty clearing station, and having run the gauntlet of innumerable medical officers he may eventually reach the base, and having appeared before numerous boards he will resume his journey to the front again; but to accomplish this purpose his malady must be of so obvious a nature that it can be detected at a casual glance. Otherwise he falls into the category of neurasthenia, neuritis, myalgia or shell shock, all of which have a sinister significance for the sensitive man. His career is ended, and that is not what the army wants, for the experience which he has gained during laborious years is lost to the service.

These observations apply to officers of all ranks in the fighting line, especially to battalion commanders and the heads of the auxiliary services, men who have heavy responsibilities, and are for long periods under fire, who have gained an experience which can be discarded only with ultimate loss. Junior officers are more carefully watched over, and a considerate commander is always alert lest they be overstrained.

The heaviest trial a medical officer has to endure is the private interview with a combatant officer who feels himself on the point of breaking. These men are tortured by the fear, in most cases groundless, but none the less real to them, lest in a moment of forgetfulness they may bring loss upon the service,

and dishonour upon themselves and their families. In civil life these consultations are a large part of private practice. There is nothing furtive or shameful about them, and the medical man consulted applies the remedy of rest. In the army he is helpless, and the officer returns to his duty, with the risk of disaster to himself, to the men under his command, and to the operations in which he is engaged. A keen-eyed medical officer may observe these signs of mental deterioration, but he can do nothing. The merest expression of solicitude on his part may be interpreted as a suspicion of incompetence, especially in cases where the suspicion is justified.

An attempt has been made to meet this condition by the grant of leave "on compassionate grounds." A soldier who asks for compassion is already finished. He may obtain some sinecure job in which his moral deteriorates rather than improves, but in either case his usefulness is impaired by the suggestion of stigma which is attached to such posts, whereas a period of rest and freedom would restore him to full vigour.

An officer who is fit to command a battalion or its equivalent is fit to be taken at his word when he signifies that he needs a rest. His opinion might be confirmed privately by one of the more highly specialized consultants in the medical service, and the way should be made smooth and easy for him. He should not be compelled to pass through the usual official channel, which is necessarily narrow and rigid. His case should receive instant and sympathetic consideration, not especially in his own interest but for the good of the service. Such an arrangement would loosen up the service. It would afford the second in command a chance to show his capacity. It would mean a move up for every one below and give to all a change of work, which would make for the mental health of the whole.

The Australian Government has been impressed by these considerations, and, we understand, has an arrangement in view for returning to their homes on furlough all officers and men who have served "from the first." Besides, the good of the service, the good of the family, and therefore the good of the country, is involved. Men—and women too—forget because they must, and not because they will. The difficulties of time and space which confront the Australians are not so serious in the case of Canada. A three months' furlough for officers in the higher commands would be a simple affair. It is one of the most obvious preparations for a long war. The pick of the Canadian medical profession is overseas. The Canadian Government has always shown itself to be peculiarly sympathetic towards that branch of the service. Surgeon-General Foster knows, as no one else knows, the full burden of life at the front, for he has borne it in his own spirit for two years from Ypres to the Somme. We commend to him and to his consultants on purely medical grounds—and it is upon those grounds alone we are entitled to urge a suggestion—the case of these courageous and faithful soldiers, lest they be tried beyond endurance by a fourth winter in the trenches.

The like considerations apply to the other overseas contingents with equal force. They apply also, though with the mitigations we have noted, to the soldier whose home is within the British Isles. The principle of a holiday for the soldier should be recognized, especially for the man who has to shoulder heavy responsibilities from the pressure of which his mind can never be for a moment free while he is on service. An interval of rest, of change from the obsession of his war surroundings, should come not because he is on the verge of a breakdown, but in the routine of sound military administration.

SIR ALFRED KEOGH.

THE newspapers during the last few days have been full of attacks and rumours of attacks on Army Medical Administration, which, it was hinted, might even involve the retirement from his present position of the Director-General in this country. We would view the resignation of Sir Alfred Keogh with a feeling akin to despair of the future of the organization and reorganization of army medical affairs. We are glad to say that so far from there being any likelihood of this, there is every probability of Sir Alfred Keogh carrying on the great work he has done in the building up of a service for the care of the sick and wounded which has never been paralleled in the history of warfare. Any one who has experience of the work being done in the military hospitals throughout the country must be aware that the care of our wounded and sick brought from overseas is of a standard rarely equalled even at the best of our civilian hospitals, which are the best in Europe. Moreover, the development of the medical work from a purely scientific standpoint gives cause for amazement. So much of this is due to Sir Alfred Keogh's personal influence with his colleagues of the civilian profession that the criticisms, tinged as they are with obvious political bias, do not move us. There are matters, to which we refer elsewhere, calling for prompt attention from a man of his breadth of mind and true professional instincts, and we believe that the more closely the Army Medical Department works with the civilian doctors, who now constitute eleven-twelfths of the Army Medical Services, the better for everybody—the Director-General himself, the services over which he presides, and for the country at this critical period. In our judgement Sir Alfred Keogh would do well to establish in his office a new department for dealing with the innumerable difficult questions affecting those members of the R.A.M.C. who have been withdrawn from civil life to serve the army, and to place at the head of it an officer possessing long experience of civilian methods and practice, and the intensive military experience which so many territorial medical officers have gained during three years of active service. Such an officer would understand the difficulties of individual territorial and temporary officers, would be able to represent their troubles to the Director-General, and would be in a position to act as a sympathetic intermediary between him and the professional committees or any joint subcommittee they may delegate for the purpose.

OMISSIONS FROM THE BRITISH PHARMACOPOEIA.

THE serious shortage in the supplies of sugar and glycerin available for medicinal purposes, which has already occasioned grave inconvenience, has now culminated in a notice issued by the General Medical Council and published in the SUPPLEMENT, temporarily deleting from the current edition of the *British Pharmacopoeia* a considerable number of galenic preparations containing these substances. The intention of this proceeding is, of course, to diminish as far as possible the unnecessary prescribing of those galenicals containing sugar and glycerin which are relatively unimportant or for which substitutes can be devised, and it is to be hoped that the profession will aid this very desirable object as far as practicable by abstaining from prescribing the deleted articles. The list of these, however, contains several important and widely used preparations for which it is very necessary that efficient substitutes should be provided as soon as possible, such as compound tincture of rhubarb and compound liquorice powder. It is obviously very desirable that the substitutes should be standardized preparations of known composition, and we understand that a supplement of the *British Pharmaceutical Codex* will shortly be issued (probably in the course of a few weeks) containing a comprehensive list of alternative preparations suitable for prescribing in

place of those now removed from the *British Pharmacopoeia*: the only precaution then necessary will be to add the letters B.P.C. to the name of the preparation. In this connexion, however, it may be noted that there is really comparatively little practical difference between preparations containing sugar and those containing sugar substitutes, since the latter substances are now largely used in food preparations while the supplies are very limited; it seems desirable, therefore, that the use of such preparations which do not possess any actual medicinal value should, as far as possible, be avoided. For the moment the existing stocks are probably sufficient to supply the demand for those preparations for which no proper substitutes are now in existence, but as the distribution of these stocks will, no doubt, quickly become very unequal—with consequent loss of uniformity in dispensing—it is evident that substitutes should in all cases be prescribed as soon as they are available.

THE EFFECT OF THE LIQUOR CONTROL REGULATIONS.

IN a written answer to a question asked in the House of Commons, on July 17th, Sir Worthington Evans supplied a table of weekly averages of convictions for drunkenness in areas which had been scheduled under the Liquor Control Regulations up to the end of 1916. The table is arranged in the following way: The weekly average number of convictions in each area for the four weeks prior to the coming into effect of the order is shown, then the average number throughout the whole of 1916 or such part of that year as was later than the making of the order, and then the weekly average for each successive period of four weeks down to that ending on June 17th, 1917. The general results for the whole of Great Britain are as follows: The average for the four weeks before the order was 3,956; for 1916 (the part of the year subsequent to the order) 2,434; and for the successive periods of four weeks, beginning with that ending December 3rd, 1916: 2,500, 2,697, 2,127, 1,945, 1,755, 1,420, 1,333, 1,352. The form of this return is not well chosen for the purpose of statistical comparisons; it would have been better to show the number of convictions for corresponding weeks before and after the enforcement of the order, but that the trend is downwards cannot be disputed. The *prima facie* inference is, of course, that the Control Board's regulations have had the desired effect, and this may quite well be the fact. At the same time, it is necessary to remember that statistics of this kind are ambiguous. The population of Great Britain in the scheduled areas has undergone great changes both in age and sex constitution owing to the war, while the same factor may have affected the police administration. A district from which a considerable proportion of men of military age has been withdrawn and to which large numbers of women have been attracted, would be likely to return fewer police convictions for drunkenness, while darkened streets and a reduced police force might be expected to lead to fewer arrests. It seems difficult to assess the value of these objections. In an article published by the *Daily Telegraph* on July 31st a chart is given showing total convictions for drunkenness (women), deaths from overlying, cases of attempted suicide (women), and deaths from alcoholism (women) for each year from 1911 to 1916 (inclusive). In every case there has been a considerable decline since 1914. The convictions for drunkenness declined from 37,311 in 1914 to 21,245 in 1916, and deaths from overlying fell from 1,233 to 744. The numbers of convictions among women for the whole country are not subject to the same criticism as those for all convictions, so far as variations of the age and sex constitution are concerned. The other data, particularly deaths from alcoholism, are open to many objections and have little statistical value. We think that the general impression created—namely, that there has been a sensible

decline in the overt manifestations of alcoholic intemperance—may be accepted, but it is desirable to have the subject further investigated, and no doubt the scientific advisory committee appointed some months ago by the Central Control Board will pay attention to the point.

A SOCIAL PIONEER.

WHEN the time comes to appraise the work of those pioneers of social reform whose high aims and unwearied enthusiasm were so memorable a factor of English life in the later years of the nineteenth century, few names will shine with a brighter lustre than that of the late Canon Barnett, founder of Toynbee Hall. For thirty-three years he and Mrs. Barnett, who survives him, lived and worked in Whitechapel, first for twenty years in St. Jude's Vicarage, then, after the building of Toynbee Hall in 1884, for thirteen years in its Warden's Lodge, "surrounded with the splendid body of Residents and Associates who were the first to bring honour to the Settlement movement." Of Canon and Mrs. Barnett it has been justly said that "a rare combination of idealism and practical capacity and a complete sympathy of aim made their thirty-three years' life and labour in Whitechapel singularly fruitful in the numerous efforts to which they set their hands. . . . To an astonished world they preached the gospel of University Extension Teaching, and co-operation and co-ordination among social workers, especially in the distribution of charity; and advocated causes considered then so quixotic as the higher education of pupil teachers, fortnights in the country for the poorest children, and free concerts, books, and picture galleries. By a simplicity and a directness amounting to genius they quickly won to their side some of the best heads and hearts in the metropolis, who shared their faith that the humblest ought to have an opportunity of drawing inspiration from the best that literature, art, and music could supply." On the eve of the summer meeting now in progress (August 3rd to August 17th) under her presidency at the Institute of the Hampstead Garden Suburb, devoted to after the war problems of reconstruction, Mrs. Barnett by a happy inspiration issued a memorial volume comprising some sermons, papers, letters, and aphorisms of her lamented husband, together with a brief biographical introduction. For Canon Barnett Christianity was not merely a doctrine to be professed but pre-eminently a life to be lived. It involved the recognition of universal goodwill and its expression in mutual service as the supreme ideal for individuals and nations. Hence this little volume of selections from his writings and sayings, aptly entitled *Vision and Service*, carries the weight pertaining to the words of those who practise what they preach. Many readers will turn with special interest to the Canon's last sermon on the resurrection and national policy, preached in Westminster Abbey on March 30th, 1913, to which, with its note of solemn warning and its undercurrent of grave foreboding, subsequent events have supplied so poignant a commentary. But all the contents of the pamphlet speak the faith and enthusiasm of a true and constant lover of mankind. The little book is embellished by a portrait of Canon Barnett, and a reproduction of Watts's "Love and Death," a replica copy of which, presented by the artist, hangs in the hall of the institute at the Hampstead Garden Suburb.

FLIES AND COLOURED LIGHT.

THERE are more ways of killing a dog than choking him with butter, says the adage, and the remark applies also to flies. One of the neatest, cleanest, and most scientific modes of getting rid of flies is founded on the observation that their visual apparatus is apparently only sensitive to white light, most of the primary colours producing on them the same effect as darkness. According to MM. Galaine and Houlbert,¹ the fly's retina is not impressed at

¹ *C. R. Acad. des Sciences*, p. 132.

all by violet and indigo, a little apparently, and that little disagreeably, by blue and green; yellow and orange are better borne, and reds are not perceived at all. Now for the application of these data to the problem of fly riddance. In a room with only one window the ordinary panes are replaced by light-blue glass, one being made to open when required in order to admit white light. These observers found that flies were attracted into the room through the open window, became restless as soon as the window was closed and only blue light prevailed, and then became lethargic, as in the dark. If at this juncture the movable pane were thrown open, admitting white light, they promptly availed themselves of the opportunity to escape. This experiment, repeated with green glass, yielded approximately the same results, but those with yellow were less conclusive. When there are two or more windows, those on one side of the room should be opened while the others are closed. Flies wandering into the room turn tail as soon as they perceive the blue light. A further advantage of the blue panes is that they arrest most of the heat rays. It is true that the employment of blue glass diminishes the illuminating powers of the light rays, but this can in a certain degree be overcome by employing a mosaic of blue, green, yellow, and even red glass. It is to be noted that flies are comparatively unobtrusive in churches provided with plenty of coloured stained-glass windows.

FARM COLONIES FOR THE TUBERCULOUS.

IN the JOURNAL of July 21st we made brief reference to the contribution by Sir R. W. Philip to a discussion on farm colonies at the annual meeting of the National Association for the Prevention of Consumption. It appears that there is a growing misapprehension among the public as to the relative functions of the sanatorium and the farm colony, leading to an ill-informed demand that the former should be replaced by the latter. In the course of his remarks on the place of the farm colony in the antituberculosis campaign Sir Robert Philip dealt especially with this and kindred mistaken ideas. He pointed out that the farm colony is no new idea, nor is it the last word in relation to tuberculosis. In essence it is an extension of treatment, on simpler lines, for patients incompletely cured at a sanatorium. It is in no sense a panacea for tuberculosis. The arrest of lung tuberculosis takes time, and for permanent reparation a long time is needed. In the slow development of tuberculosis lies the chief difficulty of diagnosis, and in the slow healing of tuberculosis lies the chief difficulty of treatment. Lack of appreciation of the natural history of the disease is the main cause of disappointment in the results of treatment. Somehow or other the Insurance Act has led people to imagine that, given three months' sanatorium treatment, cure may be expected. Such hopes are, of course, vain, and those who built faith upon them are naturally discontented. Hence the swing of the lay pendulum towards the farm colony and the need for Sir Robert Philip's reminder that the various tuberculosis institutions are not mutually competing. It is foolish, he says, to pit one against the other, to discuss the relative value of the dispensary and the sanatorium, and, again, of the farm colony, as if they were rival agencies. Each institution has its proper place in a sound antituberculosis programme. The one institution does not replace the other. They are mutually complementary. He defines the purpose of the farm colony: it is to serve those tuberculous patients whose disease, after varying periods at the sanatorium, has been almost or completely arrested, but who remain evidently liable to a relapse. It is dangerous and uneconomical for such persons to return to their ordinary avocations, while they require more prolonged care and guidance than is possible at the sanatorium. At the farm colony the patient merges in the colonist; residence there, under the medical eye, is a test period, in which the neuromuscular tissues, poisoned by the tuberculous toxins,

steadily recover strength and tone, and the system gradually accommodates itself to the conditions of ordinary working life. For those to whom return to their old occupations at any time would mean certain relapse it is a period of education and training in new pursuits. The life is of the simplest, and the cost relatively low. A colony is a post-graduate school for character no less than for physique, the primary curriculum being passed through at the sanatorium. Hence the colonist must be selected on definite principles so that the colony may not be a dumping ground for all sorts of tuberculous patients at every stage of the disease. Sir Robert Philip's warning is timely.

OBSELETE TUBERCULOUS LESIONS IN THE LUNGS OF ADULTS.

WHILE working over the well-worn subject of the site of tuberculous lesions in the lungs, Opie¹ has broken fresh ground by showing, in the course of an investigation "on focal pulmonary tuberculosis of children and adults," that the healed or healing lesions found in the lungs of so many children and nearly all adults have characters which serve to distinguish them from the progressive pulmonary tuberculosis of adults. They are identical with the pulmonary tuberculosis of infancy and early childhood, which may occur in any part of the lung, is not more often localized in the apices than elsewhere, and, indeed, tends to occur in the middle lobe of the right lung or in the corresponding part of the upper lobe in the left lung. In infancy there is little fibrosis around the lesion, but with advancing age this follows; the pulmonary lesion does not often show cavities, and these when present are small; it is accompanied by massive tuberculosis of the regional lymphatic glands, and resembles tuberculosis in a freshly infected animal. In the lungs of adults, on the other hand, there are two sharply definable forms of tuberculosis: (1) The apical, or that commonly recognized, which tends to spread diffusely into the lung, is not accompanied by caseation or calcification of the regional lymphatic glands, and though often fatal may become obsolete; (2) focal, or identical with that seen in infancy and early childhood, which is found in at least 92 per cent. of all adults, and may be acquired between the ages of 2 and 18 years. Almost all human beings are thus spontaneously vaccinated with tuberculosis before they reach adult life, and the apical form, if it subsequently occurs, is due to a second infection. From the presence of calcium salts in the focal lesions, x-ray plates may detect the healed lesions when not otherwise obvious in thin sections of the lungs. The paper, which is illustrated by nine skiagrams, is based on *post-mortem* examinations of 50 adults (3 dying from pulmonary tuberculosis) and 93 children (11 dying from tuberculosis). In the bodies of those dying from other diseases tuberculosis was found in 47 adults and 11 children. Of the 93 children 43 were under one year.

SPIROCHAETOSIS AND WEIL'S DISEASE.

AMONG the diseases which have become prominent during the war special interest attaches to spirochaetosis icterohaemorrhagica, which, though usually, is not invariably accompanied by jaundice; in the latter event, it may, from the prominence of nervous symptoms, resemble meningitis, though the cerebro-spinal fluid of such patients may be normal (Bloch and Hébert²). Another possible cause of confusion about anicteric cases of spirochaetosis icterohaemorrhagica is that the Wassermann test for syphilis is often positive (Costa and Troisier³). Early in the year there was some correspondence between Sir Frederick Taylor, chairman of the committee of the Royal College of Physicians on the nomenclature of diseases

¹ E. L. Opie, *Journ. Exper. Med.*, Baltimore, 1917, xxv, 855-876.

² Bloch and Hébert: *Bull. et mém. Soc. Méd. des Hôp. de Paris*, 1917, 3^e sér., xli, 69.

³ Costa and Troisier: *Compt. rend. Soc. Biol.*, Paris, 1917, lxxv, 195.

(1906-17), and Dr. A. F. Hurst in the *Lancet*¹ about the title "Weil's disease" previously applied to cases of acute febrile infective jaundice now proved to be due to this form of spirochaetosis; this eponymous title has the advantage of brevity, but accuracy and considerations of priority, for what they may be worth, can be urged in support of the adoption of the more cumbersome terms of "jaundice spirochaetal (icterohaemorrhagica)" and of spirochaetosis icterohaemorrhagica for the form without jaundice. The new edition of the *Nomenclature of Diseases*, now in the press, will, we understand, contain the term "spirochaetosis"; under "jaundice" two forms of infectious nature will be recognized—(a) bacillary, and (b) spirochaetal—the latter comprising spirochaetosis haemorrhagica and spirochaetosis recurrens (recurrent fever). Unfortunately, the comparatively manageable names spirochaetal jaundice and spirochaetosis are not sufficiently definite to eliminate syphilitic infection. There is a way out of the difficulty which so far does not seem to have been considered and necessarily has the drawback of coining a fresh word; Noguchi finds that the *Spirochaeta icterohaemorrhagiae* differs in certain characteristics from other spirochaetes, and argues that it constitutes a distinct genus for which he suggests the name *Leptospira*; it would therefore appear that leptospiral jaundice and leptospirosis might be both euphonious and distinctive. As already mentioned, there are some reasons—and these are quite apart from any antagonism engendered by an enemy name—against the retention of the term "Weil's disease" as a synonym for infection with *Spirochaeta icterohaemorrhagiae*. In the first place, the most obvious feature of the disease described by Weil was jaundice, which is not present in all cases of this infection. Secondly, as regards the thorny question of priority, while it is not possible to be certain if the disorder described by authors at different periods is the same, it has been pointed out² that Larrey was familiar with the condition in Cairo in 1800, and that Lancereaux, Landouzy, A. Mathieu and others also anticipated Weil. Further, Valassopoulos, whose interesting report on bilious typhus or infective-febrile jaundice, which he identified with the so-called Weil's disease, read before the first Egyptian Congress of Medicine in 1902, has perhaps been rather neglected, recognized the disease in 1876 in Alexandria, where it first appeared after the sewers were constructed in 1870. He considered that Griesinger's bilious typhoid described in 1853 was not, as most writers on the subject have assumed, the same as Weil's disease. But the difficulty of identifying as the same disease disorders described at different times and places by various writers is illustrated by the curious circumstance that whereas Valassopoulos considered the febrile infective jaundice of Egypt to be the disease described by Weil, which is now proved to be due to infection with *Spirochaeta icterohaemorrhagiae*, the febrile jaundice recently seen at Gallipoli and in Egypt among our troops, and presumably the same as that long known in Egypt, appears, so far as is known, to be due to some duodenal infection allied to that of paratyphoid A, and not spirochaetal, thus differing from the jaundice seen on the Western front. It therefore seems reasonable to regard acute febrile infective jaundice as a syndrome which may be due to several causes and not a disease, and to conclude that the question of priority, though an interesting historical exercise, has not much bearing on its nomenclature.

In connexion with the recent visit of the King and Queen to France, His Majesty has appointed Surgeon-General Sir Arthur Sloggett, K.C.B., K.C.M.G., Director-General Army Medical Service in France, to be a Knight Commander of the Royal Victorian Order.

At the annual meeting of the Medico-Psychological Association of Great Britain and Ireland on July 25th, Mr. John Mayne Colles, LL.D., K.C., J.P., Registrar in Lunacy in Ireland, and Dr. Alexander Reid Urquhart, late physician-superintendent of James Murray's Royal Asylum, Perth, were elected honorary members. We regret to have to record that Dr. Urquhart died a week later. A resolution congratulating the President, Lieutenant Colonel D. C. Thomson, R.A.M.C., on the conclusion of another year's presidency was unanimously adopted on the motion of Dr. Hayes Newington, whose death we have the sorrow to record elsewhere in this issue of the *JOURNAL*. At the same meeting the Gaskell Prize, consisting of fifty guineas and a gold medal, was awarded to Dr. James Cowan Woods, Major R.A.M.C., of the Priory, Roehampton. The work next in order of merit, that of Dr. Monrad-Krohn, was considered to be of such high merit that it was decided to present him with fifteen guineas and a replica of the medal in silver.

Medical Notes in Parliament.

The Royal Army Medical Corps.

MAJOR DAVID DAVIES asked the Prime Minister, on August 2nd, whether, in view of the shortage of doctors to meet the civil requirements of the nation, he would institute an inquiry into the administration and organization of the Royal Army Medical Corps in order to ascertain whether the services of medical officers who had joined the army were utilized to the fullest extent. Mr. Macpherson (Under Secretary for War) replied: The Army Council are fully alive to the shortage of medical officers and are watchful that the fullest use is made of all medical officers employed by the army, but it is not proposed to institute at the moment any inquiry while active operations are in progress which might dislocate and militate against the effective administration of the forces in the field.

Major Davies: Does the War Office intend to do anything? Mr. Macpherson: Well, the business of the War Office is to consider the demand made by the Higher Command.

Mr. Pringle: Has a Departmental Committee considered the extent to which the services of medical practitioners now in the army are being utilized? Mr. Macpherson: No; but my information is that the officers of the Higher Command are satisfied that there are none of the medical practitioners who are not being used in the best way.

Sir Garrod Thomas: Is the hon. gentleman aware that civilian medical practitioners who joined the army twelve or eighteen months ago, and have been abroad, have only done real medical work for a few hours during the whole of that long period? Mr. Macpherson: I do not know where the hon. member gets his facts, but I am glad in a way that doctors are largely unemployed at the front; it shows that the casualties are few. At the same time, at any given moment the casualties may be very severe and very numerous.

Mr. Pringle: Is my hon. friend not aware that a large part of the time of these medical men is taken up with work which is not medical, and which could be done by laymen who have had no medical experience? Mr. Macpherson did not take up this inquiry.

Major Davies asked, on August 6th, whether in the organization of the Royal Army Medical Corps a certain number of fully qualified medical men were employed to supervise the mechanical and horse transport of the ambulance and other Royal Army Corps units at the front; and whether, in view of the shortage of civilian doctors, he would take steps to allocate this particular work to officers who were not qualified medical practitioners. Mr. Macpherson replied: In all motor ambulance convoys there is attached an officer of the Army Service Corps whose duties are to look after the mechanical transport; but an officer of the Royal Army Medical Corps is necessarily in command of this as of all other medical units for the care of the wounded. In the case of field ambulances, a warrant officer of the Army Service Corps is attached to superintend the motor ambulance and horse wagons.

¹ *Lancet*, 1917, i, 200, 238, 317.

² Martin and Pettit: *Bull. Acad. Méd.*, Paris, 1916, 3 sér., lxxiv, 247.

Army Medical Service Administration.—In reply to Major David Davies, on August 8th, Mr. Macpherson said that evidence was given by the British Medical Association as well as by others before the committee presided over by Mr. Churchill, and it would not be conducive to the efficiency of the service nor the successful prosecution of the war to initiate such an inquiry as was suggested into the Army Medical Service while the war was in progress. The Secretary of State some little time ago arranged for certain eminent medical men to visit France for the purpose of satisfying him that the medical services were on a sound basis. The visit of the committee would take place when the operations now in progress admitted of the carrying out of useful inquiries.

Military and Civilian Medical Services.—Major David Davies, on August 7th, asked whether the Prime Minister's attention had been called to the fact that there was no department responsible for the provision of doctors to meet the medical requirements of the civilian population; whether the War Office had called up civilian doctors irrespective of civilian needs; that owing to the defective organization of the Royal Army Medical Corps the services of doctors who had joined the army were not utilized to the fullest extent; and whether he would appoint a competent authority to adjudicate between the competing claims of the Royal Army Medical Corps and the civilian population, as has already been done in the case of agriculture. Mr. Macpherson: There is a committee appointed for this purpose under the Military Service Act, which is the competent authority under that Act. I think my honourable and gallant friend is under a misapprehension in supposing that the War Office calls up doctors irrespective of civil needs, or that the fullest and best use is not made of the doctors serving on the various fronts. Major Davies: By what department was this committee appointed? Mr. Macpherson: By the War Office. He added, in reply to Mr. Chancellor, that he did not think any estimate had been formed of the number of qualified medical men serving as privates in the ranks, but every inducement was being given to qualified men in the ranks to take commissions in the Royal Army Medical Corps.

The Status of the Army Medical Department in the War Office.—Major David Davies asked Mr. Macpherson whether, in view of the responsibility devolving upon the Director-General of the Army Medical Service for the health and sanitation of the British armies, the time had arrived when this branch of the War Office should no longer form part of the Adjutant-General's department, but should be given the status of a separate department at the War Office, whose responsible head should be a member of the Army Council. Mr. Macpherson replied, in a written answer, that Lord Derby considered this question some time ago, and decided that the present was not an opportune moment at which to reopen discussion on a matter of organization of this importance, which had been decided some years ago after the fullest investigation of all the relevant arguments. With that decision Lord Derby was still in the fullest agreement.

Colonel Carter's Position.

In reply to a question by Mr. Gilbert, the Secretary of State for India (Mr. Montagu) said that Lieut.-Colonel Carter, I.M.S., was at present employed under the Admiralty in the equipment of hospital ships. Under Indian regulations an officer placed on special duty in this country drew somewhat less than the full pay of his substantive appointment in India. Lieut.-Colonel Carter's deputation pay—£1,057 10s. a year—was accordingly less than that attached to the last appointment which he held in India—namely, £1,360 a year. Mr. Montagu added that he was in communication with the Government of India on the subject of recognition of Lieut.-Colonel Carter's services.

Mr. Hogge asked whether Lieut.-Colonel Carter, who was responsible for exposing the scandal of Mesopotamia, ought to suffer, either financially or in any other way, as the result of his action. Sir J. D. Rees asked whether officers in the Indian services did not regard serving at home for a time at slightly lower pay as a privilege and an advantage. Mr. Montagu replied that it was because he recognized that the gallant officer's services deserved recognition that he was communicating with the Government of India as to his promotion or other special recognition. The difference between service in England and service in India must, according to the Regulations, obviously—and he thought rightly—be represented by

some difference in emolument. In further reply to Mr. Gilbert as to the reason why Lieut.-Colonel Carter was transferred to the Admiralty, Mr. Montagu said that he had shown himself peculiarly well equipped to the service he was rendering to the Admiralty. He was loaned to the Admiralty for the purpose of assisting in the equipment of hospital ships.

Colonel Yate asked whether, in making the recommendation for the promotion of Colonel Carter, Mr. Montagu would bear in mind that Colonel Carter was in independent charge of a hospital ship running between Bombay and Basra, and that consequently he had to bear none of the heat and burden of the day of going down the river Tigris in charge of the wounded, which was borne by the other officers of the Indian Medical Service, and would Mr. Montagu recommend officers of like rank in the Indian Medical Service for promotion as well as Colonel Carter? Sir George Toulmin: They did not render the same service.

Vaccination in India.—Mr. Snowden asked the Secretary of State for India the question as to setting up machinery in India whereby genuine objectors to vaccination could be exempted from the compulsory law as in England, Scotland, and Wales. Mr. Pratt (for Mr. Montagu, who was seeking re-election on his appointment) said the question and the suggestion would be referred to the Government of India.

Army Medical Re-examination Committee.

The Select Committee of the House of Commons on the Medical Service (Review of Exceptions) Act, 1917, presented a "special report" on August 2nd, which recommended that the whole organization of recruiting by medical boards and of the medical examination and re-examination, should be removed from the War Office and placed under civilian control, and pending action on this: (1) That all men waiting to be called up for military service, or holding a certificate of temporary or conditional exemption, may appeal to an Appeal Tribunal, and such Tribunal, if it thinks fit, may order a re-examination of such men by a medical or special medical board. (2) That all attested men should have the same rights of appeal as unattested men. (3) That all men who have been called up since April 5th, 1917, and are still in the United Kingdom, should have the right to appear before, and be examined by, an invaliding medical board.

There was little new in the resumed evidence of Surgeon-General Julian before the Committee on August 2nd. It was chiefly about documents the witness had put before the Committee. On the old question of classification by medical tribunals, General Julian said that the president of a medical tribunal did the classification, but he did it on advice. Thus the other doctors shared in the decision. The witness did not credit an allegation that an old soldier's discharge papers had been taken from him, believing that inquiry would give an answer to such "an unheard-of" story. In some cases there were difficulties about medical history sheets, which were vitally important. Touching Class C3 men, the witness mentioned that an Army Council instruction was issued by the War Office on July 27th. This provided that entries should be made of men fit to work under domestic conditions if their health permitted; the tribunals were also requested to say whether a man was fit to follow his own trade.

The War Cabinet's Decision on the Principle.

Sir Maurice Levy asked on August 7th whether the Government intended to give effect to the proposals with regard to the administration of the Military Service (Review of Exceptions) Act which Lord Derby had announced his readiness to accept.

Mr. Bonar Law replied that if the question referred to certain promises made by the Secretary of State for War to the Select Committee, orders to give effect to them had already been issued, the Army Council Instruction in which they were embodied having previously been shown to the Chairman of the Committee and by him to the Committee, to whom the proposals commended themselves as carrying out the pledges. If, on the other hand, the reference was to the larger question of the transfer of the responsibility of recruiting, this matter had been before the War Cabinet, which had accepted the change in principle. The details had still to be determined.

We understand that no decision has yet been reached, and the positive assertion that the work will be turned over to the National Service Department is at least premature.

DR. WILLIAM H. WELCH has resigned the post of head of the department of pathology at Johns Hopkins University to take up that of director of the School of Hygiene and Public Health. He is succeeded in the former appointment by Dr. W. G. McCallum, of Columbia University.

THE WAR.

THE RECENT OPERATIONS ABOUT YPRES.

THE information which reaches us with regard to the work of the medical service during the recent operations near Ypres shows that though it was much impeded by the almost continuous rain, varied by an occasional deluge, it was carried out with a degree of success from the point of view of the wounded for which we could hardly have hoped. One of the greatest dangers is the aggravation of the shock due to the wound itself by exposure to cold and wet. The mud everywhere, but especially between the regimental aid posts and the advanced dressing stations of the field ambulances, was amazing, and the labour involved in stretcher-carrying enormous. It took practically six bearers to a stretcher, instead of what is now the almost normal—two. Moreover, the relays had to be numerous, for now that we have advanced so far road-making is hampered by the water-logged condition of the ground.

However, once back to the advanced dressing station, things were comparatively easy, for, apart from ambulances, there are tram-lines, broad-gauge lines, from the collecting posts back to the walking-wounded main dressing stations, and lying cases main dressing stations. Consequently things medical moved well despite the floods of rain. The same tale could, perhaps, not have been told had not the greater part of the casualties occurred during the first twenty-four hours, when the weather was comparatively dry. Afterwards there were merely dribbles of wounded. They included quite a large number of Germans, who are being treated in all ways precisely as if they were Allied Force casualties. The difficulties in clearing the field of action of casualties have since, no doubt, been formidable, as for all other forms of military work.

Had it not been for the rain the work of the main dressing stations would have been light, as they are not desired to do operating or any but essential dressings. Owing to the weather, however, their work was very heavy, for practically all cases arrived soaked in mud, and had to be refitted with pyjama or other dry clothing, blankets, and clean stretchers, before dispatch on the remainder of their journey to the casualty clearing stations. Such attention is of great benefit to the patients, and also does much to relieve the strain on the staffs of the casualty clearing stations and to hasten the moment at which the necessary operations can be undertaken.

The casualty clearing stations are very numerous and have a larger number of operating teams than ever, so there has probably again been an increase in the ratio of operations undertaken to the wounded. These early operations, of course, add immensely to the chances of recovery. Casualty clearing stations as a whole seem now to have specialized to a considerable extent, some dealing almost solely with head cases, others with abdominal injuries, etc. Taking them as a whole, the type of case has been light; in particular thigh cases have not figured largely on the list; the casualties are reported to have arrived in very good condition as a rule, though there has been plenty of work for the staffs of the observation wards, which are now to be found at all casualty clearing stations as a matter of routine. It seems likely, therefore, that the net result of the medical arrangements in this offensive will not fall below the very high level attained in the Messines affair.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died on Service.

TEMPORARY SURGEON E. S. CALTHROP, M.B., B.S., R.N.

Dr. Edward Spencer Calthrop died on July 30th of toxic neuritis. He was the second son of Mr. and Mrs. Edward Calthrop, and received his medical education at Charing Cross Hospital. He took the diplomas of M.R.C.S., L.R.C.P., Lond. in 1909, and graduated M.B., B.S. Lond. in the following year. After holding the office of house-

surgeon at Charing Cross Hospital he saw service with the Turkish Red Crescent and also with the Bulgarian Field Corps during the Balkan war. He was to have served with Sir Ernest Shackleton on the polar expedition but obtained instead a commission in the Royal Navy and was attached to the Royal Naval Division. He spoke French well and had a writing knowledge of Turkish and Russian.

ARMY.

Killed in Action.

MAJOR W. D. KIRKLAND, A.A.M.C.

Major William Duncan Kirkland, Australian Army Medical Corps, was killed in action on July 22nd. He was the elder son of the late Dr. Kirkland of Lithgow, New South Wales. He received the Military Cross on June 10th, 1917.

CAPTAIN G. S. PIRIE, R.A.M.C.

Captain George Stephen Pirie, R.A.M.C., was killed in action on July 24th. He was the second son of the late George Pirie of Affcullen, Plumstead, Cape Town, and of Leopard's Vley, Cape Colony, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1914. He took a commission as lieutenant in the Special Reserve of the R.A.M.C. on January 2nd, 1915, and was promoted to captain after a year's service, and on January 11th, 1917, accepted a permanent commission in the R.A.M.C. as lieutenant, with the temporary rank of captain. He had served in the 29th Division in Gallipoli, where he was wounded, and since December, 1915, in France. He had twice been mentioned in dispatches. He was attached to the East Surrey Regiment when killed.

CAPTAIN W. A. SNEATH, M.C., R.A.M.C.

Captain W. A. Sneath, M.C., R.A.M.C., whose death from wounds was reported in the BRITISH MEDICAL JOURNAL of August 4th, was there stated to be a temporary officer. He took a permanent commission in the R.A.M.C. from January 11th, 1917.

Died on Service.

LIEUT.-COLONEL J. H. HORTON, D.S.O., I.M.S.

Lieut.-Colonel James Henry Horton, D.S.O., I.M.S., was reported as having died on active service, in the casualty list published on August 2nd. He was born on December 27th, 1871, the son of Major J. Horton of Woolwich, was educated at Guy's Hospital, where he gained the Arthur Durham prize in 1891, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1895. After filling the post of house-physician at Guy's and at the Royal Bethlem Hospital successively, he went to India as a special plague medical officer. He was one of the four plague officers who accepted commissions in the I.M.S. as lieutenant from January 29th, 1902, and while at Netley gained the Marshall Webb medal and prize. He became captain on January 29th, 1905, major on July 29th, 1913, and was specially promoted brevet lieutenant-colonel on December 21st, 1916. He served in East Africa in 1902, in the operations in Somaliland, was present in the action at Jidballi, was mentioned in dispatches (*London Gazette*, September 2nd, 1904), and gained the medal with two clasps and the D.S.O.; on the North-West Frontier of India, in the operations in the Mohmand country in 1908, medal with clasp; and as surgeon to the British Red Cross Society in the Balkan war of 1912, medal with clasp. He also had the fourth class of the Order of St. George and St. Vladimir of Russia. On March 17th, 1908, he was posted as medical officer of the 14th Bengal Cavalry, and at the beginning of the present war was appointed to the command of the 126th Indian Field Ambulance.

MAJOR J. AITKEN, R.A.M.C.(T.F.).

Major James Aitken, R.A.M.C.(T.F.), died at Yorkhill Military Hospital, Glasgow, on July 29th. He was the son of the late Mr. William Aitken of Glasgow, and was educated at Glasgow University, where he graduated M.B. and C.M. in 1891, after which he went into practice at Ilford, Essex, where he was honorary surgeon to the Merchant Seamen's Orphanage. He took a commission in the auxiliary forces on May 29th, 1901, had been surgeon-captain in the 4th Battalion of the Essex Regiment, and became major in the 1st East Anglian (Norwich) Brigade of Royal Field Artillery on August 5th, 1914.

CAPTAIN R. H. BHARUCHA, I.M.S.

Captain Rustam Hormusji Bharucha, I.M.S., was reported as having died on active service, in the casualty list published on August 2nd. He was born on July 2nd, 1884, educated at the Grant Medical College, Bombay, where he graduated as L.M. and S., and at University College, London, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1909. He entered the I.M.S. as lieutenant on January 29th, 1910, and became captain on January 29th, 1913. When the war began he was medical officer of the 86th Carnatic Infantry.

CAPTAIN R. H. DRENNAN, R.A.M.C.

Captain Robert Hugh Drennan, R.A.M.C., died at Gravesend recently, aged 51. He was the youngest son of the late Mr. James Drennan, J.P., of Carse Hall, Limavady, Ireland, and was educated at Edinburgh University, where he graduated M.B. and C.M. in 1892. He was in practice at Gravesend till he took a temporary commission as lieutenant in the R.A.M.C. towards the end of 1915, being promoted to captain after a year's service.

Wounded.

Lieut.-Colonel R. P. Lewis, R.A.M.C.

Captain R. R. G. Atkins, R.A.M.C. (temporary).

Captain R. Dow, R.A.M.C. (temporary).

Captain W. J. Evans, R.A.M.C. (temporary).

Captain H. S. G. Haji, I.M.S.

Captain J. L. Hamilton, R.A.M.C. (T.F.).

Captain J. W. Macdonald, R.A.M.C. (temporary).

Captain P. J. Matthews, R.A.M.C. (temporary).

Captain L. Meakin, R.A.M.C. (temporary).

Captain R. A. Stark, R.A.M.C. (T.F.).

Captain D. S. Twigg, R.A.M.C. (T.F.).

Lieutenant T. Archdeacon, R.A.M.C. (temporary).

Lieutenant A. A. Henderson, R.A.M.C. (temporary).

Lieutenant and Quartermaster O'Hara, R.A.M.C.

DEATHS AMONG SONS OF MEDICAL MEN.

Ross, William Stuart, Lieutenant Border Regiment, second son of Dr. Douglas Ross of Brighton, killed July 23rd, aged 25. He was educated at Brighton College, where he was in both cricket and football teams, and at St. Catherine's College, Cambridge, where he gained a classical scholarship, and graduated B.A. in the classical tripos of 1914. When the war began he enlisted in the Public Schools Battalion, and got his commission in the Border Regiment on November 13th, 1914. He had served at Gallipoli, where he was wounded at Suvla Bay, in Egypt, and in France, where he took part in the capture of Thiepval and of the Messines Ridge.

Wheeler, Percival Francis Crommelin d'Erf, Captain Dorsetshire Regiment, attached Royal Flying Corps, killed while flying on duty on July 24th. He was the eldest son of Captain d'Erf Wheeler, R.A.M.C., formerly of the English Hospital, Jerusalem, now attached to the Egyptian Expeditionary Force. He was born at Jerusalem on April 5th, 1894, and was educated at Clare House, Beckenham, and Trent College. In May, 1913, he was gazetted to the 1st Dorsetshire Regiment. He went to France in September, 1914, in charge of a draft from his regiment, and was severely wounded at La Bassée a month later. He was promoted to the rank of captain early in 1915, and in December, 1915, was sent to Mesopotamia in charge of a draft of the Dorsets, where he served for eight months, having much valuable work to his record, in spite of several attacks of malaria; but finally he was sent to Bombay to hospital with a severe attack of paratyphoid. He returned to England on January 1st, 1917, and underwent a course of training for the Royal Flying Corps, and was on the eve of receiving his wings when he met his death while flying on duty at an aerodrome in England. As a soldier and an airman a brilliant future was predicted for him, and his death is a great loss to his profession.

MEDICAL STUDENT.

Nisbet, John Stewart, Private R.A.M.C., second son of Provost Nisbet, J.P., of Denny, died of dysentery at Lindi, East Africa, on July 17th, aged 22. He was a medical student at Glasgow University in 1914-15, enlisted in the Scottish Horse, and was subsequently transferred to the R.A.M.C.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

OFFICERS COMMENDED.

THE following medical officers are included in a further list of names brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war:

Surgeon-General Sir David Bruce, C.B., F.R.S., M.B., F.R.C.P., A.M.S.

Colonel R. D. Rudolf, C.A.M.C.

Lieut.-Colonels: J. A. Amyot, C.A.M.C., G. E. Armstrong, C.A.M.C., F. W. Begbie, R.A.M.C., J. T. Clarke, C.A.M.C., S. A. M. Copeman, M.D., F.R.S., T.D., R.A.M.C., W. H. Delaney, C.A.M.C., D. Donald, C.A.M.C., C. H. Gilmour, C.A.M.C., P. G. Goldsmith, C.A.M.C., J. Gordon, A.A.M.C., J. McCombe, C.A.M.C., H. E. Munroe, C.A.M.C., H. S. Newland, A.A.M.C., Sir A. Newsholme, K.C.B., R.A.M.C., H. R. G. Poate, A.A.M.C., H. A. Powell, C.M.G., A.A.M.C., R. Raikes, C.A.M.C., H. M. Robertson, C.A.M.C., C. L. Starr, C.A.M.C., J. Tidbury, M.D., R.A.M.C., A. L. A. Webb, C.M.G., R.A.M.C.

Temporary honorary Lieut.-Colonels: H. R. Kenwood, M.B., R.A.M.C. (Major R.A.M.C.), J. Robertson, M.D., R.A.M.C.

Majors (temporary Lieut.-Colonels): H. T. D. Acland, N.Z.M.C., F. T. Bowerbank, N.Z.M.C., A. S. Brewis, N.Z.M.C., R. M. Carter, F.R.C.S.E., I.M.S.

Majors: S. H. McCoy, C.A.M.C., D. S. Mackenzie, A.A.M.C., J. D. Morgan, C.A.M.C., R. E. Wodehouse, C.A.M.C.

Temporary honorary Major T. G. M. Hine, M.D., R.A.M.C.

Captains (temporary Majors): W. Bruce, N.Z.M.C., W. H. Unwin, N.Z.M.C.

Captains: A. B. Chandler, C.A.M.C., W. V. Corbett, R.A.M.C., N. H. M. Dalston, N.Z.M.C., W. J. Enright, C.A.M.C., D. E. Fenwick, N.Z.M.C., G. E. O. Fenwick, N.Z.M.C., A. G. R. Foulerton, F.R.C.S., R.A.M.C., H. G. Gibson, R.A.M.C., F. L. Golla, M.B., R.A.M.C., T. F. Graham, C.A.M.C., H. C. Hall, C.A.M.C., R. H. Hogg, N.Z.M.C., W. B. MacDermott, C.A.M.C., W. C. Smales, D.S.O., R.A.M.C., W. Tweedy, N.Z.M.C., W. S. Wallis, N.Z.M.C.

Temporary Captains: H. S. Raper, M.B., R.A.M.C., F. R. Seymour, R.A.M.C.

Temporary honorary Captain W. M. Flack, R.A.M.C.

Lieutenant H. E. Stevens, A.A.M.C.

Quartermasters and honorary Majors: A. Bruce, R.A.M.C., J. Watkins, R.A.M.C.

Quartermasters and honorary Lieutenants: A. Harwood, R.A.M.C., J. W. Willsheer, R.A.M.C.

Temporary Quartermaster and honorary Lieutenant J. Ritchie, R.A.M.C.

Ireland.

THE TUBERCULOSIS PROBLEM.

At the twenty-fifth annual general meeting of the Royal National Hospital for Consumption, held in Dublin on July 30th, the medical report for 1916, signed by Dr. W. L. Crofton, Mr. F. K. Cahill, F.R.C.S.I., and Mr. F. O'B. Kennedy, resident medical officer, was presented. In a paper on the tuberculosis problem Dr. W. L. Crofton said that, roughly, about 70,000 people die of tuberculosis in the British Isles in each year, about 50,000 of them from tuberculosis of the lungs. In 1915 there were in Ireland 9,625 deaths from the disease, of which 7,547 were from disease of the lungs. Nearly 73 per cent. of these deaths occurred in persons between the ages of 15 and 45 years. The deaths from the disease in Ireland represented a rate of 2.2 per 1,000 of the population, as compared with a rate of 1.5 for England and Wales and 1.6 for Scotland. It was generally recognized that the large majority of people were at some time or another infected with tuberculosis, and it must be assumed that the natural resistance of 80 per cent. of the population was able to overcome the infection. If the resistance of the remaining fraction of the population could be made normal the problem would be solved, and only sporadic cases, produced by specially virulent infection, would occur. The commonest cause of tuberculous infections in children was the bovine strain of the bacillus conveyed to them in milk from tuberculous cows. Dr. Crofton held that each city should have its own municipal dairy of tested and immunized cows. A pure milk supply was as important as a pure water supply. The chief source of the human type bacillus was the expectoration of people with tuberculous disease, and the proper way to stop the spread of infection from this cause was to isolate patients until their sputum ceased to contain tubercle bacilli, which meant until they were cured or died. The lowering of the resistance of the individual, which allowed the disease to develop, might be due to (1) bad hygienic surroundings; (2) infection with other microbes; (3) inheritance of a low resistance; (4) the overcoming of the normal resistance by a virulent or continuous infection. The only method of insuring an adequate resistance of the individual against a prevailing infection was by inoculating him with a vaccine of the causative microbe. Tuberculosis would not be stamped out until the resistance of every member of the community was raised in this way. A beginning should be made with members of families whose parents were tuberculous or in which tuberculosis had occurred. The sanatorium

method had been shown by Karl Pearson to be a complete failure. Some had supplemented it by inoculating the patient with tuberculin; in many cases, especially in the early days of its use, this had done actual harm, owing to ignorance of the fundamental principles of immunization. Even in skilled hands its success had been only partial, because tuberculosis of the lungs in these climates was practically always a mixed infection, the lungs being invaded before, at the same time, and after by other microbes, as well as the tubercle bacillus. No more than a partial success could therefore be expected when only a part of the cause of the disease was being attacked. By attacking all the microbes infecting a given patient with a chemical germicide combined with inoculation of vaccines, not only of the tubercle bacillus, but also of the mixed infections, Dr. Crofton had obtained encouraging results and had been able to arrest the disease, not only in the early cases, but also in many acute and advanced cases. The results obtained at the Royal National Hospital for Consumption in Ireland were from three to five times as good in the different stages of the disease as before these methods of treatment were used. Institutions should be of two kinds: first, hospitals near the large centres of population for the treatment of well-established cases, where the patients could receive nursing and treatment until they were strong enough to go to the second kind of hospital, which should be of the nature of a convalescent home, where they would undergo a hardening process. The first kind of hospital should have wards tacitly set apart for hopeless cases. Every dispensary doctor should have a special course of instruction in the methods, should have a special nurse or nurses to help him, and should hold dispensaries for tuberculous patients at suitable short intervals. In every county there should be a hospital and convalescent home, with sufficient beds and resident staffs to satisfy the institutional needs of the county, to which should be attached as visiting physician a county tuberculosis officer, who would act as consulting physician to the dispensary doctors. In the big cities the tuberculosis dispensaries should have whole-time medical officers and nurses; while attached to the hospitals should be institutions for chemical research, where the materials for diagnosis and treatment for each province could be prepared.

England and Wales.

THE HEALTH OF LONDON.

WE noted last week the appearance of the report for 1916 of the medical officer of health and school medical officer of the administrative county of London.¹ Dr. Hamer begins his introduction with an interesting "talk about the weather." Early workers in epidemiology, he reminds us, attached great, perhaps undue, importance to meteorology. Their successors, with the modern reverence for laboratory methods and for inquiries into regions hitherto unexplored, have neglected somewhat the knowledge carefully and laboriously acquired in earlier days. The type of distribution of rainfall over the metropolitan area during the past seven years has, it appears, exercised a marked influence for good upon the public health. According to this view, the phenomenal weather conditions of recent years, which reached "high water mark" in 1916, account far more than is generally realized for the lower infant mortality and the reduced death-rate from epidemic throat diseases, diphtheria, typhoid fever, and epidemic diarrhoea, and also for the freedom from the ordinary nuisances prejudicial to health. But beyond the abnormal weather conditions, the disturbances due to a great European war had their effect upon the death and sickness rates for 1916. Restricted freedom of communication with foreign countries, brought about by the war, has diminished the spread of infectious disease; against this must be set the depletion of sanitary staffs due to the same cause. Looking towards the future, Dr. Hamer points out that trying seasons will come round again, peace conditions will once again favour spread of infectious

disease; the need for maintaining the sanitary service becomes more evident every month.

Vital Statistics.

The total civil population of London county in the middle of 1916, as estimated by the Registrar-General, was 4,237,387. Dr. Hamer considers that this estimate may be too low. Since 1914 it is certain that the gradual cessation of building operations has practically put an end to all outward movement from London towards the outlying districts, while decreased railway services and increased fares have tended to set up an opposite movement towards the centre. Furthermore, the births in London during 1915-1916 exceeded the deaths by nearly 67,000; and to this increase of population must be added thousands of refugees who have come to live within the county. Against these factors must be set the decrease due to enlistment, which, in Dr. Hamer's opinion, probably did no more than maintain an even balance up to the end of 1916. With so many uncertain factors it is evident that the estimates of population upon which mortality and sickness rates are calculated cannot altogether be relied on.

The marriages registered in London numbered about 43,800, as compared with 58,354 in 1915—an abnormal year—and 43,373 in 1914. The calculation of a marriage-rate for comparison with pre-war figures is difficult owing to the fact that the marriages included those on active service, while the published estimates of population relate to civilians only. The Registrar-General's calculation for 1916 is 19 per 1,000.

The births in London county numbered 99,336, as against 102,117 in 1915, and 109,952 in 1914. The Registrar-General's estimated rate is 21.5 per 1,000 for 1916, which stands for comparison with 25.0 in the pre-war period 1909-13.

The deaths among the civil population in London during 1916 numbered 62,325, as compared with 72,393 and 66,037 in the two previous years. The Registrar-General calculates the death-rate for 1916 at 14.7 per 1,000. The withdrawal of males of military age from the total gives a misleading aspect to this rate; had there been no war the death-rate in 1916, calculated on a normal population, would have been below the rate of 14.6 recorded in 1914, and would not, Dr. Hamer believes, have greatly exceeded the record rate for 1912 of 13.6.

Infant Mortality.

The deaths during the first year of life in London during 1916 numbered 8,864, or 89 per 1,000 births. In 1915 and in 1914 the rates were 112 and 104. The infant mortality for 1916 is the lowest ever recorded in the county, the previous record being 91 in 1912. A preponderating share in this result is attributed to the favourable conditions of moderate summer temperature. There were nearly 750 fewer deaths from diarrhoea and enteritis in children under one year of age than in the previous year. The reduction of infant deaths from suffocation and prematurity are suggested as being related to the restrictions upon the sale of intoxicants. In an interesting paragraph Dr. Hamer discusses generally the decline in infantile mortality during recent years.

Infectious Diseases.

Two cases of small-pox were notified in London during the year, and one case of typhus. Civilian deaths from measles numbered 822, against 2,286 in 1915 and 1,376 in 1914. Throughout 1916 measles and German measles were compulsorily notifiable, and 47,470 cases in all were notified in London. Civilian cases of scarlet fever numbered 8,746, against nearly 17,000 in 1915 and 25,000 in 1914. There were fewer cases in 1916 than in any year since 1891, when notification first became compulsory. Diphtheria cases showed only a slight decrease; their number was 8,743. Whooping-cough was notifiable during the year in three London boroughs only; the total number of deaths in London from this cause was 802.

Deaths from diarrhoea and enteritis during 1916 numbered 2,009, against 3,098 in 1915 and 3,624 in 1914. Of puerperal fever, 277 cases were notified, with 158 deaths, compared with 276 cases with 132 deaths in 1915, and 393 cases with 195 deaths in 1914. The Registrar-General recorded 237 deaths from other accidents of childbirth last year, and 674 stillbirths were reported.

¹ London County Council: Report of the County Medical Officer of Health and School Medical Officer for 1916. London: P. S. King and Son, Ltd. (1s.)

The number of civilian deaths from phthisis in 1916, as well as the number of deaths from respiratory diseases generally, was lower than in 1915, but a little higher than in 1914.

Cerebro-spinal Fever.

A special section of the report deals with cerebro-spinal fever, of which 425 cases were notified among the civil population of London in 1916, a drop of 200 from the previous year. In the last two annual reports the relation between cases of cerebro-spinal fever and influenza, coughs, colds, catarrhs, etc., in epidemic and non-epidemic periods was discussed. During the past year or two this subject has received a great deal of attention from military, naval, and civilian medical officers. The inter-relation of these diseases is an interesting study. Recent work confirms Dr. Hamer in his belief that the epidemiological can no longer be subordinated to the bacteriological aspects of the problem.

The number of cases of poliomyelitis was 197, the highest on record.

Enteric Fever.

Typhoid fever receives close consideration in the report. There were 461 cases during the year, as compared with 789 in 1914 and 607 in 1915, but the figures are not strictly comparable, since the practice relating to the inclusion of military cases was not the same in 1916 as in the two preceding years. The experience of 1916 confirms that of 1915, in that evidence of a markedly increased dissemination of this disease by direct human agency was lacking. Allowing for the absence abroad of many susceptible males the prevalence of typhoid fever in London in these two years was actually lower than ever before known, despite the addition to the population of returned typhoid convalescents, and presumably also of healthy carriers from abroad. After reviewing the evidence, Dr. Hamer points out that the great decline in the prevalence during recent years has occurred *pari passu* with abandonment of consumption of shellfish and fish from polluted sources, and with removal of "layings" to a distance from sewer outfalls. He regards the classical reports of Dr. Bulstrode and the adoption of the precautionary measures outlined in them as having been very largely responsible for the great reduction in the prevalence of and mortality from typhoid fever during the last twenty years. Further care for the purity of shellfish layings and entire prohibition of ungutted flat fish are, in his opinion, the lines along which further advance can be made.

Venereal Disease.

In preparing the scheme for London under the Local Government Board venereal diseases regulations it was realized that great advantage would accrue if the local authorities adjoining the county would co-operate with the council in making use of the facilities to be afforded by the London hospitals. In the result twenty-two hospitals agreed to undertake the treatment of patients, the pathological examination of specimens, and the supply of salvarsan to authorized persons; the scheme came into operation on the first day of 1917. In a short discussion on the prevalence of syphilis in recent years Dr. Hamer sounds a note of caution concerning the interpretation of the Wassermann test, and especially with regard to estimates of widespread taint in the population based on observations of this character.

(To be continued.)

Canada.

SIR WILLIAM C. MACDONALD.

In the death of Sir William Macdonald, which occurred at Montreal on June 9th, at the ripe age of 86 years, Canada has lost one of its most generous patrons of education, and McGill University a chancellor and a benefactor who was constantly seeking to promote the interests of every department of the work of the university. Modest and unassuming in manner, austere in his way of living, Sir William was a familiar figure on the campus of the university, wandering amongst the beautiful buildings, so many of which owed their existence to his generosity—the Macdonald Engineering Building, which was burnt down

and rebuilt; the Macdonald Physics Building, the Chemistry and Mining Buildings, the McGill Union, the Macdonald Park, and the magnificent Stadium recently erected; all these remain as a permanent memorial to the munificence of one whose name will go down to history coupled with that of the Honourable James McGill, founder of the university, and Lord Strathcona, the former Chancellor. Sir William endowed various chairs in the different faculties, paid for the necessary equipment in the various departments, and over and over again came to the aid of the university. As the founder of Macdonald College—that magnificent pile of buildings on the banks of the Ottawa River, comprising a School of Agriculture, the Normal School for (Protestant) Teachers of the Province of Quebec, and a School of Household Science—Sir William Macdonald will be remembered as one who recognized the importance of agriculture in a country like Canada. In New Brunswick, Nova Scotia, and Prince Edward Island Sir William established the Macdonald Consolidated Schools as a means of improving education in rural districts. Sir William Macdonald received the honour of knighthood in 1898, and in 1914, upon the death of Lord Strathcona, became Chancellor of McGill University. His father, the Honourable Donald Macdonald, who was at one time president of the Legislative Council of Prince Edward Island, was a son of the eighth Chief of the Macdonalds.

Among the bequests made by Sir William was the sum of five hundred thousand dollars to the medical faculty of McGill University, an equal amount to the Montreal General Hospital, and one hundred thousand dollars to the Maternity Hospital.

MEDICAL LIBRARY ASSOCIATION.

The twentieth annual meeting of the Medical Library Association was held in New York on June 4th and 5th, and in Brooklyn on June 6th last. The majority of the important medical schools of the United States were represented, and in Canada the Medical Faculty of McGill University and the Academy of Medicine, Toronto. A paper on war bibliography contained a proposal to collect under subject headings medical war material.

Correspondence.

A NEW SCHOOL FOR THE STUDY OF HEART DISEASE.

SIR,—There seems to be at present a good deal of friction between the "old" and "new" school for the study of heart disease. The "new" school apparently claims that those who saw the light of day before them have made a mistake and have only felt the darkness of night. On the other hand, the "old" school apparently believes that it has not only seen the blaze of noon but bequeathed that blaze and brilliance to the juniors. My object here is to express the hope that our profession will join what for purposes of distinction I call the super-school. This term does not imply that it is a school of supermen, but it includes the other two, and will supersede them. Its aims are to benefit the patient and to attempt in every way to prevent heart disease and to guide and protect sufferers.

For fifteen years I have been urging the claims of this school, in season, and apparently chiefly out of season. Now ten days ago I received to my national sorrow and international joy a communication from New York from an association founded on these lines in 1916, with already twenty-six branches! Thus a forward step in medicine staring this country in the face for years has been taken from us, while our two schools struggle over neurogenic and myogenic theories, the action of digitalis, auricular fibrillation, and soldier's heart.—I am, etc.,

London, W., Aug. 5th.

F. JOHN POYNTON.

THE INFLUENCE OF THE WEATHER ON THE INCIDENCE OF CERTAIN INFECTIOUS DISEASES.

SIR,—Dr. Hamer, the Medical Officer of the London County Council, in his annual report for 1916, draws attention to the association between wet summers and a diminished incidence of infectious diseases, such as scarlet fever and diphtheria. This association has been frequently

remarked before, and I venture, therefore, to put forward a theory to explain it. In dry, sunny weather there is a tendency for sufferers from mild attacks of infectious disease to move about more or less freely in the open air; in other words, there is a greater chance of infected and susceptible individuals being brought into contact. During a recent epidemic of measles I have noticed several instances of this. In one case a child suffering from measles during the first week of illness was taken a daily run on the top of the tramcar, possibly as a sort of "open-air" treatment. If the weather had been wet and stormy, it is more than likely the mother would have kept the child indoors, probably in bed. In another case, where the door of the house opened directly into the living room, a child suffering from measles was found lying on a couch just within the door. Callers, such as visitors, errand and newspaper boys, milk-sellers, etc., could hardly escape contact, and the risk of contracting the disease. Moreover, all the domestic traffic in and out of the house had to pass the patient, who was placed there for coolness. If the weather had been cold and wet, the patient would certainly have been placed beside the fire, where he would have been out of the line of traffic, and the air currents would have been directly to and up the flue.

I have little doubt that similar conditions will be found influencing the spread of other infectious diseases, such as scarlet fever and diphtheria.

I suggest, therefore, that the drop in the number of cases of infectious disease reported, which so often happens after the onset of wet weather, may be in some measure attributed to the enforced home isolation which the inclement weather brings about.—I am, etc.,

Hartlepool, July 31st.

GEORGE JUBB.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS.

SIR,—I have just read a paper in your issue of July 28th on "Tropical medicine and research," by Sir Patrick Manson. In the section on trypanosomiasis he writes:

Later, Castellani, also a former student of the London School of Tropical Medicine, and at the time a member of the Royal Society's Commission for the study of sleeping sickness in Uganda, found the same parasite in the cerebro-spinal fluid of patients suffering from sleeping sickness. Sir David Bruce, Nabarro, and many others, confirmed Castellani's observation, and definitely linked up the trypanosome of Forde and Dutton with sleeping sickness as cause and effect.

This means to the ordinary English reader that Castellani was the discoverer of the cause of sleeping sickness, and that Bruce, Nabarro, and many others merely confirmed his observation. I thought this controversy had been finally disposed of in 1913, but if so well known an authority on tropical diseases as Sir Patrick Manson still erroneously attributes this discovery to Castellani, I feel it to be my duty as Chairman of the Sleeping Sickness Committee of the Royal Society in 1903 to again intervene. In a letter to the *Times*, August 14th, 1913, I wrote:

There is no possibility of doubt that the demonstration of trypanosomes as the parasitic cause of sleeping sickness was made solely by Sir David Bruce, and that Castellani, although he had seen these parasites at Entebbe, definitely stated on the day of the arrival of Bruce at that place that he did not consider them to be of any importance as regards sleeping sickness.

This matter was thoroughly discussed in the *Times*, when Castellani put forward his claims in 1908 to the honour of this discovery. His claims were shown by the overwhelming testimony of those who had been with him at Entebbe to be baseless. The "Sleeping Sickness Committee" of the Royal Society specially investigated the matter, and Colonel Bruce reported to that Committee as follows:

For the sake of the future historian it may be well to point out the exact state of affairs as regards our knowledge of sleeping sickness in relation to trypanosomes when Colonel Bruce arrived in Entebbe on March 16th, 1903.

Dr. Castellani had observed these haematozoa in the cerebro-spinal fluid of five cases of sleeping sickness, and in one of these he had also seen them in the blood.

At the time of the arrival of the Commission (i.e., Colonel Bruce) Castellani did not consider that this trypanosome had any causal relationship to the disease, but thought it was an accidental concomitant like *Filaria perstans*.

Upon this statement the Committee (of which I was chairman) made and signed the following minute, which is

now preserved in the minute-book at the Royal Society's offices:

November 26th, 1903. That the statements in Colonel Bruce's report correctly and fairly represent the facts, and do full justice to the part played by Dr. Castellani in the investigation.

This was signed among others by Sir Patrick Manson himself. I am unwilling to encroach on your valuable space, which I know to be greatly restricted at present, so I shall only refer any of your readers who may be interested in this matter to the letters which appeared in the *Times* from Sir John Kirk, Dr. Moffat, P.M.O. of Uganda, Dr. Baker of Uganda, myself, and others.

If I may be permitted to do so, I should like further to draw attention to a statement made by Major R. McCarrison in a paper entitled "India and medical progress," which appeared in the same issue of your *JOURNAL*. Regarding Ross's discovery in 1898, that bird malaria is conveyed from bird to bird by the mosquito, he writes:

Through it a great light was shed upon the mode of spread by suctorial insects of other protozoal diseases, by which light the problems of the propagation of dengue, yellow fever, sleeping sickness, and other diseases of the tropics have reached, or are gradually reaching, solution.

Surely the boot is on the other leg. It was the discovery by Bruce in 1895 of the rôle played by the tsetse fly in the propagation of trypanosome disease which led to the discovery of the part played by the mosquito in malaria.—I am, etc.,

London, S.W., July 30th.

E. RAY LANKESTER.

THE NEEDED MEDICAL MEMBER OF THE SECRETARY OF STATE FOR INDIA'S COUNCIL AT WHITEHALL.

SIR,—I propose that the Secretary of State for India nominates to his council in London a member of the Indian Medical Service who holds, or has held, a seat on one of the Indian provincial Government councils, and who is specialized in administrative work and sanitary knowledge. No such adviser now exists. The very able President of the Medical Board at the India Office is completely employed in dealing with the medical examinations at the India Office, but it is an official acquainted with administrative work in India who is needed to advise the Secretary of State for India. Such an official would keep touch with the progress of sanitary administration in England, would watch the action of the English Local Government Board in all health matters, and would be in touch with the Director General of the Army Medical Service at the War Office. I cannot imagine how a Secretary of State for India can fulfil his responsibility without such an official on his council. The few thousand pounds this addition to the council would cost in salary, clerks, and office staff would amply repay India for her money so expended. Why such an appointment was not created years ago is an outward and visible mark of the defective medical organization in Indian official life.—I am, etc.,

GEORGE J. H. EVATT, M.D.,
Surgeon-General A.M.S.(ret.).

Junior United Service Club,
London, S.W., July 28th.

QUO VADIS?

SIR,—No doubt I shall broaden Dr. Wood's smile when I marvel at his "knowledge" whereby he assesses the value of proofs and witnesses unheard and unseen by him. One rather thinks that a good deal of mistaken diagnosis is founded upon similar knowledge.

The "main point" of my letter was that an assertion was made by the chairman of the practitioners' meeting referred to therein, and that the assertion was challenged by Dr. Wood. As a member of the meeting I have confirmed the assertion. It need only be added that the evidence and witness were sufficient to carry weight with a roomful of ordinary mortals not possessing Dr. Wood's remarkable intuition. Of course, the fact he cites was duly taken into consideration, together with all other known facts, and our judgement formed upon the weight of evidence. I withdraw nothing from, and qualify nothing in, my previous letter, and readers who are sufficiently interested may be left to draw their own conclusions.

As regards the number of men the Government had at the time "ready to go anywhere," any estimate is only

based upon surmise; but it is no surmise to say that that number would have been augmented, had occasion required, by many more hundreds. And so long as the fifth paragraph of Dr. Ogilvie's letter on p. 165 of the JOURNAL remains a statement of fact, as it assuredly is, so long will the truth of my letter be, unfortunately, beyond question.—I am, etc.,

Histon, Aug. 4th.

L. GWILLIM DAVIES.

SIR,—In the JOURNAL of July 14th Dr. Rawdon Wood wrote that as a "farewell" to medical politics he "must nail to the counter" my statement that in 1912 the Government had a whole-time service scheme and were prepared to work it. In plain English, that was, in his opinion, an erroneous statement. I am not concerned with Dr. Wood's estimate of my reputation for accuracy, but when the official JOURNAL comments with favour on the "aptness" of Dr. Wood's comparison with the Russian legend in support of his contention some notice must be taken of it.

Dr. Wood must be singularly ill-informed of the history of the Insurance Act developments in 1912 if he is unaware that in October of that year the Chancellor was in a position to state (1) that in many districts the medical men were prepared to accept improved terms of remuneration rather than risk a whole-time service; and (2) wherever else the local profession might continue to resist, a whole-time service would be instituted, he having at that date already large numbers of well-qualified applicants for prospective appointments. These statements were accepted as incontrovertible by leaders of the profession, and no doubt influenced them in the advice they proffered to the ranks concerned. Further, the acceptance was reflected in the absurd advice of the Representative Body to make terms if possible with the clubs, thereby abandoning one of the six cardinal points of our policy. The Council failed to maintain the resistance which the "pledges" were intended to guarantee, and from that hour discipline, if it ever existed, was at an end. This deplorable incapacity of the profession to unite and to make its influence felt in the shaping of public health legislation will be seen again shortly unless the Association, as the only representative body, can exert its latent powers in a worthy manner.

I have nothing to fear from what the officials of the Association may disclose if Dr. Wood's demand for publication of the evidence were met. It would be surprising if all the material facts were to see the light, and, even so, it would be difficult to reproduce the run of the cards at any given moment during that crafty game of 1912. But Dr. Wood and others might learn for the first time something of "the windings of political intrigue" to which I referred in my previous letter, and he might find his satisfaction in bidding "farewell to medical politics" considerably enhanced.—I am, etc.,

Cambridge, August 6th.

B. E. FORDYCE.

A STATE MEDICAL SERVICE.

SIR,—My article in the *Westminster Gazette*¹ was almost entirely devoted to an attempt to sketch the advantages of such a service to the nation; a great part of the replies is devoted to proving what I never doubted or denied, namely, that the medical profession is generally opposed to it. I candidly admitted that fact. Such views as I have occasionally heard in favour of it have come not from young but from middle-aged practitioners in the services. But the opinion of the profession is naturally conservative, and is not the vital factor of the question.

The main issue is this: Would such a service be a benefit to the nation? If that can be proved, then, as the natural guardians of the nation's health, we must sink our individual preferences and acquiesce. There can be no other possible course. We only stand on a special footing, and our views will only be specially considered because in any change the status of the profession, and the attraction it offers to the best brains, must be raised instead of lowered. A lowered standard of professional life would be a national calamity.

Some of those who oppose any change fail, if I may say so, to realize the situation as it exists to-day. A State service is referred to as some remote and impossible contingency. Are we not actually in danger of having a State

service forced on us piecemeal under conditions that satisfy no one, and possess the double disadvantages of both public and private service? Personally, I should prefer a change, if it were to come, at one mouthful, under my conditions, than in a succession of nibbles under some one else's conditions, and we are travelling in that direction to-day.

The treatment of infectious disease, of mental cases, of paupers, is already largely out of the hands of the private practitioner. Venereal disease threatens to come under the same category, and so does tuberculosis.

Again, what is the Insurance Act which we bitterly but unsuccessfully opposed, and which deals with the medical needs of about one-third of the population, but a modified State service? It makes no difference whether an Insurance Committee or a State department stands between doctor and patient; the intervention is there all the same. The direct, intimate, personal relation between doctor and patient is overshadowed by some third party who controls the purse strings. This was one of the strongest arguments brought against the Insurance Act. Therefore I suggest we are swallowing a State service piecemeal. A Ministry of Health may contain other limitations of private practice too.

Let us be prepared with a satisfactory scheme lest one day we are again caught unawares, and presented with a *fait accompli*.—I am, etc.,

August 1st.

THE WRITER OF THE ARTICLE.

* * * Our correspondent has not advanced his argument that a whole-time salaried State medical service would be a benefit to the nation.

THE CONSTITUTION OF A MINISTRY OF HEALTH.

SIR,—These are anxious times for those who love our profession, which is having the greatest struggle in its history for its very existence as an art and science, free and untrammelled to do always that which is right and without fear or favour. If our independence is lost, as we all hope and trust it may not be, it will not be from any fault of yours in warning us of what our apathy will lead us to. Over and over again you have pointed out that the thirty-four thousand doctors in the United Kingdom are not taking their rightful place in the councils of the nation or even in those matters of which they alone have made a long and special study. Every county council should have two or three medical men in it. And the proposed Ministry of Health should not only have a Doctor of Medicine at the head of it, but all the subchiefs and principal employees should be doctors. No one is so qualified as the doctor who spends his days and sometimes half his nights among the poor to know what the poor require to make their health better. The doctors of Great Britain have been saving 100,000 babies' lives every year for fifty years and they could save a hundred thousand more if they had the means provided to obtain milk. Profiteering in milk does not save babies' lives, and if the proposed Ministry of Health were manned by doctors from top to bottom the first thing they would do to save infant life would be to provide the necessities of child life at or nearly at cost price instead of allowing the price to be made prohibitive as it is, and they would see to the housing of the poor.

Some do not think, judging by your correspondence, that it would be right to settle such an important matter, and one having so great a bearing upon the future of our profession, as the Ministry of Health, at a time like the present, when ten thousand doctors are away with the forces fighting for our hearths and homes. I rather agree with those who think the time is not propitious. But in any case the head of such a ministry must not only be a doctor, but he must be one elected from the rank and file of the profession who have had long and active practice in the homes of the poor. He must have the confidence of the thirty-four thousand medical men with whom he has to deal, and whose help and sympathy are absolutely necessary to make the Ministry a success. The only reasonable way in which to find such a man is to elect him, and such an election could be held as soon as voting papers could be sent to every registered medical man and woman. These voting papers, numbered and sealed, could be sent by registered mail, and could contain

¹ See BRITISH MEDICAL JOURNAL, July 14th, p. 55.

a registered return envelope. The voters would enter on them the names of the three most suitable men for a Minister of Health. The thirty having the largest number of votes could meet in London soon after, and elect from their number the very best man for the position. The subchiefs could be chosen from the remainder. There may be some other and better way, and, if so, we should hear about it now. Such a Minister of Health would soon set the machinery in motion for the betterment of the health of the nation. He knows already, as do most of the thirty-four thousand doctors, what is needed, and every month he could gather in council around him the county medical officers from all over the country who are recognized as the ablest health experts in the three kingdoms.

A Ministry of Health composed entirely of doctors would know how to treat the thirty-four thousand most highly educated men in the community in such a manner as soon to remove the many causes of unrest and distrust which are only too evident to any one reading the letters from your correspondents.

In many countries the President of the Republic is a doctor, while in others a doctor is Prime Minister, while in almost all doctors are either Ministers or members of parliament. In all other countries as far as I know all legislation concerning the health of the nation emanates from one source alone, and that is from the national medical association. Our British Medical Association is quite able and I believe willing to undertake the organization of a Ministry of Health, and no more important meeting could ever be held than a three days' session in London this autumn for this purpose.

All this bears out the importance of medical men taking a greater interest in national affairs, as you have so frequently and forcefully pointed out. For your efforts in this direction I shall always be—

July 25th.

A. CONSTANT READER.

DR. ADAMI'S CROONIAN LECTURES.

SIR,—It is a piteous exhibition that Sir Ray Lankester has made of himself, and were it not that he has again touched upon points of personal honour I would have preferred to be silent and not further discover his shame. But by his deliberate misrepresentations and reiterated and unfair attempts to place me in the wrong, he has left me no option. He forces me to point out:

1. That he repeats and does not withdraw his accusation "that Dr. Adami erroneously claimed novelty for the view that the activities of the bacteria are susceptible of change under changed environment." I made no such claim. On the contrary, I called attention to the fact that Pasteur, Roux, and Chamberland had demonstrated changes of this order. It was not necessary for me to inform my audience that the demonstration was afforded in the early Eighties, or that Pasteur died before this century opened. What I did claim was that "the latter day investigations in medical science" showed that certain of the above-mentioned changes were of the nature of direct adaptation, or direct equilibration—a very different matter.

2. That he repeats the charge that I misapprehend the significance of the word "adaptation," and states that I admit the blunder. Far from making any such admission, I, on the contrary, proved to the hilt, by a reference to Herbert Spencer's own words, that the misapprehension was his, that my use of the term was consistent and correct, and that it was he and not I who misused it. He must himself admit, now that the heat of the moment has passed, that this is not clean fighting. It is inexcusable.

3. That as for his repetition of the charge of an offence against the laws of social intercourse by making use of a confidential communication, I must point out, in fuller detail than in my last, that it was Sir Ray Lankester himself who, while knowing my address, by transmitting his letter, addressed to me, to a third person for prior perusal, converted what would otherwise have been a private into an open correspondence. I have his letter of transmission before me as I write. It may interest him to know that previous to the delivery of my first lecture I put the case before two friends of his, both men of distinction, one of them a Fellow of the Royal College of Physicians. Both held that I would be justified in referring to the correspondence, and this, in the case of one of the two,

after he had read the manuscript and seen the exact terms of the reference.

It will be observed that Sir Ray Lankester takes no notice of my challenge that he should publish this earlier correspondence and prove that I had, as he asserted, "garbled" my reference to his views. He cannot afford to refuse to discuss so vital a matter as this of the evidence recently obtained regarding direct adaptation with its bearing upon heredity and social matters of the first order. He cannot do this without tacitly resigning his position as a leader. To preserve his own honour I again ask him to publish the triangular correspondence already referred to, that the points at issue may be clearly defined.

Surely I need say no more.—I am, etc.,

London, W., Aug. 6th.

J. G. ADAMI.

PAYMENT OF MEDICAL OFFICERS TO V.A.D. HOSPITALS.

SIR,—As regards auxiliary hospitals which have set apart beds for wounded soldiers, it appears to me that if the medical attendants have no pay it is their own fault.

In August, 1915, I wrote to Dr. Cox on the subject, and received full information and courteous replies from Mr. Bishop Harman and Dr. Cox, as secretaries of the War Emergency Committee. The staff of our hospital was granted payment by the War Office for any number of soldiers when more than twenty beds were occupied. When I saw that payment was given at another local hospital, the obvious thing to me was to make inquiry.—I am, etc.,

Loughborough, Aug. 6th.

J. B. PIKE.

MEDIUMISTIC METHODS.

SIR,—I have examined a few reports of sittings with "mediums," and by comparing them have formed the opinion that by the examination of a larger number a definite and convincing exposure of their methods could be compiled. They are mainly stereotyped in their matter, but a considerable number is necessary to demonstrate this conclusively. They are doing much harm by the suggestion of hallucinations through expectant attention, and in other ways.

If any of your readers could induce patients or friends who have such reports to lend them to me, in strict confidence, I should be greatly obliged.—I am, etc.,

HENRY RAYNER.

Upper Terrace House, Hampstead, N.W.3.
Aug. 2nd.

Obituary.

HERBERT FRANCIS HAYES NEWINGTON,

F.R.C.S. EDIN., M.R.C.S. ENG.

THE death of Dr. H. F. Hayes Newington, of Ticehurst, must have come as a painful surprise to the numerous friends who had seen him taking an active part in the proceedings of the annual meeting of the Medico-Psychological Association a few days previously. Dr. Newington had been so long and so intimately connected in so many ways with that association that it would seem appropriate that his latest piece of public work should have been in connexion with it. His admirable and successful work as treasurer, great as it was, is but a small part of the able and ungrudging services that he had rendered during the past forty years. During the fourteen years preceding the passing of the existing Lunacy Acts, almost yearly bills had to be considered and discussed, and often combated through friendly members in the House of Commons; in all these efforts Hayes Newington took a leading part. He also organized the resistance of those interested in private asylums against the legislative dangers with which they were threatened. His services on the Parliamentary Committee, of which he was chairman for many years, cannot be too highly estimated, and his work on the Educational Committee, to which so much of the improved character and status of the nurses of mental hospitals is so largely due, was also of the highest value.

Hayes Newington was a member of a medical family that has for generations conducted an establishment for the treatment of mental diseases at Ticehurst in Sussex.

After completing his medical education at King's College Hospital, he served for some years as a medical officer in the Royal Edinburgh Asylum, rising to the position of senior assistant physician. With this experience he became physician of the Ticehurst institution already mentioned; he was part proprietor, and superintended it with eminent success. His contributions to alienistic literature have been of considerable extent; in addition to his address as President of the Medico-Psychological Association in 1889, the articles on "Stupor" and on "Some mental aspects of music" testify to his originality of thought. His clinical acumen is evidenced in "Hemiplegia in relation to insanity" and in many other papers in the *Journal of Medical Science*.

Dr. Hayes Newington was an old member of the British Medical Association, and was vice-president of the Section of Psychology at the annual meeting of the Association in Edinburgh in 1898. He was also a representative of the Medico-Psychological Association on the special sub-committee on incipient insanity appointed by the Parliamentary Bills Committee of the British Medical Association in 1900, and in subsequent years rendered great assistance to the Medico-Political Committee of the Association in connexion with the amendment of the law with regard to the treatment and detention of cases of incipient insanity, inebriety, and the drug habit.

Dr. Newington played a very active part in local affairs, especially as county councillor for East Sussex, taking great interest in the planning of the latest Sussex Asylum, of whose committee he was an esteemed and valued member.

Apart from medical and social work he was a skilled musician, a keen gardener, and excelled, thanks to his fine physique and calm temperament, in many games and sports. In all the varied relations of his life he was a typical example of the humane physician and of the English gentleman. His genial manner and invariable consideration for others, together with his absolute fair-mindedness, won him many and sincere friends who will long regret his loss.

He leaves a wife, a daughter, and a son who has distinguished himself in the present war.

Dr. CHARLES MERCIER sends us the following appreciation:

The announcement of the death of my old and valued friend, Hayes Newington, is a heavy blow. Only last week we were engaged in one of those wordy combats of which we had so many, which left our warm friendship unimpaired, and indeed strengthened, for they were usually accompanied by a private interchange of chaffing letters. Hayes Newington was a Tory both in politics and in medicine. He would have said, like the late Duke of Cambridge, that he was ready to welcome any innovation that was an improvement; but, like the late Duke, he never considered an innovation an improvement. He was nevertheless a sound physician, and there was no man to whom I entrusted a patient with more confidence. His attitude towards the insane was peculiar. He looked upon himself, not only as their physician, but beyond this, and even more than this, as their guardian. Every measure concerning the insane may be looked on from at least two aspects: It may be regarded from the point of view of the community, and judged according as it is better or worse for the community; or it may be looked on as affecting the madman, and as better or worse for him. It was from the latter point of view almost exclusively that Hayes Newington regarded a measure. Sir Thomas Clouston once divulged in an outburst of candour that the insane are "unloveable." He might have used a stronger term, and still expressed what most of us feel. Their disease removes the higher qualities of their nature, and leaves the lower outstanding in their naked repulsiveness. But Hayes Newington never allowed himself to think of them or to speak of them thus. The manifestations of the lower nature, which are repulsive to most of us, did not repel him. He looked upon them with a mild and admirable toleration, as the manifestations of disease, and he never went further in antagonism than to view them with amusement. He was a good organizer and a wise counsellor. He took over the Treasury of the Medico-Psychological Association when the fortunes of that body were at a low ebb, and he lifted it into a position of

prosperity and influence which few of its members expected it would ever attain. He guided its counsels for many years, and he will be as much missed in that association as he will be at Ticehurst. He had the satisfaction of knowing how highly his great services were appreciated, for the association presented him with his portrait. Though he was 70, none of us looked upon him as an old man, and he has died as an active, hard-working, and wise man would wish to die, with no preliminary period of decay. He will be long had in affectionate remembrance, for no man can quite fill his place.

Dr. J. F. BRISCOE (Boscombe) writes: As a physician of one of the largest private mental hospitals Dr. Hayes Newington practised his art with consummate skill, and set an example in the management and care of institutions for the well-to-do insane. Such private hospitals for the insane are greatly needed at the present moment, and those who minister to the welfare of the inmates deserve every consideration from the profession. The life is filled with care and anxiety, though mistrust of these private mental hospitals, vulgarly called private asylums, is long since forgotten, since they are not only governed by statutory formulas, but have the immediate eye of that beneficial commission, the Board of Control.

Dr. THOMAS BROWN DARLING, of Morningside, Edinburgh, passed suddenly away on July 29th, whilst attending divine service in Alvey Church, Aviemore, where he was spending a few days of well-merited rest. It is only a few months since he was called upon to mourn the loss of his second wife. Dr. Darling was the son of Mr. Darling, the founder of the Regent Hotel, an early and a well-managed establishment on temperance principles; and he himself took a constant interest in the cause, being treasurer of the Edinburgh branch of the British Medical Temperance Association. Dr. Darling graduated M.B., C.M. in 1884, and became M.D. in 1890. He acted as resident surgeon in the Royal Infirmary and at the Edinburgh Royal Maternity Hospital in the winter of 1884-5, and was a member of various medical societies in Edinburgh. He settled in the Morningside district of Edinburgh, and there for some thirty years he had a large practice and was widely esteemed and beloved. A great and prevailing cheerfulness, combined with real personal sympathy and understanding, marked all his dealings with those under his care. He is survived by a son and two daughters, the former being on active service in the R.A.M.C. From time to time he made interesting contributions to the medical journals, although he was pre-eminently a practitioner rather than a writer.

Dr. JAMES RUSSELL, who died at Hamilton, in the Province of Ontario, Canada, enjoyed a wide reputation as an alienist. He was for many years superintendent of the Hamilton Asylum, and a member—and at one time president—of the American Medico-Psychological Society. He was also a member of the Ontario Medical Council. He was born in Lanarkshire, Scotland, in 1843, and went to Canada as a boy of 13. His medical studies were made in New York and at Toronto University, where he graduated in 1869. He spent some years as a general practitioner in Hamilton, and in 1887 was appointed superintendent of the Asylum, a post for which his administrative ability made him eminently fitted.

Dr. FRÉDÉRIC LABADIE-LAGRAVE, sometime physician to the Maternité and afterwards to the Charité Hospital, Paris, died recently at the age of 73. He studied at Paris, took his doctor's degree in 1873, and was appointed physician to the Paris hospitals in 1879. In conjunction with Germain Sée he published a work on clinical medicine in twenty volumes, to which he contributed treatises on urology and diseases of the kidney, and on diseases of the liver and bile ducts. He was the author of a medico-surgical treatise on gynaecology, written in conjunction with Professor Leguen, which had a great success. He also contributed several important articles to Jaccoud's *Dictionnaire de Médecine*. While he was still interne he served in the war of 1870, and was decorated on the battlefield at Metz for guiding and saving a large convoy of munitions and provisions. Dr. Labadie-Lagrave retired from active practice in 1909.

Universities and Colleges.

UNIVERSITY OF LONDON.

A meeting of the Senate was held on July 18th.

The annual report by Dr. L. Mellanby, acting superintendent of the Brown Animal Sanatory Institution, stated that 3,769 animals, including 2,237 dogs, 1,130 cats, and 225 horses, had been brought to the institution during the year. A portion of the assistant superintendent's work on experimental rickets, undertaken at the request of the Medical Research Committee, had been carried out in the laboratory of the institution.

Miss Janet E. Lane-Caypen, M.D., has been appointed a member of the National Council for Domestic Studies.

Dr. S. Russell Wells, Sir Rickman Godlee, and Mr. H. J. Waring, M.S., have been elected Chairman of the Council for External Students, the Brown Animal Sanatory Institution Committee, and the Dixon Fund Committee respectively.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

At a special meeting of the President, Vice-President, and Council, Lieut.-Colonel William Taylor, President, in the chair, Major Francis Carmichael Purser, M.D., L.R.C.S.I., was unanimously elected Professor of the Theory and Practice of Physic in the Schools of Surgery.

Medical News.

Dr. A. LINNELL of Paulerspury has been elected vice-chairman of the Northamptonshire Insurance Committee.

THE King has granted permission to the following to wear the decorations indicated conferred upon them by the Sultan of Egypt in recognition of valuable services rendered by them:—*Third Class of the Order of the Nile*: Dr. Reginald G. Kirton, P.M.O., Prisons Department, Cairo; Dr. William F. C. MacCarthy Morrogh, President of the Central Medical Commission, Public Health Department, Cairo. *Fourth Class of the Order of the Nile*: Dr. William C. Hayward, Inspector, Public Health Department, Cairo.

THE Rockefeller Foundation is about to build two hospitals in China—one at Peking, the other in Shanghai—at an estimated cost of £600,000. The Foundation has also decided to send a hospital ship to the Moros and allied tribes of the Sulu Archipelago; it will cruise for five years among the islands in the Southern Philippine group. Skin diseases, malaria, hookworm, dysentery, and other affections are rife among the Moros. The Philippine Government is co-operating in the enterprise.

THE annual report for 1916 of the Saint Paul's Hospital for Skin and Genito-Urinary Diseases, Red Lion Square, London, W.C., states that it is one of the approved centres for the treatment of venereal diseases in London. It is one of the four which at the suggestion of the National Council gives free early treatment to soldiers thereby involved, and to be prepared for after-war conditions. The committee has leased, adapted, and equipped part of the adjoining premises, and provided additional beds for venereal patients. An appeal is made for funds to defray the cost of these extensions.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Antiology, Strand, London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY and BUSINESS MANAGER (Advertisements, etc.), *Articulate, Strand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Mediscera, Strand, London*; telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES.

INCOME TAX.

D. T. W. has been in charge of a military hospital at a salary of £1 ls. a day for two years as a civil medical practitioner, and has included that remuneration in his general income tax return. The local surveyor of taxes says that the special (military) rate of tax does not apply to "D. T. W.'s" remuneration, and he asks what steps should be taken to have this opinion set aside.

*. Seeing that our correspondent is paid by the War Office as a temporary civilian practitioner the point is not free from

doubt, though his services would seem to be of a military character. In the circumstances we suggest that the full facts be placed before the Board of Inland Revenue for their ruling on the point before any further steps be taken.

LETTERS, NOTES, ETC.

RINGWORM IN ADULTS.

THE note on small-spored ringworm of the scalp in an adult, by Dr. Henry Waldo, published in the JOURNAL of July 21st, p. 81, has brought us other communications. The interest lies in the occurrence of the condition in an adult, for both the small-spored and the large-spored variety produce a disease which is clinically ringworm. Dr. Norman Walker, in his *Introduction to Dermatology*, states that in Scotland most of the cases are caused by the small-spored variety. In London the proportion is between 80 per cent. and 90 per cent., and in Paris 60 to 70 per cent.; while in Italy nearly all the cases are due to the large-spored variety.

DR. G. H. LANCASHIRE (Manchester) writes to state that four years ago he saw a woman, aged 23, who had on the scalp a typical patch of microsporon ringworm, the size of a shilling; the diagnosis was confirmed by microscopical examination. The only feature distinguishing this case from ordinary juvenile scalp ringworm was the rapidity of the cure, which took place within a few weeks, under oleate of mercury ointment. This being the only case of the kind he had seen amongst multitudinous examples of ringworm, Dr. Lancashire is still of the opinion that, in that district, scalp ringworm might be practically regarded as a disease of childhood.

DR. D. OWEN WILLIAMS (Glandyfi, Cardiganshire) writes that he saw recently a case of ringworm in a seaman aged about 35. There were large patches measuring 5 in. each on the sole of each foot and also lesser patches on the legs. They cleared up rapidly under the treatment for tinea tonsurans which he adopted. He had recently also a case of ringworm of the scalp, at the junction of the skin and the hair, in a youth of 17, which has now cleared up.

A CLINICAL TEST FOR THE ESTIMATION OF THE PERCENTAGE OF GLUCOSE.

DR. J. BARKER SMITH, L.R.C.P. (Herne Hill, S.E.) writes: As a worker using colour methods for quantitative estimation of glucose, ammonia, nitrates, etc., during twenty years, and having for ten years ceased to use my chemical method of delivering definite solution of acid permanganate into weak solution of potassium iodide in favour of coloured glasses, I am interested in Mr. Parnell's letter in the BRITISH MEDICAL JOURNAL of June 23rd, p. 842. I have always felt we required colour standards fixed for the whole profession to use for reference. I began my use of colour glasses regretting that we had no definite standards for colour, especially for the colour of urine—normal, jaundiced, caramelized, etc. Taking a normal of ammonia in urine as 0.03 per cent., I fixed approximately unit one of my colour glasses on this normal of ammonia when the urine is diluted to a thousand, using 25 c.cm. of the dilution, 1 c.cm. of Nessler's solution, and waiting one minute. Such unit approximates to the colour of the "pale yellow" of our textbooks on urine, or a pale chip box. I found caramelization afforded means of estimating the minute quantities of sugar in cereals, by colour or by oxidation (*The Miller*, 1894, serial articles). I examined Mr. Parnell's glasses some years ago, and note in my work book that, using the test which he describes, a ½ per cent. of glucose would be nine units on my scale, a 1 per cent. sixteen units. I use a test tube of water as a background for the glasses. We want common standards.

FULLY PROTECTED.

A CORRESPONDENT asserts that the following story is true in fact: A few weeks ago a medical officer made the tour of the large general hospitals in Alexandria in order to determine what percentage of the patients had been inoculated against typhoid fever and against typhoid, paratyphoid A and paratyphoid B (T.A.B.). This information ought to be recorded in each man's pay-book, but one man had no pay-book with him, so he had to be cross-questioned. He said, "Yes, sir, I have been inoculated against pretty well everything—about nine times altogether. The last time, I remember, it was against V.A.D."

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NOTE.—It is against the rules of the Post Office to receive *postes restantes* letters addressed either in initials or numbers.

THE PART PLAYED BY BRITISH MEDICAL WOMEN IN THE WAR.

BY

MISS MARY H. FRANCES IVENS, M.B., M.S.LOND.,

SURGEON-IN-CHARGE SCOTTISH WOMEN'S HOSPITAL,
ROYAUMONT, FRANCE.

In the days of peace medical women took their share in all phases of professional life in Great Britain and Ireland so that they needed no separate history. But in war the spheres of work open to them are limited by military considerations, and it has seemed proper, therefore, to attempt some account of the manner in which they have come forward to render professional services to the wounded and sick. They have not shrunk from personal risk and hardship, and at the same time have done their part in bringing modern scientific methods to bear on the novel clinical problems with which the special circumstances of this war have confronted military medicine, and have not only individually shown untiring energy in emergencies, but also an admirable capacity of a combination and organization in face of unforeseen difficulties. The account does not profess to be complete, it does not make mention of much good work done by individuals, and contains little reference to the many medical women who have laboured with medical men at home for the good of the civil population; but such as it is it has an interest of its own as a sketch of the work done by British medical women in the first war in which they have been numerous enough to count.

In the early days of the war British medical women volunteered their services in aid of the wounded of their own country, but finding that the British Red Cross and the War Office were at that time amply supplied, they turned their attention to the needs of the Allies, whose countries were already invaded by the enemy. Units composed partly or entirely of women were accepted for service under the Belgian, French, and Serbian Red Cross.

The Women's Imperial Service League was the first to send a hospital to Belgium, and though, owing to the rapid and unfortunate march of events there, its career was short, it rendered very material service during the siege of Antwerp. Miss Stoney, M.B., B.S.Lond., with a staff of six women doctors, was in charge of the hospital, which was full of seriously wounded cases when the bombardment on October 8th took place. The hospital was eighteen hours under shell fire before the patients (Belgians and some British) could be placed in comparative safety. During this time no member of the unit was injured, although the ground was littered with shell and the houses round were burning. The unit crossed the Scheldt by the bridge of boats on London motor buses to join the retreating British marines twenty minutes before the boats were blown up by the retreating Belgians.

In November, 1914, the unit was formed again, and a hospital of 70 beds was established at Cherbourg under the French Red Cross in an ancient chateau. Two days after their arrival seriously wounded French, Belgians, and Senegalese came in from Dunkirk by boat. Most of the cases had badly comminuted fractures, and, as they did not arrive until four to eight days after being wounded, a considerable number of amputations had to be performed for gangrene, advanced sepsis, septicaemia, and secondary haemorrhage.

It was not until the spring of 1915 that medical women undertook the full charge of British wounded in England, although in October, 1914, Dr. Louisa Garrett Anderson established, under the French Red Cross, a small hospital in Paris which received some British wounded.

In consequence of a rearrangement of the transport of the wounded the hospital at Cherbourg was closed early in 1915. Dr. Florence Stoney was appointed radiologist to the Fulham Military Hospital in April of that year, with a ward for the treatment of cases of disordered action of the heart, shell shock, and Graves's disease. By January, 1916, this department had already examined 4,351 cases, and had taken 5,530 skiagrams, in addition to giving *x* ray, high frequency treatment, and vibratory massage. The

special study of the action of *x* rays in hyperthyroidism led Dr. Stoney to point out the close connexion between hyperactivity of the thyroid gland and the tachycardia and breathlessness seen in cases of "irritable heart" and "soldier's heart." By *x*-ray treatment the thyroid gland can be reduced in size. As it grows smaller the symptoms disappear. The thyroid in exophthalmic goitre is much more easily affected by *x* rays than the thyroid of a quiescent bronchocele, as the glandular cells are in a very active condition. Conditions similar to Graves's disease are produced by war strain. Dr. Stoney believes that *x* rays are a specific for exophthalmic goitre, though the heart condition is incurable, the muscle remaining weak, so that the organ can be more easily overstrained than a healthy heart. Symptoms of hyperthyroidism are often of late onset in ordinary bronchocele, when microscopically areas of altered tissue similar to that occurring in exophthalmic goitre are found. Thus Graves's disease may be primary (most of the cases in the war come under this group), or grafted on to a pre-existing bronchocele. Dr. Stoney places special stress on the following abnormal symptoms needing treatment: (1) Fine tremor, (2) excessive perspiration, (3) great nervousness and twitchings, and (4) a pulse-rate habitually over 90. A common combination is tremors, breathlessness, tachycardia, weakness, and sweating, nervous twitchings, and obliteration of wrinkles on the forehead. Though *x*-ray treatment does not deal with the primary cause of the disease it relieves the patient by lessening the thyroid gland. Its chief disadvantage is that several sittings, spread over a couple of months or more, are required. *X* rays are applied as vigorously as is compatible with safety. One Sabouraud dose filtered through one or two millimetres of aluminium is given to each side of the thyroid weekly in about twenty minutes. The heart is one of the earliest organs to respond, becoming regular and of normal size. After some time exophthalmos usually disappears and the goitre diminishes. The only risk is that of temporary pigmentation of the skin occasionally going on to telangiectasis.

Scottish Women's Hospitals.

In September, 1914, an Edinburgh graduate, Dr. Elsie Inglis, was instrumental in promoting the formation of the Scottish Women's Hospitals for foreign service, and units consisting entirely of women were arranged for Belgium, France, and Serbia. The first unit, intended for Belgium, was, owing to the German occupation of that country, sent to Calais. It was not a complete unit, but consisted of a staff of doctors and ten nurses under Dr. Alice Hutchinson. It worked during the severe typhoid epidemic among the Belgian soldiers under Dr. Depage from November, 1914, to April, 1915; the mortality among its patients was relatively low.

Work in France.

At the beginning of December, 1914, the first complete hospital unit was sent out under the French Red Cross, and was established in the Abbaye de Royaumont. Within easy distance of a large evacuating station the Abbaye, from its size and situation, proved to be an excellent site. Although within sound of the guns, its architectural beauty and the forest scenery in the neighbourhood made it an ideal spot in which the wounded soldier could forget for a time the horrors and discomfort of war. After inspection by the Service de Santé the hospital was opened on January 13th, 1915, as Hôpital Auxiliaire 301, fully equipped for the reception of surgical cases.

Dr. Agnes Savill has described the difficulties encountered in making the first *x*-ray installation. An *x*-ray room was fitted up close to the operating theatre and a developing room was contrived in a large cupboard with a fish-kettle as a cistern. In spite of this the developing was easily performed until there came a rush of work. Then a village plumber, who had known the abbey in the days of the nuns, found a cold water pipe in a cupboard on the first floor. This space was promptly fitted up as a developing room, but experience of the first months proved that it was possible to turn out good work without all the luxuries and conveniences to which students trained in a medical school are accustomed.

In a short time a bacteriological laboratory was added, a theatre, and an elaborate x-ray installation were equipped, and the number of beds was increased to 400. The cloisters lent themselves very well for the open-air treatment of wounds, and the large halls on the ground floor made it possible to wheel the beds out so that a large proportion of the cases could spend part of the day out of doors.

The medical staff included a surgeon-in-charge, five assistant surgeons, an anaesthetist, and a bacteriologist; there were thirty trained nurses, and about forty women orderlies, usually untrained volunteers who worked in the wards as probationers, helped in the kitchen, looked after stores, carried stretchers, and assisted in all the departments under trained heads.

The wounded were brought in from the military evacuating station by motor ambulances under the charge of women drivers. This is responsible work, for trains frequently arrive at night, the roads are by no means ideal, and during a rush the chauffeurs must work many hours without a break.

An x-ray car enables the radiologist to do radiographic work for those neighbouring hospitals which have no installation.

From the start the work of the Royaumont Hospital has been continuous, though in the early summer of 1916 the hospital was almost cleared in preparation for the attack on the Somme. The refectory was then arranged as a ward with 100 beds, and in a few hours, on July 2nd, was almost filled with seriously wounded cases.

In two years 2,527 patients had passed through the hospital and 2,859 operations had been performed, with a mortality of 48 (1.9 per cent.). Cases of almost every

form of treatment required. The factors enumerated as of importance in the production of gas gangrene were:

1. The proximity to contaminated soil. Wounds of the lower limb showed a mortality three times as great as those of the upper, though wounds of the upper were more frequent.

2. Shell wounds were six times as frequent in gas gangrene as in ordinary infected wounds.

3. The presence of an infected wad of clothing kept up infection.

4. The interval between the wound and the first surgical intervention; insignificant wounds if severely infected might cause fatal results if untreated. Early treatment was most important in the prevention of gas gangrene.

5. Vascular lesions were an important factor when due to injury; as a remedial measure, namely, ligature of great vessels, they were not important; twenty-two cases with vascular lesions were followed by gangrene in six only.

6. Sixty per cent. of gas-infected cases had fractures, and 71 per cent. of those of gas gangrene.

7. Joint injuries occurred in 13 per cent. of gas infections and in 20 per cent. of gas gangrene. They increased the gravity of cases, as damaged joints were difficult to immobilize without pressure.

8. Wounds of the calf, trunk, or hip-joint were specially dangerous.

9. Tissue injury had an important influence. Gas abscesses were frequently seen in gas infections at the site of subcutaneous injections or near simple fractures in the same case.

10. Intramuscular tension from within or without was a potent aid in the production of gangrene.

It was found that the flora of gas gangrene was usually multiple: *B. perfringens* was present in nearly every case, *B. sporogenes* in 41 cases, *Vibrio septique* in 6 cases (several fatal); *B. histolyticus*, *B. Hübner IX*, and



FIG. 1.—The Cloisters, Abbaye de Royaumont. Photograph reproduced in *Proc. Roy. Soc. Med.*, February, 1917.



FIG. 2.—The Theatre.

type of severity were admitted, but when an attack was proceeding they generally included a percentage of cases of gas gangrene. In December, 1916, Miss Ivens, M.S., Médecin Chef of the hospital, read a paper before the Surgical Section of the Royal Society of Medicine, in which she dealt with cases of anaerobic wound infections which had occurred in the hospital. She presented an analysis of 464 cases of gas infection, of which 107 were clinically gas gangrene. Attention was drawn to the importance of complete bacteriological study and the careful examination of the x-ray plates, which, in the majority of cases, showed the situation of gas bubbles or streaks according to the species of microbe present, thus affording extremely valuable aid in a decision as to the



FIG. 3.—X-ray car with tent.

B. oedematis were all reported, but less frequently. Streptococci of a virulent type were present in 59 cases, and added to the gravity of the infection. Tetanus occurred in 15 cases; and was demonstrated bacteriologically in 7. Marked and latent forms of tetanus were described. Intrathecal administration of serum, 30 c.cm. at a dose, together with subcutaneous injections up to 30 or 40 c.cm. a day, proved successful. Seven clinical forms of gas gangrene were noted: (1) Classic form (Weinberg); (2) toxic or oedematous type; (3) mixed forms; (4) local gas abscess; (5) superficial and deep-seated gas phlegmon; (6) chronic and latent infections; (7) gas septicaemia or pyaemia.

Of 464 cases of gas infection 42 were fatal, 25 dying

from gas gangrene, 4 with tetanus, and the remainder with severe fractures, brain or abdominal injuries.

Amputation was considered necessary in advanced cases of gangrene; it was performed 65 times, with 48 recoveries, by the open method with lateral incisions. When gangrene was limited to groups of muscles or joints, excision was performed—41 times, with 33 recoveries. Hypertonic salt treatment alone was found to be unsuccessful, but combined with 2½ per cent. carbolic acid had given good results. Other methods used, such as continuous irrigation with eusol, Dakin's solution, or normal saline, apparently gave the same results. Ten cases of very severe gas gangrene were treated by antiserum for *B. perfringens*, *B. oedematiens* and *Vibrio septique*. In five cases (one being an instance of septicaemia with triple anaerobic infection) the results were successful. The fatal cases were already septicaemic before serum was given. There was distinct evidence that its curative use might be advantageous and probably its prophylactic use even more valuable.

In the work of the hospital bone injuries were common, over 900 fractures being admitted.

The operations performed included 1,057 for shell and grenade wounds, 264 for bullet wounds, 68 amputations and 59 reamputations, 78 joint operations, 176 for radical cure of hernia, 41 for appendicectomy, and 60 nerve and tendon operations. In addition, 200 civilians from the district were admitted for operative treatment.

When the climate allowed, the sun was found to be a valuable aid in the treatment of wounds, which were exposed, with a thin layer of gauze to keep away flies.

During the two years 3,612 x-ray photographs were taken, including a special series showing the presence of gas in the tissues, a subject on which Dr. Agnes Savill made a communication to the Royal Society of Medicine in October, 1916.

Work in Serbia.

The Scottish Women's Hospitals sent out their first unit to Serbia in January, 1915, just after the Austrians had been driven over the Serbian frontier, leaving thousands of sick and wounded. Typhus of a virulent type was raging and the mortality was very high.

The unit went to Kragujevatz, the arsenal of Serbia, where it took charge of 570 beds. The first hospital was prepared in about forty-eight hours. The patients were in a miserable condition, many suffering from septic wounds and bedsores. They were found in all available buildings in the town shivering and verminous. To deal with the large numbers Dr. Eleanor Soltan in a short time opened other buildings with fresh equipment sent from Scotland. At Valjevo 70,000 typhus cases were lying unattended; some were sent at once to Kragujevatz, and Dr. Alice Hutchinson was sent with another unit to open a camp hospital at Valjevo. On its way out the unit stopped for a short time at Malta to nurse British wounded from the Dardanelles. Next Dr. Elsie Inglis arrived in Serbia and opened two additional hospitals, one at Mladanovatz and the other at Lazarovatz. The former hospital was named the Neil Fraser Memorial, after a member of the first unit who had died of typhus. This hospital was under the charge of Dr. Beatrice Macgregor, and was continuously full. The hospital at Lazarovatz, housed in inns and dwelling-houses of the village, was able to accommodate 400 patients.

In an account of some of the medical work done during her ten months in Serbia, Dr. Chesney has reported that 100 out of the 300 officers of the Serbian army medical service died from the fever, and that the Scottish Women's Hospital unit, to which she was attached at Kragujevatz, also suffered severely. Two buildings were taken over at

Kragujevatz, so that cases of recurrent fever could be separated from typhus, but in a short time the wards contained nothing but typhus. The windows were kept open, and only one patient was allowed in each bed. The patients were washed, and lice hunted out of every hiding place; but fleas were ineradicable. The bathing arrangements and water heating apparatus were rough but efficient, though fuel was difficult to obtain. The sanitary arrangements were primitive; they consisted of a room with a small hole in a wooden box over a cesspool, and when this was filled up another small room was taken and another cesspool constructed. The cesspools were emptied by suction pumps and carts at intervals. Kragujevatz has normally a population of 10,000, but during the war there were about 20,000, and only five sanitary carts could be allowed for the town. With all its disadvantages the results in the hospital compared favourably with most of those in Skopliji and Banja, where buildings and sanitation were good. Each ward had two English sisters, and a Serbian and two Austrian orderlies. The Austrians made good nurses, and the Serbians preferred their ministrations. They were decent, friendly, and hard working. The sisters maintained discipline with ease by means of a sign language.

Typhus was at its height in February. It was of a very severe type and the death-rate extremely high. Nearly all cases were in the sixth or seventh day of illness when

admitted, with the rash well out. Strong patients seemed to suffer most severely; the delirium was more severe, and when this persisted the case was nearly always fatal. The Austrian prisoners often died from heart failure just before the crisis; the majority of deaths were just at the crisis. In the Serbian hospitals the most common complication was gangrene of a moist type, but Dr. Chesney had no such cases, although numb and painful feet occurred not uncommonly. Eleven bullock wagons were sent to the surgical hospital laden with patients suffering from post-typhus gangrene, in an appalling condition from want of nursing.

Post-typhus pneumonia was fairly common. The patients responded to good nursing, and the death-rate at this 6th Reserve Hospital was about 16 per cent., which was very low considering the violence of the epidemic.

The precautions against lice taken by the staff were to wear high boots, and to protect the wrist and neck with bandages rubbed with naphthalene. With the advent of summer typhus rapidly died down, the cases became milder, and finally ceased. Recurrent fever followed the same course, and during the summer, except for diphtheria, Serbia was quite healthy.

The Scottish Women's Hospital units worked in Serbia through the summer of 1915 until the advance of the Austro-German army swept them back. First, the Mladanovatz unit, which had treated more than 1,400 cases, had to fall back on Kragujevatz. Next, the Valjevo hospital had to retreat west to Vrnjatichka—Banja, where the members were made prisoners of war and taken to Hungary. The Lazarovatz unit retired to Kurjevatz.

Sir Ralph Paget, British Commissioner, arranged for those who wished to retreat into Montenegro. They endured terrible hardships travelling over snow-capped mountains 7,000 feet high, with food at famine prices, and shelter often not procurable, but with one exception all reached the coast in safety. In Kragujevatz during the first three months of the enemy occupation the care of a large number of Serbian wounded was given over to the Scottish Women's Hospital, and as there was great overcrowding an outbreak of typhus was feared, and an infectious hospital was organized with difficulty, as the Germans would give no other building.



FIG. 4.—Convalescent French soldiers on the terrace.

Bathing arrangements were improvised and disinfectors set going. The sanitation was deplorable, and it was necessary to empty the overflowing cesspools, to build incinerators, and to clean incessantly. Thousands of Serbian prisoners taken in the south passed through Kurfevatz miserably underfed. Their sufferings from hunger and exposure were very great. Hospital rations were meagre, and any extra articles, such as milk and eggs, were liable to be seized at the hospital gates by the Austrians. On February 9th the hospital was evacuated. The greater number of patients had been removed to Hungary, and the few remaining, badly wounded, were taken into Austrian hospitals. On February 11th, 1916, the entire hospital staff was sent north under an Austrian guard. In Vienna the Austrian Embassy took charge of them, and they were finally sent home through Zurich.

Work in Salonica.

In May, 1915, the second French hospital under Dr. Mellroy was opened at Troyes. It was established in tents, and at the end of the summer was sent with the French Expeditionary Force to the Balkans. For a month it was stationed at Ghegeli, and cases were received from the front, which was about fifteen miles away. Orders were then given to evacuate, and the hospital retreated to Salonica, where it opened as a tent hospital on January 1st, 1916, on a stretch of flat ground near the sea, overlooking the bay of Salonica. The medical staff consisted of five women doctors and a radiologist. The climate of Salonica was found very trying, and there was a considerable amount of sickness among the staff during the hot season, when the work was heaviest, 1,000 patients being admitted during July and August with dysentery, malaria, colic, diarrhoea, and jaundice. In October, when active hostilities began again, the hospital was used for wounded. The x-ray department treated a considerable number of cases with high frequency, electrical massage, hot air, light and ionization, under the direction of Miss Edith Stoney; cases were sent also from other hospitals for treatment. During the year 3,045 patients were admitted.

Work in Corsica.

Some of the Scottish women who had been in the Serbian retreat in December, 1915, appalled by the sufferings of the Serbians, undertook, with the approval of the French Government, the provision of medical care for the Serbian refugees in Corsica, and looked after them during their transport from Salonica to Corsica.

Dr. Blair landed in Ajaccio with the first transport full of Serbian refugees on Christmas eve, 1915, and took medical charge of the Serbian colony there. The refugees on the island at one time numbered 6,000. The first Serbs to arrive were from Southern Serbia, some civil officers and their wives and families, some peasants, but all at that time equally destitute, as they had fled before the Bulgarians, leaving everything behind them, and had suffered great privations. The maternity work started before the refugees reached Ajaccio, for a child was born on the first transport. There was a considerable amount of illness among the refugees, the result of exposure, privation, and exhaustion, and there was ever present the possibility of infectious disease. A suitable building was turned into a hospital, which was soon filled with patients, as, in addition to all the serious cases from the refugee colony, numbers of young recruits arrived from Corfu. They had been in the retreat through Montenegro and

Albania. The condition of these starving boys was most pitiable, and the most devoted nursing was not always successful in restoring them to health after the privations they had endured. Tuberculosis was extremely common. The most pathetic group of all to arrive were the school boys and students, who from 11 years upwards were marched to the Adriatic lest they should fall into the hands of the enemy; several thousands died by the way, thousands more after reaching the base, so many that the isle where they were quartered came to be known as L'Ile des Morts. The boys who recovered in the hospital were sent first to Great Britain and later to France.

The medical service for the Serbs consists of the main Scottish Women's Hospital at Ajaccio, the branch hospital for isolation (the Lazaret), and out-patient dispensaries at the refugee houses.

During the autumn of 1916 the hospital began to receive discharged incapacitated soldiers. It has over eighty beds occupied and is equipped with a theatre, pathological laboratory, and an x-ray installation. There is an open-air department for phthisis, and sun baths are an important part of the treatment. More than 2,000 patients were treated at Ajaccio alone. The Serbs were found to be extraordinarily interesting and grateful patients, and very much endeared themselves to their British nurses.

In the autumn of 1916 the second Serbian army was mobilized and re-equipped at Corfu. The Scottish Women's Hospital received an invitation to send out a

unit with it, and Dr. Agnes Bennett went to Salonica in charge of a well equipped hospital of 200 beds. The movements of the unit, which was attached to the Serbian army, were facilitated by the possession of motor transport sufficient not only for the wounded but for the staff. The hospital was first located near Salonica. Later on it

was moved to Ostrovo. The bad roads and heavy hill climbing made the transport difficult and dangerous. This hospital received many wounded from the Serbian army during its advance and proved of the greatest value to it. When the army moved forward a small outpost station was sent ahead to enable the most serious cases to be looked after for a few days before being transported over the bad roads. Mrs. Harley, sister of Lord French, who was killed recently in Monastir, was in charge of the transport column.

Work in Russia.

Another unit was sent out through Russia for the 1st Serbian Division of the Russian army in the Dobrudja. It was in charge of Dr. Elsie Inglis and Dr. Lilian Chesney, and started work in October, 1916, at Mejidia, where the barracks were converted into a hospital. About 300 patients were received during the eighteen days of its existence. Owing to the rapid advance of the Bulgars, it had then to be evacuated.

Meanwhile a second hospital had been established at Boulboulmick, consisting of three hospital tents and a dressing tent: after being occupied for a fortnight, it, too, had to retreat to a village near Mejidia. The final retreat was slow and arduous, and great hardships were suffered. The hospital equipment was transported through Cernavode by stages to Ismail and Galatz, and ultimately into Russia, only a motor kitchen and ambulance being lost. Dr. Inglis established dressing stations at Harsova and Braila and found many wounded at the latter place. The unit, when last heard of, was at Bessarabia, across the Russian frontier.



FIG. 5.—Scottish Women's Hospital for Serbian refugees in Corsica.

Work under the British War Office.

On leaving Paris Dr. Garrett Anderson and part of her staff did good work for some months at Wimereux in association with the R.A.M.C. It was then arranged by the Director-General, Sir Alfred Keogh, that they should organize a military hospital at Endell Street Workhouse Infirmary, London, which they have since conducted with great efficiency. Some results of experience gained there in the treatment of septic wounds have been published by Dr. Garrett Anderson; a first paper, written in conjunction with Miss Chambers, M.D., and Miss Lacey, B.Sc., was specially concerned with the use of salicylic acid. Basing themselves on the study of 1,000 cases they expressed the opinion that salicylic acid applied in a suitable form often saved cases when other methods failed, and was particularly useful when dressings could not be repeated at frequent intervals. They advised that in all cases in which recovery was delayed and the effect of the treatment doubtful it should be controlled by making repeated cultures from the wound surfaces. Drs. Garrett Anderson and Helen Chambers have since reported the results of a careful study of the paste (B.I.P.) recommended by Professor Rutherford Morison, which consists of bismuth subnitrate (1 oz.), iodoform (2 oz.), and paraffin sufficient to make a paste of the consistency of soft butter. The patient is anaesthetized, all gangrenous and necrosed tissue cut away, the wound thoroughly cleansed and swabbed out with rectified spirit, and a small portion of the paste vigorously rubbed into the tissues. As both the constituents are toxic not more than two grams should be used, but subject to this precaution the risk of toxic absorption was found to be negligible. A little of the paste is left at the bottom of the wound, which in many cases is closed with interrupted stitches, and dressed with gauze wrung out in spirit. No further dressing is required for seven to fourteen days; this is a great advantage in cases of compound fracture, as is also the fact that drainage tubes are not required. The paste maintains a continuous antiseptic action in the wound. It acts as a lymphagogue, producing a free exudation of serum which washes the wound from within outwards; it does not prevent the escape of discharges; granulation tissue grows freely in contact with it; drainage tubes and gauze drains are unnecessary; septic wounds heal nearly as rapidly as non-infected wounds; and bone union is rapid and the tendency to form sequestra slight.

Of 97 cases of compound fracture, 51.57 per cent. were completely healed within two and a half months of being wounded. Of 62 cases treated to a conclusion, 50 had healed, 4 had sinuses, and 8 superficial wounds. Of the whole series of cases treated, 6 complicated with suppurating joints required amputation after being treated with the paste, but in all extensive infection had occurred before they came under the treatment, and examination of the amputated limb showed that sepsis had subsided in the area to which the paste had been applied, but had spread extensively, so that the paste had not reached the whole of the infected area. Secondary haemorrhage occurred only in one of 400 cases. No case of gas gangrene or tetanus developed under the treatment, although anaerobes were grown from many of the wounds, and from some of them the tetanus bacillus; how much of the favourable results should be attributed to the injection of antitetanic serum, which every patient receives, could not certainly be stated. As compared with the Carrel-Dakin treatment, the object of treatment by B.I.P. is to use a less powerful antiseptic of feeble solubility, which keeps up a continuous action in the depths of the wound without requiring to be renewed for days or even weeks. A bacteriological and chemical examination carried out by Dr. Helen Chambers and J. N. Goldsmith, M.Sc., led to the conclusion that the bactericidal action of B.I.P. is due to the free iodine liberated from the oxidation of iodoform and by the nitric acid formed by the hydrolysis of bismuth subnitrate. The conclusion is that the chief reaction is the continued liberation of small quantities of iodine from a mixture practically insoluble in saline governed by the oxygen supplied from the air or from arterial blood. Cultures taken from open wounds under treatment by B.I.P. showed that they were not bacteriologically sterile, but that there was a reduction in the number of bacteria, which were not able to proliferate freely, and the wounds healed as if surgically clean. Most of the cases under this treatment excreted products of the decomposition of iodoform to a varying

extent, and the general effects of iodine absorption may have some bearing on the results.

PHYSICAL TREATMENT OF DISABLED SOLDIERS.

The problem of what should be done for soldiers suffering from results of injuries of joints and nerves and unfit to return to duty or to engage in any industry, but capable of cure or great improvement under suitable treatment, began to press for attention early in the war, and before long became one of great magnitude. At first the men were given extended leave at home, and were treated in out-patient departments or in special centres. One such centre for massage and electricity, promoted by Mr. and Mrs. Almeric Paget in London, was organized by Miss F. Barrie Lambert, M.B., with the help of the Hon. Essex French, daughter of Field-Marshal French. The circumstances under which many of the men were living militated against their recovery, and after inspecting the London centre the Director-General took steps to extend and systematize the treatment. The first great medical convalescent camp was established at Eastbourne, and subsequently command dépôts were added. Dr. Lambert was appointed medical officer in charge of a large mechano-therapeutic department at Eastbourne, where there was an electric installation furnishing galvanic, faradic, and combined currents, a plentiful supply of local radiant heat, and Schnee baths and vibrators. Dr. Lambert insisted on the importance of keeping the apparatus as simple as possible. In an article published last November she said that at the outset, though a fair number of masseuses and teachers of remedial gymnastics were available the supply of electricians was very limited, but that this difficulty had been got over by forming a staff of masseuses in squads, with in charge of each a skilled electrician who was responsible for the work and tuition of the other members. The plan proved satisfactory and was afterwards adopted in convalescent camps at Epsom and Dartford, so that when, some six months later, the command dépôts were started there was a nucleus of experienced and practical electricians to draw upon. The masseuse employed in military work is required to have not less than six months' training, and either to hold the certificate of the Incorporated Society of Trained Masseuses—as 90 per cent. of them do—or to satisfy the board of examiners set up by the War Office. The Eastbourne camp is large; there are 3,000 patients, and the visits to the electrical department vary between 600 and 800 daily. At Dartford camp are 1,200 patients, and from 150 to 200 electrical treatments are given daily. At Epsom, with 4,000 patients, from 500 to 700 are treated daily. Both these camps have been fitted, under the direction of Dr. Lambert, with apparatus similar to that installed at Eastbourne. Later on two other camps were established in the North of England, and there is a similar camp in Ireland, at Randalstown, and one having the same general purpose at Tipperary. It was found that after six months or so in these camps there was a residue of men who, though susceptible to cure, would require a much longer period of treatment—anything from four to six months; for their benefit command dépôts were established. In them convalescent soldiers belonging to particular commands are grouped. The cases are necessarily of a chronic type, and are subject to periodical inspection by medical boards, when men found to be incapable of further military service are discharged and become entitled to a pension. All cases in which it is thought that further improvement may be obtained by surgical interference are examined periodically by the Inspector of Orthopaedics or his representative. The men as they arrive at the command dépôts are drafted into one of five or six groups. In the first group are men who are practically fit but require final hardening by drill, route marching, and so on. In the second group the men receive physical drill, and are encouraged to take part in general sports. In the third group the men have light physical training and work. In the fourth group, consisting mostly of medical cases, the men have light physical training. The fifth group comprises the larger proportion of the cases which require massage, such as stiff joints, trench feet, and nerve injuries. The sixth group comprises cases of shell shock or men so gravely injured that they can only take light exercise and be trained in special movements to improve co-ordination. The average length of time for which a man remains in each dépôt is from two and a half to

three months, by which time he will reach Group I, and after going through the process of hardening will be fit to be transferred to army category A, B, or C.

Dr. Lambert considers that the system of convalescent camps and command dépôts is working very well, that massage is well and intelligently administered, and that the system of training by medical gymnasts is preferable to the use of Zander or other forms of mechanical apparatus.

Finally, it is to be noted that the number of men passed through and restored to health is very large; the number undergoing massage, electricity, and special exercise treatment in the command dépôts at one date in September was 8,262, and the total number of men who had then passed through the dépôts was 127,132.

THE ALLEGED PERILS OF URIC ACID.

BY

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THE public are, through the medium of the daily press, persistently reminded of the perils to which they are exposed from uric acid, but are at the same time confidently promised a safe escape from their dangers by the use of the remedies which the enterprising dealers recommend for that purpose. As all this is merely the usual exploitation of medical opinions which are still unsettled, it is advisable, therefore, to review briefly the alleged facts upon which it is based.

When deposits of uric acid were detected in the joints which had previously been the seats of painful inflammatory swellings, that substance was at once assumed to be the cause of gout; and not only of the typical and so-called regular manifestations of that disease, but also of all functional derangements and anatomical lesions which precede, accompany, and follow that peculiar affection of the joints. This view has gained general and speedy acceptance owing to a favourable concurrence of circumstances. There was the belief, which for centuries has been held—a belief so implicit that from its inception to this day it has never been questioned—that gout is essentially the consequence of excesses in eating and drinking, or of indulgence in particular articles of diet; and as uric acid was supposed to be an imperfect form of urea there was *prima facie* evidence of its causality. Not the less influential was the disappointment of practitioners who had long since turned away from the wranglings of the humoralists and solidists. Neither the shadowy product of a faulty distillation nor the mysterious influence of the nervous system could satisfy their longing after a clearer insight into the nature of the process with which they had to deal. The remedial measures, which they could plan only upon some speculative opinion, persistently failed. Their failures were disheartening to everybody concerned, and continued to be the subject of general derision as they had been at the time of the Satirists of old. But now there was a prospect of a change for the better. Here was a definite chemical body which as a derivative from food not only confirmed a doctrine held from the remotest antiquity, but encouraged the hope that if its formation could not altogether be avoided its consequences might at least be effectually averted.

Uric acid was thus with one accord admitted as the specific cause of gout; and though recently other substances have been suggested instead of it, it has hitherto lost none of the hold which it had gained at the moment of its discovery as a constituent of tophaceous deposits.

Nothing, however, was known how that peculiar substance obtained and how it exerted its alleged morbid action, for though presumably a toxic agent by virtue of its being an excrementitious substance, it was impossible to overlook the fact that it was invariably formed in the course of normal metabolism, and generally discharged without producing any disturbance. It was obvious therefore that there were here peculiar circumstances which led to its conversion into an irritant and to its deposition into the joints.

The fundamental doctrine supplied the key to the solution of the problem. Excesses in eating and drinking, it was argued, being the primary cause of the disease, it

followed that their product would be correspondingly large, and such a mass of effete matter would be enough to account for all the symptoms of gout. Thus the uric acid would contaminate the blood; and if it happened, as it often did, that other acids were generated within or introduced from without, they would render it insoluble. To avert the serious consequences that would ensue from the presence of that impurity the system made efforts to get rid of it, and in favourable circumstances succeeded in doing so by depositing it into the articular cartilages as being parts of no great importance for the preservation of life.

Since this theory was advanced it has been found that uric acid is derived not only from food, but also from the disintegration of the nuclei of the tissues. Whether its origin is endogenous or exogenous, even the largest quantities that may be formed are excreted without any concomitant derangement so long as the renal filter is intact, and whatever the disturbances associated with its imperfect elimination they are not produced by it. All the symptoms that occur in these circumstances are co-ordinate phenomena, and are due to some pathological changes in the kidneys which lead to a retention not only of uric acid but also of urea, of water, and of other effete substances. That such retention is not indifferent to the organism need hardly be insisted upon, but that uric acid is the sole, or even the most potent, element in the causation of the ensuing consequences is a purely gratuitous assumption.

Nothing has been definitely ascertained on this subject, although an over-production of uric acid in gout has been readily assumed. The current view on that point is merely an inference from the fundamental doctrine upon which the pathology of the disease has been constructed. Brugsch, however, holds as the result of his researches that uric acid is formed here in an abnormally small quantity—so small, indeed, that the presumably healthy kidneys are not sufficiently stimulated thereby to effect its removal. He alleges that it is retained in the blood and allowed gradually to accumulate there until it has reached an amount sufficient to break the renal barrier.

Nor is there the slightest evidence of any deficiency of alkalis in the blood, whereby uric acid is rendered insoluble, and thus becomes an impurity of which the organism can only rid itself by depositing it into the joints. Numerous hypotheses have been advanced to account for this supposed conversion, but none of them has been confirmed by actual examination. All inquiries into this subject have shown that there is no deficiency of alkalis, and that uric acid is perfectly soluble even in blood which is saturated with it. The statement of one writer that in his own case he felt, on the consumption of a few drops of an acid, the uric acid immediately rushing into his big toe, stands hitherto as an isolated experience.

Just as there is no foundation for the assumption of the several stages previously referred to which are said to lead ultimately to a deposition of urates, so there is none for the hypothesis that they, in the form of crystals, exert pathogenic influence. Whether they act in the typical attack of gout as mechanical irritants, as some maintain, or as toxic agents, as others hold—in either case it would be necessary that, being the alleged causes, their presence must precede the appearance of their consequences. But though the process takes place in the closed cavity of the joint, and is thus not accessible to direct inspection, yet the conclusion is fully justified that it is not different from what is observable on the surface. Thus Sir Alfred Garrod described the formation of an inflammatory tophus of the ear as starting with a vesicle of clear contents, in which the microscope showed a few uratic crystals. Gradually, when the serum was absorbed, the exudation became inspissated and opaque, the uratic crystals were then more numerous, and when all the fluid was removed the tophus remained. When there is occasion to examine such a tophus anatomically it will be found that there were initial changes either in the subcutaneous tissues or in the cartilage of the ear, or in both.

Not infrequently, however, urates are found on *post-mortem* examination of joints, in which their deposition was never attended by inflammatory or other symptoms, notwithstanding Sir Alfred Garrod's opinion that this cannot take place without producing some twinges. Commonly tophi of very large size are formed on the fingers without the least sign of any inflammatory

reaction, which appears only when the matrix in which the urates are deposited has begun to soften.

But as the term "gout" is generally used, both in theory and in practice, it is applied to all kinds of functional derangements and organic lesions, which are then described as visceral or irregular gout, and are supposed to be due to uric acid in the blood. Oftener than not that substance is not then found where it is supposed to exist. If it happens to be present, there is not the least evidence that any of those symptoms are produced by it, as it is met with in the ascitic, the pericardial, and the pleuritic effusions in connexion with such various diseases as valvular lesions of the heart, tuberculosis of the lungs, the pleura, and the peritoneum, with or without amyloid degeneration of the kidneys or the spleen; in acute pneumonia, in cirrhosis of the lungs and in pneumothorax; in marasmus due to stenosis of the pylorus due to a cicatrix of a gastric ulcer; in cirrhosis and cancer of the liver; in chronic interstitial and chronic parenchymatous nephritis; in amyloid degeneration of the kidneys; in pernicious anaemia; in chronic lead poisoning; in the contents of ovarian cysts; in hydrocele fluid, and in the ichor of gangrene of the lower extremities. On the inflamed or obsolete tissues, into which such transudations or effusions may have taken place, the uric acid may crystallize out of its solutions, and generally does so with the receding tide, but no one will seriously maintain that it is the cause of those various lesions. Uric crystals never occur in the circulating fluid; their deposition is an epiphenomenon, and is observed only in joints in which the cartilage was inflamed or has undergone amyloid degeneration or other changes; in the tissues of a degenerating cutaneous tophus; upon an atheromatous intima of the aorta; upon inflamed meninges; upon ulcers of the rectal mucous membrane, and within the corpora cavernosa of the penis, if they contain decayed or decaying matter.

Thus the clinical data afford no proof whatever of any pathogenic property of uric acid. Nor do the results of experimental inquiries. Subcutaneous injections of that substance into rabbits, and occasionally into guinea-pigs and dogs, have in no case produced a gouty inflammation of a joint or a tendon; they have led merely to deposits in the skin outwardly resembling tophi; but even that effect was obtained only by quantities thirty times as large as occur in man. Van Loghem introduced uratic crystals into the peritoneum of animals, and with the exception of a slight exudation of leucocytes, as may well be expected from the presence of such foreign bodies, he saw no deposits of crystals in the liver nor inflammatory reaction of its tissue. Leber, therefore, holds that only in considerable concentration does uric acid exhibit a very slight tendency to cause inflammation. Ibrahim, on the other hand, injected into himself a solution of 6 grains of uric acid with 9 grains of piperazin in 2 oz. of distilled water. The injection was very painful at the time, and continued to be so for hours or days; but the tissues, though hard and infiltrated, showed no sign of any nutritive changes. Freudweiler, however, alleges that he produced tophi which became inflamed; if so, these results are different from what takes place in the human subject, in whom the tophi generally remain an inert mass until the matrix softens. Whether he carried out his experiments with all necessary precautions does not appear from his reports of them.

In view of these facts, many clinical observers deny the causality of uric acid in gout and hold that the materies morbi is here a particular poison the nature of which is unknown. They make this unwarranted assumption because they hold that the gouty process takes place in previously healthy tissues.

There is consequently no indication for an exhibition of a uric acid solvent, because that substance is readily soluble in the tissue juices and is not the cause of the symptoms observed. Even if those alleged solvents served to remove all the uric acid from the blood, even then the patient would not be benefited thereby; for in the experience of His an intense treatment with radium completely drove out all uric acid from the blood, yet the gouty attacks returned with the same frequency and the same intensity as before. Moreover, such of the alleged solvents of uric acid which contain salts of soda have the undesirable consequence of favouring a deposition of uratic crystals.

Not only is the use of the pretended remedies to cure

the various functional derangements and organic lesions which are wrongly attributed to uric acid recommended upon a baseless hypothesis, but it is mischievous also, because it allures the unwary sufferer by specious advertisements of its effectiveness to have recourse to it and continue with it until its failure is evident. Thus valuable time is lost before he submits himself to rational treatment while there is still a reasonable prospect of satisfactorily coping with his disease.

ACETOZONE AS A GENERAL SURGICAL ANTISEPTIC.

BY

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The important properties of an ideal antiseptic appear to be (vide Browning and others, *BRITISH MEDICAL JOURNAL*, January 20th, 1917) that it has (1) great potency against all micro-organisms in presence of protein material, as serum, etc.; no deleterious effect on phagocytosis; (3) is innocuous to the tissues; has (4) a stimulating effect on connective tissue cells, so that it promotes healthy granulations; and is not toxic.

In benzoyl-acetyl-peroxide we have a preparation that fulfils these conditions. After previous experience of this substance in my surgical wards, I introduced it into this country in May, 1915, and have used it extensively in military hospitals since then as an antiseptic solution in the treatment of septic wounds. Its formula is $C_6H_5CO.O.O.COCH_3$, and it is known as acetozone. It has been used for years as an intestinal antiseptic in enteric fever and mucous colitis, and as a throat spray.

It may be used cold as a bath: (a) containing 5 grains to the pint (the cost is 8d. a gallon at army prices, and plenty of it is available); (b) or as a 7-grain solution with one-third hot water added. Its action is very rapid; unhealed amputation stumps heal quickly if put into a bath of this solution for half an hour daily, and dressed afterwards with dressings of sterile lint or gauze soaked in the 10-grain solution.

I have seen numerous cases of septic wounds which have resisted all other treatment for four or five months heal up in three weeks by this method.

It can be applied to deep wounds by Carrel-Dakin tubes, by the bath method, or in a waterproof bag, or by wet dressings of 10 grain strength solution, renewed two or three times a day.

Mode of Preparation.

1. The solution must be made by adding 5 to 7 grains to 1 pint sterile water at 112° F., left to stand for two hours, and should not be filtered.
2. Or a 10-grain to 1 pint solution can be used with dressings or Carrel-Dakin tubes, etc.
3. In very septic cases, swarming with anaerobes, etc., a 20-grain to 60-grain solution may be used.
4. It should be made fresh every seven days, and the bottle shaken before using.

Pure hydrogen peroxide is very unstable and momentary in its oxidizing power, while acetozone in solution is a fairly stable antiseptic, and its ozone-producing power is prolonged. Acetozone has a remarkably pleasant, pungent ozonic odour, the solution is colourless, and does not stain linen. Used in a 20-grain solution it is an efficient sterilizer of the skin.

Professor Hewlett has made bacteriological experiments with this drug, and reports as follows:

REPORT ON TESTS OF THE GERMICIDAL POWER OF ACETOZONE.

BY PROFESSOR HEWLETT.

At the request of Lieut.-Colonel Gore-Gillon, R.A.M.C., we have carried out a number of tests on the germicidal power of acetozone (benzoyl-acetyl-peroxide). The tests have been done with the *Staphylococcus pyogenes aureus*

and *Bacillus mycoides* (the latter as a type of a sporing organism). The method employed has been as follows:

A saline emulsion of an agar culture is made containing an approximately known number of organisms. Measured volumes of the emulsion and of acetozone solution (unfiltered) of known strength are mixed, kept at 37° C., and subcultured at certain time intervals. In some instances serum or broth has also been added to the mixtures. The following table shows some of the results obtained:

Staphylococcus Pyogenes Aureus.

SALINE MIXTURES.

Approximate number of organisms in mixtures = $2,000 \times 10^6$ per c.cm.

Strength of Acetozone in Mixtures.	Time of Exposure at 37° C.	Result.
1 in 1,750	1 hour 45 minutes	+
1 in 875	" "	+
1 in 513	30 minutes	-
1 in 437	24 hours	-
1 in 510	24 hours	-
1 in 872	24 hours	-
1 in 1,744	24 hours	-
1 in 4,370	24 hours	+
1 in 4,370	24 hours	-

This table shows that in saline mixtures acetozone 1 in 600 or thereabouts kills with an exposure of thirty minutes; and 1 in 4,000 or thereabouts kills with an exposure of twenty-four hours.

With an addition of one-third sterile human serum to the mixtures, acetozone 1 in 437 killed, and 1 in 654 did not kill, the staphylococcus with an exposure of twenty-four hours.

With an addition of one-third sterile nutrient broth to the mixtures, acetone 1 in 1,744 killed, and 1 in 4,370 did not kill, the staphylococcus with an exposure of twenty-four hours.

With sporing *B. mycoides* in saline mixture, acetozone 1 in 437 killed with an exposure of one hour. With an exposure of twenty-four hours, acetozone 1 in 1,744 killed, 1 in 4,370 did not kill.

With the addition of one-third serum to the mixtures, acetozone 1 in 437 with an exposure of twenty-four hours did not quite kill (there was no growth in the subcultures after twenty-four hours, but some growth after forty-eight hours' incubation). This was the highest strength tested.

With the addition of one-third sterile nutrient broth to the mixtures, acetone 1 in 1,744 killed, 1 in 4,370 did not kill, with an exposure of twenty-four hours.

We were able to make only one experiment with pus (staphylococci). Equal parts of pus and acetozone solution (giving 1 in 437 in the mixture) did not kill with exposures of 20 minutes, 40 minutes, 60 minutes, 1½ hours, and 18½ hours.

Finally a meat-broth anaerobic culture made from a septic wound was tested; it contained large numbers of mixed anaerobic sporing bacilli. Acetozone 1 in 290 with an exposure of twenty-four hours killed.

The results show that acetozone is a potent disinfectant. In saline mixtures it kills the staphylococcus in strengths of 1 in 600 in thirty minutes and 1 in 4,000 in twenty-four hours. The addition of serum and of broth reduce its germicidal power, but it is still effective in strengths of 1 in 437 and 1 in 1,744 respectively with an exposure of twenty-four hours.

With sporing *mycoides* in saline mixture it kills in strengths of 1 in 437 in one hour and 1 in 1,744 in twenty-four hours. With an addition of one-third serum 1 in 400 kills in twenty-four hours. With a mixed culture of sporing anaerobic bacilli grown from a septic wound, 1 in 290 killed in twenty-four hours. (1 in 290 = 30 grains to the pint; 1 in 437 = 20 grains to the pint approximately.)

We are much indebted to Miss Lettice Digby, assistant in the laboratory, Military Hospital, Richmond, for the care and labour she has devoted to the conduct of the experiments.

At a meeting of the medical profession held in Osler Hall, Baltimore, on May 23rd, £28,560 was subscribed for Liberty Loan bonds.

The number of past and present students of St. Thomas's Hospital serving in connexion with the war up to August 8th was 972, of whom 39 have been killed in action or died on service, 60 have received British honours, 10 have received foreign honours, and 3 the Order of the Hospital of St. John of Jerusalem, while 101 have been mentioned 146 times in dispatches and for valuable services.

THE BACTERIOLOGICAL EXAMINATION OF THE BLOOD IN CASES OF IRRITABLE HEART.

BY

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AND

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(Report to the Medical Research Committee.)

In the BRITISH MEDICAL JOURNAL of November 13th, 1915,¹ a letter was published which intimated that organisms had been found in the blood of patients complaining of the symptoms associated with the condition known as "irritable heart," namely, breathlessness on slight exertion, palpitation on excitement or moderate exercise, giddiness, and sometimes fainting, precordial pain and a general lassitude. Further investigation showed that the first conclusions were not warranted. The following note gives the results of the blood examinations in two series of patients. The first series was examined at University College Hospital, the second at the Hampstead Military Hospital, Mount Vernon.

First Series.

In all, 92 cultures from 27 patients were examined. The first 32 cultures gave only one positive result, a Gram-positive micrococcus in pure culture. The organism grew in minute colourless colonies, and had to be frequently subcultured, as it died out in three or four days. It was difficult to class it either as a streptococcus or as a staphylococcus. In a hanging drop short chains of three and four could be seen, but diplococci were most common. In a film short chains of three and four could be seen, but the arrangement on the whole was staphyloid. The colonies remained minute after several subcultures. The organism, incubated at 37° C., produced acid when grown in saccharose, lactose, raffinose, inulin, salicin, mannite, and litmus milk. There was no liquefaction of gelatin at 20° C. The remaining 60 cultures of this series gave 8 positive results at a temperature of 37° C., and 14 positive results in duplicates incubated at a temperature of 20° C. The majority of the cultures produced a micrococcus similar in type to that described above, but some showed a bacillus.

Such a high percentage of positive results raised the question of contamination, and the suspicion was increased by the larger number of growths found in the duplicates incubated at 20° C. A series of control blood cultures in normal people was therefore undertaken. Twenty-four cultivations were made; cocci or bacilli were found in four instances. Tentative cultures made from the skin and the syringe, after sterilization, showed that the method used to sterilize the syringe was faulty. The syringes had been sterilized by drawing up into the barrel, three to six times, oil heated to 140° C., according to the method recommended by Sir A. Wright.²

Subsequent experiments³ showed that syringes may not be rendered sterile even by six syringefuls of oil heated to 140° C. A satisfactory method of sterilizing syringes was found to be as follows:

An all-glass syringe is fitted together with the needle attached. Alcohol is drawn through to ensure the absence of moisture. The piston is withdrawn about a quarter of an inch to prevent it adhering to the neck of the barrel after heating. The syringe is placed in a large test tube with a wool pad at the bottom, and the tube is plugged with wool. The whole is placed in the hot-air sterilizer, and the temperature raised gradually to 160° C. and kept at this height for fifteen minutes. The air is allowed to cool gradually, and the syringe is ready for use as soon as it is cool. It need not be handled or exposed to the air until the moment of employment. This method of sterilization was controlled by contaminating the syringes with known organisms. It was found that all organisms tested, including the spores of *B. subtilis*, were killed by this treatment. In the second series of observations this method of sterilizing the syringes was used.

Second Series.

The patients in this series were of the same type, and presented the same clinical syndrome as those in the first series. The skin was sterilized by lysol or sublimate, 1 in 1,000. Alcohol and ether were subsequently employed. The blood was taken from the median basilic vein. Various methods of cultivation were used:

(a) 4 c.cm. of blood were taken and distributed between four tubes, each containing 10 c.cm. of broth. (b) 6 c.cm. of blood were distributed between twelve tubes, each containing 10 c.cm.

of broth. (c) 10 to 15 c.cm. of blood were poured into flasks containing 100 c.cm. of bouillon with 1 per cent. saponin. This method had to be given up owing to the difficulty of excluding air organisms. (d) Blood was poured directly on to the surface of agar plates incubated at 37° C., and also at room temperature. (e) 2 c.cm. of blood were put into a sterile test tube, incubated for twenty minutes at 37° C., and then at room temperature for one hour. The serum was pipetted off, and 10 c.cm. of broth were added to the tube containing the clot. The tube was replaced in the incubator at 37° C. Other media employed were: 1 per cent. saponin broth, 1 per cent. sodium taurocholate broth, 1 per cent. sodium glycocholate broth, 1 per cent. sodium citrate, 0.9 per cent. saline, and media containing adsorbents—aluminium hydroxide, animal charcoal, iron hydroxide. Anaerobic methods were also employed. The cultures were kept for ten days or a fortnight and frequently subcultured.

In all, 96 observations were made on 43 cases. In no instance was any organism grown, except in the few cases which became contaminated by organisms from the air when the flask method was used.

Since the patients were of the same clinical type we may collate the findings in the two series. In the second series, when the methods of sterilization were controlled, the results were consistently negative; it may therefore be assumed that the positive results obtained in the first series were due to contamination. Using the methods of cultivation in general vogue we have failed to demonstrate the presence of bacteraemia in cases of "irritable heart," and must therefore conclude that bacteraemia does not play a demonstrable part in the pathology of this disease.

We wish to express our thanks to Captain H. S. Blackmore, R.A.M.C., for the help he gave in carrying out the first part of the investigations at University College Hospital.

REFERENCES.

- ¹ T. Cotton, T. Lewis, and F. H. Teale: A Note on the "Irritable Heart" of Soldiers. ² *Technique of the Test and Capillary Tube*, p. 194. ³ *Journal of the Royal Army Medical Corps*, October, 1916, p. 522.

TRAUMATIC RUPTURE OF THE SPLEEN.

BY

J. LIONEL STRETTON,

SENIOR SURGEON TO THE KIDDERMINSTER INFIRMARY AND CHILDREN'S HOSPITAL.

TRAUMATIC rupture of the spleen is rare in this country. The two following cases, which occurred within seven months, are worthy of record:

CASE I.

W. T., male, aged 24, had been acting as a dispatch rider in Egypt, where he had attacks of malarial fever.

On December 18th, 1915, at 1.30 p.m., he was riding his motor bicycle, when he collided with another. The impact was sufficient to throw him forward thirty yards. He was stunned, and, when picked up, was taken home and attended by Dr. Griffiths at 2 p.m. I saw him at 9 p.m. He was blanched; the pulse was 128; the abdomen was distended and immobile and dull in the flanks.

At 9.30 p.m., under a general anaesthetic, an incision was made through the left rectus. Five pints of bright blood and some clots were removed from the peritoneal cavity. The spleen was enlarged to three or four times its natural size and an irregular laceration could be felt on its upper surface. At this juncture the patient became so collapsed that it was impossible to entertain the removal of the spleen. Gauze was packed into the laceration, the lower portion of the wound was closed, and the patient returned to bed.

He rallied during the night. There was no further haemorrhage. He was given calcium chloride gr. xv every four hours. He remained much in the same condition until December 23rd, when he gradually sank and died, five days after the accident.

CASE II.

J. M., male, aged 14, working on a farm, on July 15th, 1916, at 9.30 p.m., was running down a bank, when he caught his foot in some fern roots and fell on an ant-hill. He states that he hurt himself so much that he lay there for half an hour before he was able to get up and walk home, a distance of only fifty yards. The pain was in his left testicle and there was a swelling on the left side of the scrotum. He vomited three times after he reached home. His mother put some fomentations on him. The next morning he was seen by Dr. Deacon, who ordered him into the Kidderminster Infirmary.

He arrived at 2 p.m.; he had been driven fifteen miles in a two-wheel trap and was sitting up by the driver and appeared to be well. He got down and walked to the ward. He was said to be suffering from a hernia. I saw him at 3 p.m. He did not appear to be ill; the temperature was 97° and the pulse 106. There was no swelling in the scrotum, but when he coughed there was a protrusion from the abdomen into the scrotum, which was easily returned. It felt like a portion of omentum

with some fluid. He denied any sign of a hernia previously. The abdomen was not distended, the movements were free, and there was no rigidity. There was some dullness in both flanks.

At 3.30 p.m., under a general anaesthetic, an incision was made for radical cure of left inguinal hernia. The sac was isolated; before applying the ligature it was opened, when a quantity of blood poured out; the operation for radical cure was completed. The abdomen was opened by an incision through the left rectus. About two pints of blood and clots were removed from the peritoneal cavity. The spleen was felt to be lacerated. It was lifted out and the pedicle tied. The cavity was sponged out and the wound closed in layers. The spleen weighed seven and a half ounces, and was lacerated in four places.

The patient bore the operation well. He gradually improved and the wounds healed. He had an attack of acute parotitis at the end of August, which delayed his recovery, but he was discharged on October 5th. He looked well, and did not appear to suffer any ill effect from the loss of the spleen. He is now at work again and enjoying his usual health.

The contrast between these cases is interesting. The first patient had an enlarged spleen, which predisposes to rupture. The violent nature of the accident was sufficient to make us suspect a serious injury. Although the operation was performed eight hours afterwards, the loss of blood was so great that the patient was unable to recover from it. This result was favoured by the concussion, which prevented a sufficiently early recognition of the abdominal condition. Although it was not possible to remove the spleen this did not affect the result, as there was no further haemorrhage. In the second case the spleen was of normal size, and there was no predisposing cause of rupture. The accident was not severe, and did not make us suspect a serious injury. Although the operation was not performed until eighteen hours afterwards, the loss of blood, though serious, was not sufficient to prevent recovery. If the hernial sac had not been opened the condition might not have been discovered, as it was obscured by the sudden appearance of a hernia and by the moderate nature of the constitutional symptoms. It is difficult to believe that a boy could sit up in a shaking trap and drive fifteen miles over a very hilly road with such severe injuries.

A CASE OF "SPONTANEOUS" RUPTURE OF THE SPLEEN: SPLENECTOMY: RECOVERY.

BY

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THE case is published for two reasons, first, on account of the rarity of rupture of the spleen as an abdominal catastrophe in this part of the world, and secondly, so that medical officers may be reminded of the necessity of examining the spleen in cases who have served for a period abroad.

I am indebted to Lieut.-Colonel Hayes, R.A.M.C., for his permission to publish the notes on this case.

Pte. P., aged 26 (service seven and a half years), was admitted to No.—General Hospital on March 29th, 1917.

He complained of acute abdominal pain and was cold, collapsed, somewhat cyanosed, and without any perceptible radial pulse. The abdomen was not rigid. There was dullness in the left flank. The liver dullness was present and normal. The patient had an "appendix" scar in the right iliac fossa. A lung lesion and locomotor ataxy having been excluded the case seemed clearly an acute abdomen, though its nature was doubtful. Marked cyanosis of the finger-nails was noted, and Colonel Hayes suggested the spleen as the focus of mischief, when the patient remarked "that some had said malaria was his trouble."

Operation.

Immediate middle-line laparotomy was performed. Captain Frew, R.A.M.C., gave the anaesthetic, and Captain F. T. Hill, M.C., R.A.M.C., assisted. On opening the peritoneum free blood was at once found. The wound was enlarged, and a very big spleen was quickly delivered through it. The capsule of the spleen was torn, and the torn surface was covered with firm clot. The pedicle was clamped and the spleen removed; the vessels were secured with a Staffordshire knot. Nearly two pints of blood were then wiped out of the pelvis and the kidney pouches; when the peritoneum was clean, the abdomen was closed with through-and-through silk-worm-gut stitches. Salines, morphine, and stimulants aided the rallying of the patient. His wound healed well, and surgically he made a good recovery.

The blood examination showed the parasite of malaria present in very great numbers. No crescents were found, and,

whilst the case looked a malignant one, the opinion expressed was that he had a double infection of tertian ague. This condition seemed to settle after a course of quinine, followed by one of liq. arsenicalis.

Previous History.

The patient had served in India for three years. There he had "an odd day or two" with attacks of malaria, but was never in hospital, and no blood examination was made. From November, 1915, to December, 1916, he was at Salonica. In August, 1916, he had an attack of malaria for which he was detained five days in hospital and then attended for three weeks, taking quinine. He was invalided home after an operation for appendicitis. From the beginning of 1917 he began to notice that heavy work and "jumping about" gave him a feeling of discomfort in his stomach, and after such exercise he vomited on several occasions. He was not short of breath, and thought his discomfort was due to his appendix operation. He arrived in France the day before his admission to hospital. He had been uncomfortable for five days before that, but had suffered no special trauma on land or sea during that time. He marched to his dépôt, took ill with bad abdominal pains during the night, and, when seen by his medical officer, was immediately sent to hospital. The spleen after removal was about eight times the size of the normal organ; it must have been much larger before it ruptured. The patient was transferred to England very well on May 14th, 1917.

THE EARLY TREATMENT OF COMPOUND FRACTURE OF THE FEMUR CAUSED BY GUNSHOT WOUND.*

By CAPTAIN R. C. DUN, R.A.M.C.(T.F.).

GUNSHOT WOUND, causing compound fracture of the femur, must certainly be looked upon as one of the gravest of war injuries. A more widespread appreciation of sound principles of treatment, and a thorough application of those principles, will, I feel confident, lead to improved functional results.

In no class of case is it more important that the treatment be early and adequate. I emphasize both adjectives.

This note is chiefly based on the practical experience which I have gained in working at casualty clearing stations, and, in the main, deals with the treatment carried out in them. But it has become obvious to me that it is the regimental medical officers and field ambulances in front of the casualty clearing stations who have in their hands the power of giving these cases the best possible start in their race for life. To obtain the best results a definite line of treatment must be adopted as early as possible—that is, by regimental medical officers and field ambulances, and carried on at casualty clearing stations.

What are the factors which we have to fight in these cases of compound fracture of the femur, and how can they best be dealt with before and after reaching a casualty clearing station? Broadly speaking, they are: (1) Shock, (2) haemorrhage, and (3) sepsis.

Shock.

I think we may fairly divide the shock from which these cases suffer into two classes—(a) and (b). The former is due to the gravity of the injury and the pain necessarily caused, especially in the earlier stages of transport, before complete immobilization of the fractured limb is possible; morphine and the best available fixation of the limb is the obvious treatment. Hot drinks, hot-water bottles, and saline injections should be made use of as early as possible. I submit that, up to the time when the patient can be put on a stretcher, a method probably as good as any is to fix the thigh with short local splints and to tie the thighs and legs together.

It is to the second class of shock that I particularly want to draw attention. This is the shock which results from the often unavoidable incomplete fixation of the fractured limb, and frequent handling of the patient in his journey from the field to the ambulance. In my opinion the best and simplest method of completely immobilizing a fractured femur is a properly applied Thomas splint, and this should be put on as early as possible; it would be ideal if it could be done at regimental aid posts or advanced dressing stations. Another ideal would be attained if cases of fractured femur could be transported from advanced dressing stations to casualty clearing stations

without removal from the ambulance, so reducing the movement of the patients to a minimum.

I have no hesitation in saying that cases of compound fracture of the femur which have had a Thomas splint applied early, and which are rapidly sent on to the casualty clearing station, arrive there in much better condition than similar cases imperfectly immobilized and subjected to movements during transit.

Haemorrhage.

As regards the treatment of haemorrhage before the case reaches the casualty clearing station, there is strong reason for avoiding the prolonged use of the tourniquet, on account of the increased risk of gas gangrene so entailed by producing anaemia of already devitalized tissues. Large vessels may have to be ligatured, or the patient may be sent down with artery forceps on. The most frequent form of haemorrhage, and one which should always be vigorously dealt with, is slow oozing from the wound. No case should ever be sent down until this has been checked. To do this, wounds often have to be opened up and ligatures or forceps applied to the bleeding points. Failing this, direct pressure with a firm packing of gauze into the opened up wound is often sufficient to check general oozing. A cork of gauze is worse than useless.

Sepsis.

To combat sepsis in the early stages, all that can be done is rapid disinfection of the skin for a considerable area around the wound or wounds. For this purpose a 5 per cent. solution of picric acid in methylated spirit is less irritating and more searching than iodine. Except for the necessary treatment of haemorrhage or the removal of visible foreign bodies, the wound should not be interfered with. The insertion of drainage tubes is unnecessary. Dressings should only be changed if soaked with blood.

Treatment at Casualty Clearing Stations.

Arrived at the casualty clearing station, all cases of compound fracture of the femur should be disturbed as little as possible, and sent without delay to the pre-operation ward. No case of this type should be evacuated to the base without first passing through the theatre. Small superficial wounds are deceptive, and invariably cloak much more extensive damage of the deeper tissues. Cases in which haemorrhage is taking place will naturally be given precedence in going to the theatre. Wherever possible inadequately splinted cases should also have next precedence; when this is not practicable the fixation should be improved. The greatest care must be exercised to prevent increase of shock by unnecessary movements; thus no attempt should be made to remove the clothing from the injured limb until the patient is anaesthetized, and he should not be lifted off the stretcher on which he arrives until anaesthesia is complete. The usual methods of treating shock—warmth, morphine, camphor, and salines—will be employed in cases which have to wait their turn for operation.

When the case reaches the operating theatre care must again be taken that no increase of shock occurs from unnecessary or rough handling of the patient. Probably the soundest plan in all cases is to lift the stretcher on to the operating table, and anaesthetize the patient before he is removed from the stretcher. The only circumstance which may justify an exception to this rule is an efficiently applied Thomas splint.

With a view to shortening the time occupied by the operation and to ensure smooth working, all members of the operating team should have been made thoroughly conversant with the details of the technique. Where multiple wounds are present, a second operator should get to work on them at the same time that the femur is being treated. The only reference I will make to the question of the choice of an anaesthetic will be to point out the advantage of spinal anaesthesia in some cases of fractured femur—for example, when associated with a penetrating chest wound.

Shock must be vigorously combated on the operating table. Warm blankets, hot-water bottles, salines, subcutaneously or intravenously, should be used. In all grave cases, the latter is the method of choice, and it should be employed at the start of the operation. As soon as the

* Paper read at a meeting of medical officers of an army in the field.

patient is anaesthetized he is lifted off the stretcher, splints are removed, and clothing cut away. The limb is then raised from the table by means of a rope and pulley apparatus, attached to a clove hitch round the ankle (see Fig. 1). By this means the limb can be elevated and

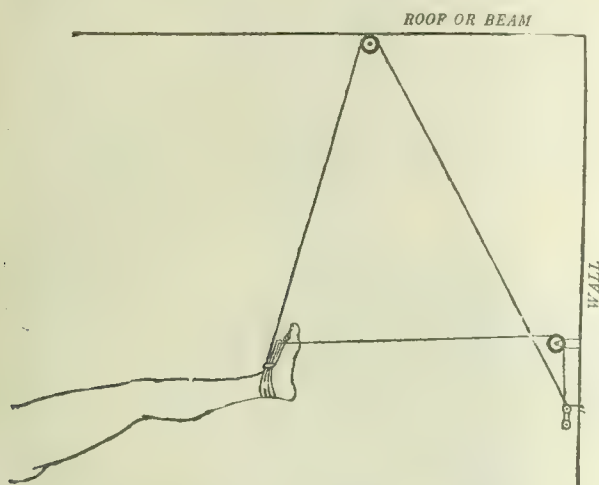


FIG. 1.—Fracture of femur. Diagram of rope and pulley apparatus for raising leg from operating table.

extended at the same time. This simple device frees the orderly from the somewhat arduous task of holding up the limb during the whole period of the operation.

The preparation of the skin must be thorough. A wide area round the wound or wounds and the whole circumference of the limb should be treated, as unexpectedly extensive incisions are often necessary.

An important detail is the secure fixing of sterilized towels round the upper part of the limb. Clips should be used which fix the towels to the skin, as they are apt to become displaced during the changes in position of the limb which have to be made in the course of the operation. The leg and foot should be wrapped in a sterilized towel, under cover of which is the suspension sling, or the hands of the orderly supporting or adjusting the leg.

The first step in the actual operation should be excision of the superficial wound, followed by a determination of the main pockets with the finger. The wound should then be opened up in the direction of these pockets, unless this entails the division of important structures. The full extent of the injury to muscles and bone must be seen. The eye must be our guide as well as the finger. It is only when a thorough survey of the injury has been so obtained that the operator is in a position to decide the subsequent course he should adopt in each particular case. The size of superficial wound is no indication of the deeper damage. Most extensive laceration of muscles and severe comminution of bone very frequently underlie apparently trifling skin wounds.

The Question of Amputation.

The full extent of the wound having been appreciated, the question of amputation will arise in a proportion of cases. In some hopelessly mangled limbs the decision is easy. There are again many borderland cases where there is great difficulty in deciding what is the proper course to steer. I think it is a good plan to hold consultation in such cases. Amputation should be performed:

1. Where the main vessels, both artery and vein, are divided, and collateral circulation has not been established; unless, as happens in rare early cases, some form of blood vessel anastomosis can be performed—for example, by intubation with paraffin covered glass tubes, until danger of gas gangrene has passed.

2. Where gas gangrene is definitely established in more than one group of muscles, or where, for anatomical reasons, complete excision of any infected part cannot be carried out.

3. Where either the main artery or vein requires ligature, and there is evidence of even a localized patch of gas gangrene beyond the point of injury to the vessel.

4. Where virulent sepsis is already established in extensive wounds, the patient being in low condition.

In cases where the general condition of the patient is bad, especially as a result of haemorrhage, one's leaning should be towards amputation.

Involvement of the knee or hip joint does not by any means necessarily call for amputation. The same may be said of extensive laceration of muscles and severe comminution of bone—if the circulation is good, and there is no evidence of gas gangrene in the wound.

When amputation is decided on, the circular or modified circular method—as low down the limb as possible—is the one which should be employed. When sawing the bone, a strong flat metal plate, with a slot in it to admit the femur, is useful in keeping muscles out of the way and in saving time. In order to prevent superficial necrosis of the sawn bone, a layer of deep muscle fibres may be stitched over it. The dressing used is either a "salt pack" or Carrel's method. Such amputation stumps are ideal wounds for the application of a salt pack. A practical point is that room should be left between the skin edges for drainage when the strips of adhesive plaster are being applied.

Conservative Treatment.

I should like again to emphasize that, in addition to the careful removal of foreign bodies, the superficial wound must be completely excised, and all badly lacerated fascia and muscle cut away. With regard to the muscles, contraction alone is not a sufficient guarantee of the necessary degree of vitality—definitely bleeding muscular tissue must be reached before one holds one's hand. Great care must be taken that the vascular supply of muscles previously treated be not cut through during the later stages of the operation. Once embarked on such an operation, there must be no half measures. Most extensive dissections may have to be carried out. There must be no hesitation in cutting wide. The principles which guide us in the operative treatment of malignant disease must be applied. One small piece of devitalized muscle left in the wound may be sufficient to render the whole procedure useless. Bone fragments, unless completely separated, should not be removed.

If a joint has been directly opened by a missile, the damaged portions of the capsule and synovial membrane must be cut away. The joint is then washed out and the opening into it closed with sutures. A drain should always be employed down to, but not into, the capsule.

Perfect haemostasis is essential. The operative technique is the same whatever form of after-treatment is followed.

After-Treatment.

Practically speaking, there are but two methods of after-treatment: the pack (at present the "salt pack"), and Carrel's method. The difficulty in applying a pack to many of the wounds associated with fracture of the femur is considerable. One should always ask oneself: Can any given wound be completely and accurately packed, and, if this can be done, will the necessary pressure so applied increase the risk of gas gangrene? In any case in which a main vessel has been injured, a salt pack should not be employed, as the requisite pressure may interfere with the establishment of the collateral circulation. If any doubt exists it is wise to use Carrel's method. Where a pack is put in, a drainage tube should be inserted down to, but not between, the bone fragments—the tube coming out through the centre of the pack.

The operation completed, all that remains to be done is to immobilize the limb. Incomplete fixation may lead to failure, in spite of the most careful operative treatment.

Fixation by Thomas's Splint.

A "Thomas splint outfit," properly used, is the simplest and most efficient method of obtaining complete fixation.

The detail of the application is, shortly, as follows (see Fig. 2):

1. The suspensory sling is removed from the ankle and the limb is supported by an orderly.

2. Application of Extension Bandage.—It is not necessary to shave the limb. Paint the entire circumference from the malleoli upwards, sufficiently high to allow the

extension to get a good pull on the lower fragment, with a glue solution, of which the formula is—

Glue	1				āā	50 per cent.
Water	|	...	...	...
Thymol	|	...	...	...	...	$\frac{1}{2}$ per cent.
Glycerin	|					
Calc. chloride	|	...	...	...	āā	2 per cent.

A shaving or small painter's brush is used for applying the glue. During an action a pot of this glue should always be kept ready melted. The glue will become too thick after a time, and a little water should then be added.

Next apply, on either side of the limb, a length of bleached calico bandage, and run a roller bandage round the limb.

3. Application of Splint.

—The ring of the splint is passed over the foot and pushed upwards, until the posterior part of the ring presses firmly against the ischial tuberosity.

4. *Tightening of Extension Bandage* (Figs. 3 and 4).—The surgeon takes an extension bandage in each hand and passes one of them over, the other under, the lateral bars of the Thomas splint. First one bandage and then the other is thereafter passed round the notch in the cross-bar, a complete turn being taken in each case. The turns are taken in opposite directions, and the last overlaps the first. The ends are made secure by tying a half-bow.

5. *Application of Slings.* — In

cases where the wounds are in such a position that it will be necessary to remove the ham splint for dressing purposes, slings formed by bandages or, better still, perforated zinc strips should be applied at this stage.

6. Application
of "Ham"

Splint.—This should be padded to suit each case. Moss pads serve the purpose well. Over these a sheet of jaconet is placed to prevent soiling. The ham splint is now slung to the side bars of the splint by three strips of adhesive plaster—the adhesive side being next the ham splint. This effectively prevents lateral movement of the ham splint.

7. *Application of Anterior Thigh Splint.*—The splint consists of a piece of Gooch's splinting applied to the thigh, canvas side towards the limb. It should extend from near the ring of the Thomas splint to just above the patella. A number of suitable lengths of Gooch's material should be cut beforehand. The whole roll may be sawn through; an orderly can cut off any breadth

required. The thigh splint is fixed by the bandage, which is now applied to the limb from the ankle upwards. This bandage encircles all the splints.

8. *Application of Foot-piece.*—The foot must be supported at a right angle by means of the metal foot-rest, which is supplied with the outfit. A bandage sling passed round the ball of the toes, fixed there by glue on the sole of the foot, and pinned on either side about the knee level to the bandage which surrounds the limb, is perhaps more comfortable to the patient. An oblong piece of splint, rather longer than the breadth of the foot, padded thinly and covered with jaconet, will prevent the bandage press-

ing on the sides of the foot. Glue will prevent slipping of both bandage and splint.

9. *The Suspension Stretcher Bar should always be Used.*—To this the Thomas splint is slung by two pieces of bandage, one attached to

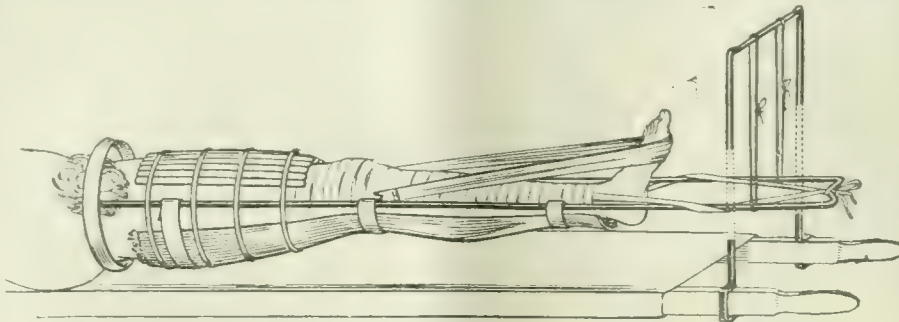


FIG. 2.—Fracture of femur. Diagram of application of "Thomas splint outfit" for transport of fracture of femur.

either bar of the splint. If no suspension bar is available, the leg must be slung by some other means.

Similarly, if the patient cannot be evacuated, the injured leg must be slung in the wards. A simple method is the use of two bandages, each passed over a beam of the hut. The two ends of one bandage are then tied to the bars of the splint close to the ring. The ends of the second bandage are secured to the bars at the level of the foot.

Evacuation.

Many cases of compound fracture of the femur may safely be evacuated as soon as they have recovered from the anaesthetic. Before evacuation the extension should always be inspected—the bandages may require tightening or loosening. A pad of wool may be required between the ring and antero-external part of the thigh, so as to prevent the ring from nipping the scrotum or slipping off the tuber ischii.

In cases which have to be kept at a casualty clearing station for more than twenty-four hours, the superficial dressing

should be changed before evacuation, on account of oozing. Here also care must be taken of the skin pressed on by the posterior part of the ring—it should be pulled up to change the point of contact, and carefully dusted. Alteration of the degree of elevation of the splint, or propping up the patient, frequently adds to his comfort.

The abduction frame should be used for fractures of the femur so high up that the upper fragment cannot be

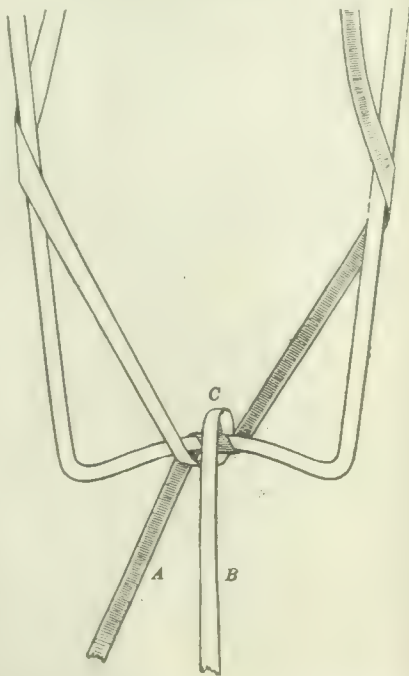
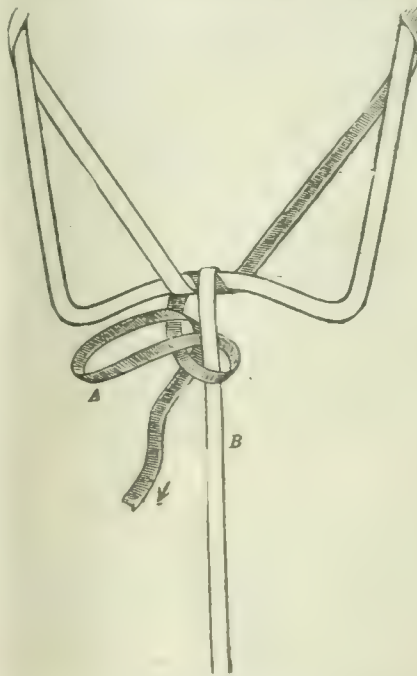


FIG. 3.



Fi : 4.

FIGS. 3 and 4.—Fracture of femur. Method of tying the extension bandages so as to prevent slackening of the adjustment and loss of time during adjustment. Pull and hold a taut (Fig. 3). Pull and hold B equally taut, thus fixing a at c. A may now be left loose. Tie loop knot with a on B and draw tight up to c (Fig. 4). In adjusting, hold B taut; undo loop knot; hold A taut and pull to its own side. Pull B taut, and proceed as above, merely substituting B for A.

controlled by the anterior thigh splint. The method of its application is indicated in the official memorandum on "Treatment of injuries in war."

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CONGENITAL DEFICIENCY OF PHALANGES.

THE accompanying radiograph (taken by E. Terry Coppin) and photograph are those of the left hand of a young woman whom I examined as an entrant to Woolwich Arsenal. She was a dressmaker by trade, anxious to do her share of work in munitions. She was rejected by a labour exchange on account of the deformity of her hand, but was brought to me by her sister, who had been passed as suitable. Although she had apparently only one phalanx to the first finger and to the thumb, she could grasp firmly and had considerable power in the first two fingers and thumb. There were no nails.

No family history and no antenatal history were ascertainable. The girl was passed as medically fit, and she is at present engaged in "ringing fuses" as expertly as any worker in her shop.

London, W.

ELIZABETH SLOAN-CHESSER, M.B.



DERMATITIS FROM EXPLOSIVES.

I WISH to express my own thanks and those of my brother-officers in this ambulance to the authors of the contributions on the above subject. They solve the mystery of a case we had to deal with a few nights ago. A young soldier was brought in with a deep erythematous rash over both buttocks. The portions of skin affected were very tense and painful, and, on the right, vesicles of varied minute sizes had developed. I asked if a German shell had recently burst near him. His history was that eight days previously a shell had burst some yards distant from him while he was sitting over a pole on an open latrine with his gluteal region exposed. Further than a shower of light earth he felt at the time no serious consequences of the explosion. Till the morning of his admission to our ambulance he felt all right. On that morning he felt intense pain in the right hip, and discovered the rash. It seemed to us at the time like a case of shingles, though its bilateral character was unusual. The long interval between the explosion and the appearance of the rash seemed to annul the likelihood of any connexion between the two. The case was sent to a casualty clearing station as one of dermatitis. It is obvious now that powder from the explosive had been conveyed with the shower of earth which he felt on the unprotected parts.

R. B. ROBSON, M.B., Ch.B. Aberd.,
Captain R.A.M.C.(T.C.).

RESUSCITATION OF THE NEW-BORN INFANT BY HEART MASSAGE.

I HAVE had some experience in midwifery, having attended over 2,200 cases in thirty-five years, but I have not before this come across an instance in which I have been able to revive a child when the heart impulse had ceased.

The labour was one in which the head was delayed by a very deep perineum in a primipara. Chloroform was used and delivery completed by forceps, the perineum being torn to the anal margin. No time was lost in extracting the child. The child was more white than blue. Artificial respiration was of no use even after blood had been allowed to flow from the cord.

I had read lately of a successful case of heart massage performed in an operating theatre by incising the epigastrium and massaging through the diaphragm, and as there was not any heart beat at all, I tried massage.

I pressed my right fingers deeply into the left epigastric region, and pushed them right under the ribs, invaginating the belly wall, the left fingers pressed in the chest about the left nipple, and I was able to grasp the heart. I tried to make my two sets of fingers meet by repeated quick thrusts, and after five or six the heart started beating. In about one or two minutes it was fairly established, and then ordinary artificial respiration caused the child to breathe in about five minutes; keeping it up I got a good cry before ten minutes had gone by. The child

never had a throw back afterwards, but bruising showed itself where my fingers had pressed in the skin.

As a rule, one finds a heart beat in these cases, and continues artificial respiration as long as a heart flutter can be detected. Hitherto, if that heart flutter has ceased, one has considered that no more can be done. Now I am convinced that heart massage as described will most probably set the heart going again,

and then artificial respiration will complete the process.

Whether the cardiac stoppage was due to the chloroform I cannot say. Certainly the mother did not have an overdose, as she was sufficiently round to implore me to save her child if I could.

King's Langley, Herts.

FRED. C. FISHER, F.R.C.S.

Rebielus.

CAUSATION.

DR. MERCIER'S book, *Causation, with a Chapter on Belief*,¹ is polemical. Polemics are usual in essays on causation, and normal in chapters on belief. But, in addition, it has the rare merits of wit and lucidity. One gets a first impression of a jolly thing, almost a skit, dashed off in gay high spirits. All sorts of reverend people—Hume, and Mill, and lesser lights—are scalped with zest and enjoyment. But the first impression is wrong. Here is no skit, but an extraordinarily thoughtful and convincing, and withal original, piece of work. The proof lies in the fact that, though we smile as we pass easily from chapter to chapter, yet, afterwards, we find that we have looked, often more deeply, always more clearly, into matters that have been treated with dreadful obscurity for centuries.

It is impossible to review the essay adequately. It consists of a chain of reasoning of which an examination would require as much space as the work itself. It is possible to indicate only its point of view.

What is a cause? What is causation? Every one thinks he knows. In a sense, every one does know. According to Dr. Mercier, "the notion of causation is almost elementary. Cause and effect, like matter and force, are terms which every one understands more or less vaguely, more or less precisely, but that it is difficult to express more simply for want of simpler terms." Here, near the beginning of the essay, is adumbrated a particular point of view which is held consistently to the end—the view-point of science as distinguished from metaphysics.

In front of the reader is a printed page. He may consider it in two fundamentally different ways.

1. He may regard it as a real object in a real universe—

¹ On *Causation, with a Chapter on Belief*. By Charles A. Mercier, M.D., F.R.C.P., F.R.C.S. London: Longmans, Green, and Co. 1916. (Roy. 8vo, pp. 240. 4s. net.)

a universe which was not created by his mind, but is independent of and merely observed by it, which existed before his mind, and will have being after his mind has ceased to be. That is the view of common sense and of science. The ordinary man believes *unquestioningly* in the objective existence of his body, his wife, his child, his whole world. He believes, moreover, that they are such as his senses tell him they are, such as they seem to be. Read any book of science—astronomy, geography, chemistry, botany, anatomy, and the rest—and you will find that the view of the author is exactly similar. He has an *unquestioning* belief in a real universe in which his objects of study—stars, men, and the rest—are such as they seem to be.

2. Or the reader may delve deeper. He can see and feel the paper and hear it crackle. But every sensation through which he learns about the paper is a feeling *in him*. It is part of his mind, not part of the paper. Moreover, no feeling—for instance, the feeling which he calls a vision of the page—can be remotely like the reality. How can an immaterial feeling be like a material object with which it has no single property in common? At best the feeling can be only a sign, a symbol, of the material object—much as the written word "page" is a symbol (totally unlike) of the spoken word, and the spoken word a symbol of the vision. Moreover, is there any real object? How is one to know that the page is not a pure hallucination? We cannot get outside our feelings, which lie to us during our dreams, and may lie equally during our waking hours. How is it possible to know whether there is anything in the universe besides one's lonely, amazed mind? There you have the metaphysician. His distinguishing mark is a refusal to accept *unquestioningly* the assumptions from which science and common sense start. He tries to go deeper. That constitutes him a metaphysician. The reader is a metaphysician at this moment. Some metaphysicians, the idealists, conclude that there is only (or evidence only of) mind. Others, the materialists, suppose that there is also matter; clearly the latter are guessing. They cannot get outside their feelings.

If we adopt the scientific standpoint, a rich and illimitable field spreads before us. Objects are innumerable, and have properties and relations by means of which they can be classified and by means of which they can influence one another. For instance, a real moving stone strikes a real fragile pane of glass and breaks it. Here we understand cause and effect as well as we understand anything. We cannot put the matter in simpler terms, for already it is perfectly simple. It would be like trying to simplify the statement that $2 + 2 = 4$. On the other hand, if we adopt the metaphysical standpoint, we are in a cul-de-sac. Why should this feeling, this appearance of a moving stone, always seem to produce such an effect on that other phenomenon, the pane of glass? The thing is more incomprehensible than if, in a real painting, the appearance of a stone suddenly broke the appearance of a pane of glass. Cause and effect are incomprehensible to the metaphysician because the causing and affected appearances are themselves incomprehensible. He is on safe ground as long as he contemplates his feelings in silence, but directly he opens his mouth and tries to account for them he is in difficulties.

No one has known a consistent idealist (the common sort of metaphysician), for all known idealists have had an itch to explain in words (mere phenomena) to other people (mere visions) that they, with the rest of the universe, are mere appearances created by the idealist's mind. It is as if one asked one's conception of a friend to drink one's perception of a glass of wine. In real life only lunatics do that kind of thing. The most astounding kind of idealist is the very modern type who insists that science is concerned only with phenomena, denounces metaphysicians, and then, perhaps, discusses the age-long evolution of worlds and living beings (creations of his mind of yesterday). Such a one should be certified and sent to an asylum. Not only is he obviously insane, but he has stolen a sacred name and used it to deceive innocent men of science who know as little of metaphysics as metaphysicians of science. He has spoilt two good things.

Though metaphysicians cannot understand how anything can cause (that is, enforce) anything else, they note that certain phenomena seem always to follow or accompany certain others. Thus, if the phenomenon Tom

seems to smite the phenomenon Dick vigorously on his phenomenal nose, bleeding always seems to follow. It is this "always," this "invariable succession," that has, according to metaphysicians, originated the idea of enforcement. Why should the appearance of a blow cause the appearance of bleeding any more than the appearance of a flower garden? But, in this visionary world, Tom has phenomenal legs and arms, and a heart, and a liver, and a rage against Dick; therefore, since these things are always present, they are as much causes, "invariable antecedents," as the blow. Since only metaphysicians have written on this subject, the notion that every condition is also a cause is the accepted view among "intellectuals."

But, if you ask a man of science what causes the bleeding, he will tell you of the rupture of real blood vessels in Dick's real nose, or, as more remote causes, of the blow, Tom's animosity, or Dick's offence. The liver and similar things will not occur to him. Now Dr. Mercier, for the first time in history, puts this common-sense view into precise language and rescues it from the imputation of ignorance and thoughtlessness. According to him, "A cause is an action . . . connected with a sequent change . . . of the thing acted on." For him the idea of enforcement is clear. The rupture of the blood vessels, the blow, and Tom's rage are links in a chain of real causation. Whereas the liver, and the like, are merely *necessary conditions*—necessary because without them Tom would not be alive, and therefore could not punch Dick's nose.

We have dealt only with the view-point of this excellent book. It contains immensely more—all as clear cut and sparkling and attractive as a diamond. The author does not even declare that he maintains the scientific as distinguished from the metaphysical view of causation. But such is actually the case. And he is a pioneer. In future the metaphysician will not have it all his own way. The essay does not fall within the limits of what is commonly regarded as science; it is concerned rather with the foundations on which science is built. But, if the followers of science had a clearer insight into the nature of these foundations, it is certain that we should have less argument and more agreement, less guessing and more established truth, and above all, less of that horrible mixture of science and metaphysics which poses to-day as the purest science—such stuff as this, for instance, "The law of gravitation is not so much the discovery by Newton of a rule guiding the motions of the planets as his invention of a method of briefly describing the sequences of sense impressions which we term planetary motion."

NOTES ON BOOKS.

In The Passing of the Great Race? Mr. MADISON GRANT essays to trace European history, and illustrate its meaning, in broad terms of heredity. As Professor H. F. Osborn insists in the preface which he contributes, race has played a far larger part than either language or nationality in moulding the destinies of man. This aspect of history, in the light of the great biological movement beginning with Darwin, Galton, and Weismann, is somewhat novel, since historians have hitherto failed to realize the potent, subtle influence of heredity always at work beneath the more visible and transitory forces of environment. The modern science of anthropology seems to teach that somatic characteristics do not change through the ages. Mr. Madison Grant widens this doctrine to include a like immutability of the moral and intellectual traits which in the mass influence national development, and underlie all social and political action. Convinced of the danger of racial sentimentalism, he has written this book with the purpose of warning his fellow countrymen of the United States that if the lessons of evolution are not taken to heart, and applied to social legislation, the great race—mainly Nordic—to which is due all that is best in their national life, will be bred out of existence by other, and as he considers lower, types. While not prepared to go all the way with the author into the debatable region of practical eugenics, we can commend his treatise to serious students. The general reader, also, will find in it much to awaken interest.

²*The Passing of the Great Race; or the Racial Basis of European History.* By Madison Grant, Chairman of the New York Zoological Society. London: G. Bell and Sons, Ltd. 1917. (Med. 8vo, pp. 257; illustrated with maps and plans. 8s. 6d. net.)

THE ROYAL ARMY MEDICAL CORPS, AND ITS WORK.

THE general work of the medical service of the British army may be regarded as falling into three main sections:

1. The physical and environmental hygiene of the soldier's life.

2. The evacuation of sick and wounded from places at which their presence is an obstacle to the success of military operations, and detrimental to the men themselves; and

3. The provision and maintenance of institutions at which sick or wounded soldiers can remain during treatment.

In theory, and to some extent in practice, the area in which the work has to be done is divided into three zones. The first or forward area is known as the "collecting zone" (Fig. 1). In it the wounded are collected from the battle-

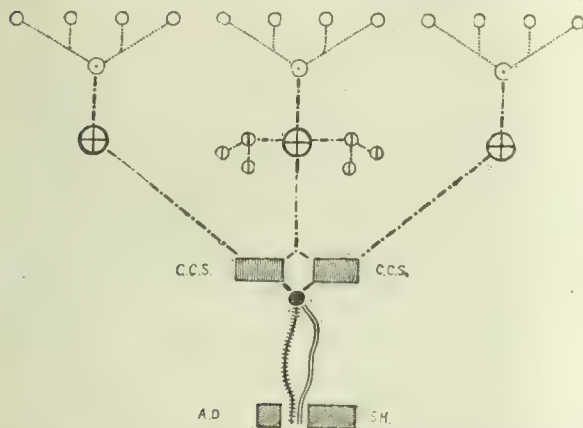


FIG. 1.—Collecting Zone. Diagram representing the distribution of the medical units. The plain circles are regimental aid posts. The circles with a dot in the centre are advanced dressing stations, and those with a cross are main dressing stations of field ambulances. The circles with a vertical line through them are rest camps and other annexes to main dressing stations. The upper oblongs are a couple of casualty clearing stations connected by road with the field ambulances and with the base by a railway line and canal traversing the evacuating zone. The oblong below (S.H.) is a stationary hospital in the evacuating zone. Opposite it is an advanced depot of medical stores (A.D.).

field, and the sick from the places at which they fall ill. Theoretically it is an area of the shape of a triangle, connected by its apex with the lines of communication, and having at its base the regiments in action; and nominally it contains only the regimental aid-posts, the field ambulances, and a "casualty clearing station," or railroad hospital, which stands at the apex, and serves to house the sick and wounded sent on from the field ambulances until they can be passed down through the evacuating zone to the distributing zone. In practice, however, it contains certain other units of a medical character.

The next or middle area is known as the "evacuating zone," because it is traversed by the roads, railway lines, or canals along which the sick and wounded are carried on their way to the distributing zone. It corresponds with the military area known as the lines of communication, and, theoretically, is long and narrow, containing, from a medical point of view, nothing but the various means of transport, and perhaps a medical store or two and a few "stationary" hospitals for the reception of patients who should not be taken any further towards the distributing zone.

The third or lowest area is called the "distributing zone," because in it are placed the various institutions among which the sick and wounded are to be distributed to receive their final treatment. It is an area of indefinite size, corresponding roughly to that in which munitions of war are gathered and reinforcements collected, and which, from a purely military point of view, is known as the base. In this war it lies partly in Great Britain, partly overseas, and consequently it is common to speak of it as if it contained institutions of two different orders—"home hospitals" and "overseas or base hospitals."

The collecting zones in France may be regarded as divided into sections, each with its own line of com-

munications and a railroad, for the front is actually held by different armies each of which has its own area of operations. Each such area is in medical charge of a senior medical officer known as Director of Medical Services (D.M.S.), who is responsible for the arrangements he makes only to the general of the army to which he belongs, and to the principal medical officer of the British forces—that is to say, the Director-General of Medical Services on the staff of the Commander-in-Chief.

In the collecting zone, even in parts of the area full of suggestions of the industries of peace, the dull booming of the guns is rarely inaudible, while a few miles further afield the road is encumbered from time to time by ammunition wagons, by ambulances, by fresh battalions going up to take their place in the line, or by battalions returning to their billets mudstained and worn. The hill-tops, too, disclose a view perhaps of swiftly moving aeroplanes, a line of observation balloons, and the rising smoke clouds formed by bursting shells.

This area has an atmosphere all its own—bracing, suggestive, thrilling, yet curiously solvent of illusions and of personal petty ambitions. That is its effect, at any rate, on many a newcomer. He sees himself suddenly from a new angle; he recognizes that he has arrived at a place where there is no room for the looker-on at life, at a place where men justify their existences by work and their deaths by altruistic aims, and where nothing counts but the war.

The various sections of this zone are each, as has been said, in charge of a director of medical services, who works through the deputy directors (D.D.M.S.) in charge of the corps into which every army is divided, and these again through the assistant directors (A.D.M.S.), who are responsible for the medical work of the divisions out of which army corps are constituted.

The number of men in a division is roughly 20,000, and to meet their needs each A.D.M.S. has at his disposition the personnel of three field ambulances, and twelve or more medical officers attached to single battalions or like divisional units.

BATTALION MEDICAL OFFICERS.

The battalion or regimental medical officers do their work in a more advanced position than any others, and in some respects are the most important components of the whole medical service.

Each is as it were the family medical attendant of the men of the unit, the medical officer of health of the locality in which it may for the moment find itself, and the private medical adviser of the commanding officer in respect of all questions in which medical considerations arise. He gets, or should get, to know the mental and physical peculiarities of every officer and man in his battalion—knowing, for instance, such things as who have dubious feet, who a nervous constitution, who are exceptionally hardy, who are careless in their living, who careful, who are disposed to go sick on the least excuse, who will never report themselves until positively obliged. He acquires this knowledge by going about among the men, by his formal medical inspections, and by noting who are the frequent attendants at his morning sick parades, and why they come. Bearing in mind that the sole reason why the men are in his charge at all is in order that they may fight, and fight effectively, he treats them much in the spirit of the medical attendant of a racing crew. Hence he is always endeavouring to tackle small evils early, and to winnow out the sick to whom he can afford all necessary treatment himself from those who must be sent elsewhere.

Everything that can in any way affect the health of his unit comes within his purview: food and its preparation, the sterilization of the water supplies, the provision of latrines and their proper maintenance, the destruction of rubbish, and the cleanliness of billets and dug-outs. He is always, too, on the alert for the first signs of an outbreak of any epidemic malady, wages war on parasites and flies, and endeavours to ensure that the men appreciate the importance of the various precautions they are told to observe, including those against trench feet. His authority he derives partly from his personal position, partly from his influence with the commanding officer of his battalion. If he secures the confidence of the latter,

and the real respect of the adjutant and the sergeant-major, his work is, from one point of view, easy.

His duties are continuous, whether his unit be resting in billets or be taking its turn in the fighting line.

TRENCH WORK.

If it be taking its turn in the fighting line he has also to attend to battle casualties and their evacuation, his precise duties in this connexion differing according as trench fighting is in progress or an "over-the-top" advance.

In the former case he does his work from a predetermined point chosen according to the lie of the ground and other circumstances, at or close sometimes to the head quarters of one of the companies of the battalion or sometimes to those of the battalion itself. The former are likely to be in a dug-out or trench some two or three hundred yards behind the fire trench, and the latter perhaps twice or three times that distance (Fig. 2). Here he establishes a first or regimental aid post, equipping it with the ordinary provisions of a surgery, coupled with bunks or other lying-down accommodation for, say,

half a dozen seriously wounded men (Figs. 3 and 4).

The aid post itself may be the cellar of a ruined cottage or house, a deserted German dug-out, or an ostensibly shell-proof annexe to a communication trench, but whatever its nature he endeavours to guard his patients against

of the post be at all considerable, he takes what steps he can to divide it up in such fashion that no single shell is likely to affect all parts of it.

To assist him he has a corporal and four men of his own corps, their specific duty being to look after the water supplies; he draws from the battalion a lance-corporal, a driver for the small cart in which he carries about his aid-post outfit, and from each half-company one man whose specific duty is sanitation. The unit also supplies him with men to act as stretcher-bearers in

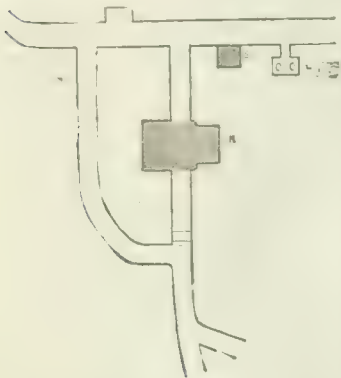


FIG. 2.—Map, drawn from memory, showing the position of a certain regimental aid post lying between a main and an accessory communication trench. The shaded block is the post itself. It stands across the trench, the patients approaching along the curved trench and leaving by the straight descending trench, which leads to the advanced dressing station. The ascending arm leads to and from the firing line. The projection (K) on the right is the aid post kitchen. The projection (L) is the latrine. The small shaded projection (S) is a dug-out for four R.A.M.C. stretcher-bearers.

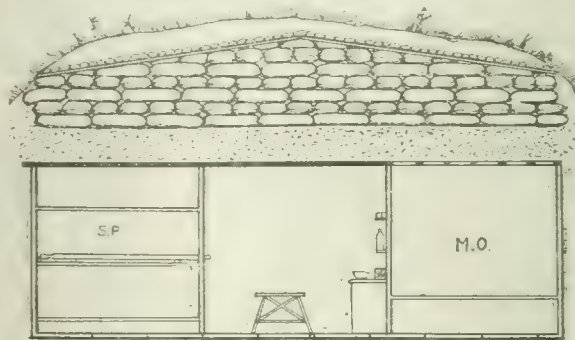


FIG. 4.—Elevation of the regimental aid post shown in Fig. 3. Tiers (S.P.) for stretchers for patients are seen on the left (one in position), and the M.O.'s bunk and stretcher bed on the right. In the middle is a trestle to support a stretcher while the case is being dressed, and near it a bench for bottles and dressings. Sufficient height for work (about 6 ft. 6 in.) is secured by slightly deepening the trench, inflow of water being prevented by a dam and sump pit. The floor is concrete; the roof, concrete, sand-bags and earth. Light is supplied by acetylene lamps.

the proportion of two to each half-company, or sixteen in all. His total command therefore consists of twenty-nine men, all of whom he trains in stretcher-bearer and first-aid work, but otherwise employs as he finds advisable. Subject to the specific duties mentioned he usually posts most of his men along the trenches held by his unit in order that they may be ready to attend the casualties when the cry "stretcher-bearers at the double" is passed from sentry to sentry.

The medical officer visits the fire trenches whenever occasion occurs, and often merely to encourage the men by the knowledge that should they be wounded skilled attention is at hand; his assistants are, however, competent in ordinary cases to apply the first-aid dressing which every soldier carries inside his tunic; if feasible, the wounded man is then removed to the regimental aid post. Consequently, it is here that the medical officer habitually remains.

If, however, the injury be a fracture of the lower

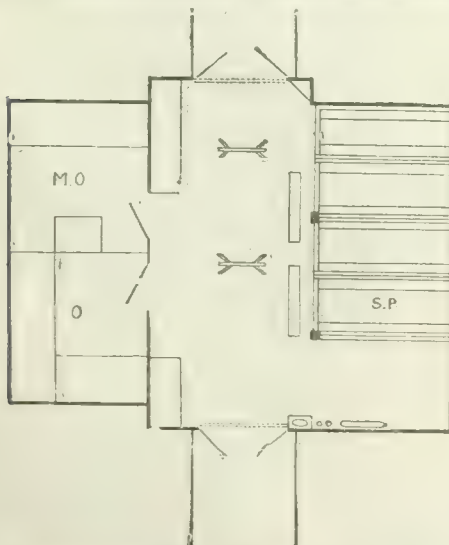


FIG. 3.—Ground plan of a regimental aid post shown in elevation in Fig. 4. On the left (O) is a bunk for two orderlies, each having his stretcher bed; next is the M.O.'s bunk, with a stretcher bed and table. In the centre compartment running from entrance to exit are trestles to support a stretcher while a case is being dressed, some tables and shelves for bottles and instruments, and two sitting benches. On the right is an empty space for storing the kits of patients, and beyond are slides, each to hold three stretcher patients, in tiers (S.P.). A curtain separates them from the centre compartment. Gas-proof curtains are rolled up above the doors ready to let down on a gas alarm, and on the floor near the exit is a cylinder of oxygen and a spraying machine and some bottles of anti-gas solution.

a gas attack, providing for all openings a blanket screen soaked in an anti-gas solution which can be lowered into place at a moment's notice. Also, if the accommodation

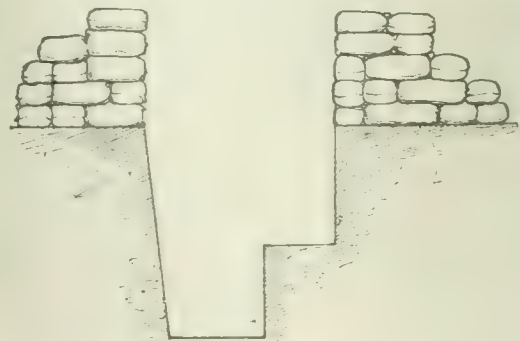


FIG. 5.—Diagram representing a section through a fire trench, measuring about 2 ft. at the bottom, about 4 ft. at the upper ground level, and about 6 ft. 6 in. from top to bottom. The shelf at the side, or fire-step, can be used as the foundation for a stretcher bed when the bottom of the trench is full of water.

limb or other serious condition, or the man cannot be brought back to the aid post forthwith, the medical officer goes up to see that the necessary steps are taken. These will always include the placing of the patient in some position in which he will be out of the way of the fighting men, while if the trench be waterlogged or the weather very rainy, and the patient helpless, it may be necessary to build him up a bed out of a stretcher on the fire step (Fig. 5), or elsewhere above the water line,

protecting him from cold and wet by blankets and a waterproof ground sheet.

The difficulty of getting a case out of the trenches varies with its nature, with the amount of the fighting that is in progress, and with the character of the trench leading from the place where the casualty has occurred to battalion headquarters. A plan of a common type of trench is shown in Fig. 6. Should the communication trench have

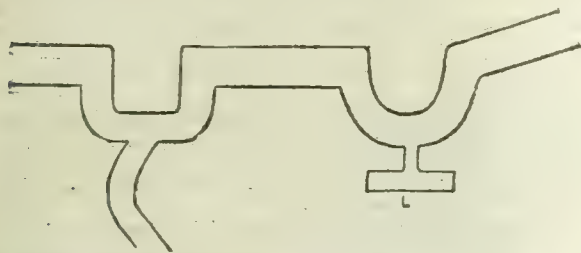


Fig. 6.—Outline of a common form of trench with traverses projecting towards the rear. The straight parts are the fire bays. On the left is the beginning of a communication trench. On the right is a latrine (L) leading out of a traverse. Many of the angles of such a trench are worn away.

been knocked about recently or be waterlogged, it may not be easy even for an active and unloaded man to get along it, and in the best of circumstances the transport of a wounded man along the trenches is a problem presenting much difficulty.

Certain types of new trench (Fig. 7) may be nowhere wider than 24 in., while the average width of a fully-developed trench is not more than 4 ft. at the level of the shoulders, and its course is invariably interrupted by angles round which an ordinary stretcher cannot be



Fig. 7.—Diagram of a type of trench presenting special difficulties in moving wounded men. It is a twin trench of which the front one is never more than about 2 ft. wide and 4 ft. 6 in. deep.

carried except by tilting. (Figs. 8 and 9.) Numerous special stretchers have been devised, and some of them meet their purpose if the communication trench is good, and especially if the trench in which they are being used be an old one and the corners of the traverses worn away.

Fig. 10 is a diagrammatic section of another type of trench in use where the ground water level is sufficiently low to allow a depth to be given to the trench sufficient to protect from rifle fire a man a little over six feet high.

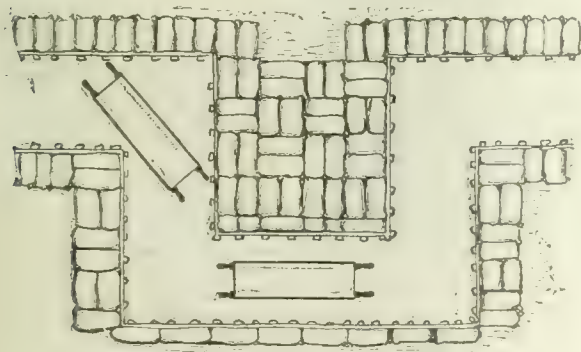


Fig. 8.—Diagram to illustrate the difficulty of getting a stretcher round the angles of a trench.

There are, however, many cases, as also many trenches, in which the special stretchers are unusable, so it is common for the problem to be solved by lifting the patient on a blanket or on a stretcher over the parapets or back wall of the trench, and carrying him to the regimental aid post over the intervening ground. Should the trenches happen to lie at the top of an ascent this is a relatively

easy process, but otherwise it can only be carried out after nightfall unless the need for removal is so urgent that the risk must be taken of the patient and his bearers all being killed.

When the patient arrives at the aid post every care is taken to obviate shock as far as possible by the administration of morphine and hot drinks, and by protection from cold. A label is attached to the wounded man briefly



Fig. 9.—A difficult turn.

describing the nature of his injury, and, if some time is likely to elapse before he can be removed out of the firing line altogether, a dose of tetanus antitoxin is given. The medical officer's outfit includes everything necessary for such purposes, as also for the arrest of haemorrhage, the splinting of fractures, and the antiseptic treatment of wounds; but he is not expected or desired to undertake formal operations.

WORK IN THE OPEN.

If the unit to which he is attached be taking part in an advance, the duty of a battalion medical officer usually requires him to wait till the attack has been launched. As

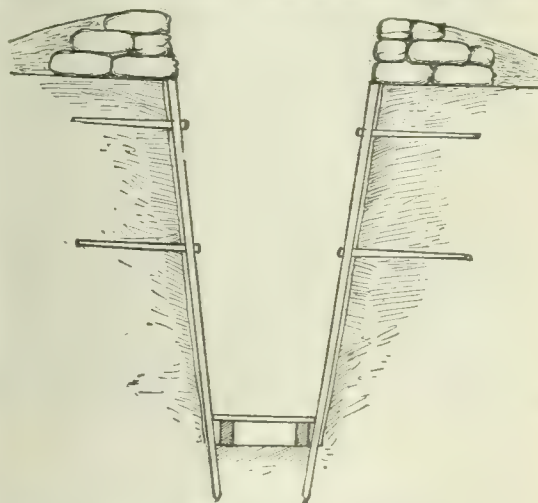


Fig. 10.—Diagrammatic view of a section of a communication trench dug in a part of the country where the subsoil water lies so low that only three layers of sandbags are required to secure protection from rifle fire for a man a little over six feet high. It has a boarded footway at the bottom, and the sides are lined with wire netting supported on spiked stakes. Although in perfect repair, its diameter at the bottom is only about two feet, and at the ground level about four feet.

soon as he sees reason to believe that his battalion is holding its own, but that casualties are occurring, he advances with his men and hunts for a spot where he can establish a regimental aid post.

If the area over which the attack is to be launched is well known because previously occupied or successfully reconnoitred by aeroplane or other observation, the front-line maps prepared for the use of the head quarters of the battalion going into action or occupying the front trenches may indicate to the medical officer where he is likely to find a good place for his regimental aid post. Otherwise he must trust to his own judgement and enterprise, selecting a dip in the ground, an enemy trench, a mine crater, a large shell hole, anything that will serve to protect his wounded from direct fire; in any case it is, if possible, near a road. He starts as soon as possible, not only because his services are needed, but also because the enemy, as soon as the attack has been launched, is likely to try and cut off the arrival of supporting troops by a curtain of shell fire.

His regimental aid-post having been established, and any patients that had been brought to it having been duly treated, the M.O. probably goes to see cases which his orderlies have found, but have not been able to move, or to which his attention is otherwise attracted. For these he does what he can, and if they cannot be moved to the regimental aid-post on account of their condition or the heaviness of the fighting, he tries to collect them into groups, so that they can be found again easily and moved later on. If the area over which his battalion has been fighting is extensive, he perhaps leaves an orderly in charge of the larger groups. The whole of this work is highly dangerous, since, apart from being done under rifle fire, the artillery fire intended to prevent the arrival of supporting troops often affects the neighbourhood in which the M.O. and his men are necessarily working.

Of the men who are not so seriously wounded as to be unable to walk, a good many probably find their way straight to the rear after applying their own field dressings or getting them applied by a comrade. Others make their way to the regimental aid post, and there they remain with the stretcher cases until their wounds have been dressed and the firing slackens sufficiently to enable them to make their way to the rear.

The stretcher cases remain until ambulances come up to fetch them, and unless the fighting is very heavy this process of evacuation will begin very shortly after the action itself; otherwise it is likely to be deferred until nightfall, when in any case a search will be made of the area over which the battalion has been fighting.

FIELD AMBULANCES.

The medical unit lying next behind a regimental aid post is one of those whose functions, though not necessarily their organization, have been considerably augmented or otherwise varied since the war began, in accordance with local requirements.

Originally its main duty was to relieve of their sick and wounded the regimental aid posts, helping them also to clear the field at nightfall or whenever there was a pause in the battle, and treating the cases until it was possible to send them to treatment centres well away from the front. It had to serve in this way simultaneously three or four battalions, all presumed to be in action on an extended front, and the better to fit it for this work a field ambulance was made divisible into three sections, each capable of acting independently, and each again divisible into a stretcher-bearer subdivision for collecting the wounded and a tent subdivision for treatment of the patients.

In several of the localities in which the British army has been fighting during the last three years field ambulances have, no doubt, been working on this plan, but in France the conditions have necessitated a modification of their work and also to some extent of their constitution.

Each remains divisible as before, and each still possesses ten vehicles for the conveyance of wounded, but seven of these are now motor ambulance cars, replacing seven horse-drawn ambulance wagons, and of the nine original medical officers one has been withdrawn. Furthermore, though every A.D.M.S. (senior officer of a division) still has three field ambulances under his direct command for the work of his division, and each of these retains its capacity to work as an independent unit, he sometimes combines forces with the A.D.M.S. of another division, or the field ambulances of all the divisions of an army corps are in effect massed.

The duties they collectively perform are now practically as follows:

1. To collect the sick and wounded from battalions, whether these be actually fighting, serving as supports, or temporarily resting out of the line.

2. To decide what cases must be evacuated, and what shall be treated at the front.

3. To provide permanent treatment for those who fail to pass through the filter thus established, and for the rest temporary treatment pending evacuation.

4. To pursue a like course in respect of local sick, that is to say, cases of illness or injury arising amongst the large number of men who never take part in the actual fighting, but whose presence just in the rear of the fighting line is essential to military operations.

5. To provide for the cleansing at frequent intervals of the persons of the men, the ridding of their clothes from vermin, and their disinfection when epidemic disease is in question.

6. To fill any gaps in the medical establishments of regiments, and to train medical officers and men for this work by sending them for a time to the battalions to see how regimental work is done.

7. To provide temporary assistance when needed to casualty clearing stations

belonging to the army of which the divisional field ambulances form part.

8. To establish advanced operating stations for immediate emergency operations, such as those required in cases of abdominal wounds.

9. To supplement the sanitary work of battalion medical officers when the battalions concerned are located in places which are out of the fighting line but not in direct charge of the sanitary staffs of the army of which the battalions form part.

10. To do for divisions and corps any work for which provision has not yet been made by the army, and which requires for its performance the kind of scientific knowledge medical officers commonly possess.

It may be said, in short, of the British armies in France that their field ambulances are the medical *bonne à tout faire* of the front.

No single field ambulance ever undertakes simultaneously all the duties mentioned, and the way in which they are allocated varies; for the environment of the divisions are not identical, and the senior medical officer of each of the armies and corps on the Western front (subject to orders from a higher authority) exercises his discretion as to the fashion in which he provides for the aggregate medical requirements of the troops in his charge. The experiences of field ambulance medical officers are therefore liable to differ, more especially if the period over which they are compared is relatively short. Commonly, whatever duties have to be performed are taken in turn by each field ambulance available, the period for which it remains employed thereon varying according to circumstances.

If a division is engaged in an active part of the line its evacuation work is usually sufficient to occupy the attention of all its field ambulances, and the same is true of



FIG. 11.—Entrance to a advanced dressing station in the cellar of a partly ruined house.

those of a corps when this is taking part in an advance or definite battle. In such cases the other duties are assigned to the ambulances of reserve or other divisions.

In trench warfare each division engaged generally makes its own arrangements for evacuation, the ambulances belonging to it sometimes acting as independent units, sometimes pooling their resources.

THE ADVANCED DRESSING STATION.

A section of the officers and men available is pushed up to form an advanced dressing station at some place within easy reach of the regimental aid posts of the battalions in action. They choose a place on or close to a road, so that the patients brought down from the battalion aid posts can be sent back rapidly from the advanced dressing station in wheeled vehicles to the place where the field ambulance head quarters or main dressing station has been established.

The advanced dressing station is always exposed to artillery fire, and though sometimes the crypt or cellar of a still standing but more or less wrecked building, such as a church or large school, may be available (Fig. 11) its habitation is, as a rule, merely an enlarged edition of a regimental aid post. (Figs. 12 and 13.) Its equipment and organization likewise resemble that of a regimental aid post, but is larger, because an advanced dressing station is rarely in touch with less than four regimental aid posts. To these it sends, as often as required, sufficient stretcher bearers to clear them of waiting cases, and if any considerable number of men have been left in the trenches till nightfall, it helps to remove them, and retains them till they are fit to be sent further towards the rear.

The way in which it brings down its patients varies in different parts of the line and according to the amount of fighting in progress. Sometimes patients are hand-carried all the way down through a winding communication trench a mile or more long. Sometimes they are carried straight across country, though the latter is possible only at night or when the ground traversed is dead ground—that is, an area which cannot be reached by rifle fire, and not too much hampered by wire entanglements. There are also a few places in which the trenches have an overhead tram-rail, and the wounded men can be transported on a special ambulance trolley suspended from it (Fig. 14), and many areas are provided with tram-lines along which run for the greater part of the distance to be traversed small lorries capable of carrying two or four patients. There are others at which it is possible for the advanced dressing station to clear some at least of its battalion aid posts by sending up a horse ambulance. The means most commonly employed, however, is a wheeled carrier, of which several types are shown in Figs. 15 and 16.

Once arrived at the advanced dressing station the patients are rested, fed and dressed, if necessary, and otherwise prepared to continue their journey, which in most cases will commence as soon as ambulance cars or wagons arrive from the field ambulance head quarters or main dressing station to fetch them.

Advanced Operating Station.

Commonly it is only by night that an advanced dressing station can clear the regimental aid posts with which it is in touch. In the case of an abdominal wound, however, considerations of risk from rifle and shell fire are set aside both at the regimental aid post and the advanced dressing station, and the patient is got down forthwith and sent to the rear in a special ambulance car, kept, if possible, for this purpose in a dug-out near the advanced dressing station, or summoned from the main dressing station or ambulance head quarters by telephone or messenger. The patient goes not to the main dressing station, but either straight to a casualty clearing station or to a field ambulance unit specially arranged for the instant performance of laparotomies, etc. Such a unit is called a corps or advanced operating station, and is established whenever the placing of a casualty clearing station within suitable distance of the part of the line concerned is likely to be delayed.

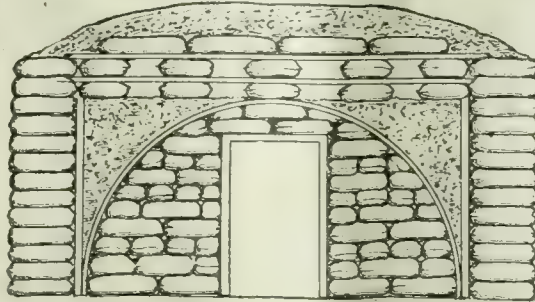


FIG. 12.—Diagram, drawn from memory, of the entrance end of a small "tube" above-ground advanced dressing station. It is built of curved sheets of corrugated steel surrounded by sandbags and earth, etc.

Varying Conditions.

The ambulance vehicles serving the advanced dressing stations almost always have to traverse roads exposed to shell fire, if not to rifle fire, and efforts are made in various ways to protect their occupants from further injury. When only trench warfare operations are in progress most of the work is done under cover of nightfall, though the depth of the darkness may be disclosed from time to time by the flashing of guns, bursting of shells, and the soaring of rockets. The ambulance transport which comes up to fetch the patients approaches and leaves the advanced dressing stations, as it were, stealthily; and, after anything like a quiet day, two or three trips at most may complete the whole evacuation.

When, however, the division or corps is taking part in an advance or definite battle the reverse is the case. Hour after hour and sometimes for weeks there is a constant inflow of stretcher-borne men, and ambulance vehicles continually arrive to carry away the patients who have received the attention they require; on these occasions the only precautions taken are to keep at a sufficient distance apart so that no single shell shall have the chance of destroying two cars, and to travel sufficiently slowly to avoid jolting the injured more than is inevitable on the shell-pitted roads. It is commonly not until the battle has commenced that an advanced dressing station can take up its position, though the site may have been chosen in advance. As it must always be on a road, so as to ensure rapid evacuation yet never run the risk of impeding the

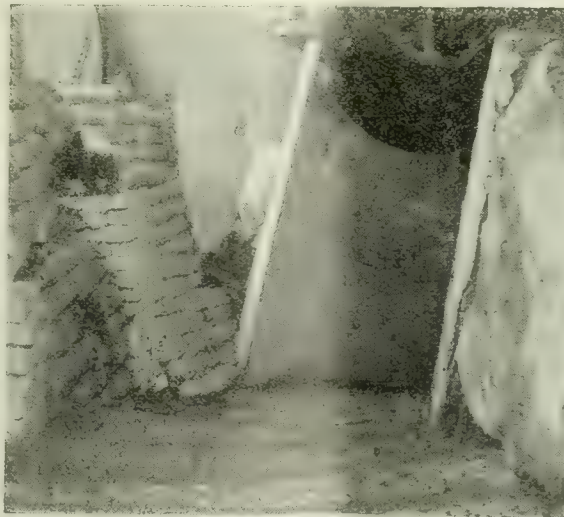


FIG. 13.—Leading down to a dressing station 30 ft. under the surface.

military work in progress, the choice is often very limited. More likely than not it will be in a deserted trench or enemy dug out, but it is always contrived so that the incoming and outgoing streams of wounded shall not meet, and that the more serious cases can be dressed separately from those that are slight. Provision is also made for cases which may have to be kept for some little time on account of their condition, and for protecting them from gas attacks.

Divisional Collecting Post.

The majority of cases with which it deals are "lyers"—that is to say, men who reach it on stretchers. The

"walkers"—that is to say, men who can find their own way to the rear—are usually shepherded off by patrols in advance of the dressing station to another field ambulance station known as the divisional collecting post, established when a big advance is in progress.

If the area over which the corps is fighting is wide, it usually establishes two advanced dressing stations and two divisional collecting posts in different parts of the field. The field ambulance medical officers at its disposition may be sufficient for this purpose, but in respect of stretcher-bearers it is always short-handed if the fighting be really heavy, consequently on these occasions its own stretcher-bearers are reinforced from various sources.

If the troops in action are very successful and make a prolonged advance, an advanced dressing station may no sooner have established itself to its own satisfaction than it has to make a fresh move to get into close touch with the regimental aid posts.

It will be obvious from what has been said that work in and around advanced dressing stations, whether in trench warfare or in a definite battle, is attended by considerable risk. The fact that it is often exceedingly laborious may not be so apparent. If the fighting is at all heavy, the work as a whole continues without pause for many hours; and while the carriage of a full-grown man over a mile or so of rough ground is never a light task, it becomes absolutely exhausting when at each step the bearers have to drag their feet out of thick mud, and when their clothes, like those of the patient, are soaked with rain.

THE MAIN DRESSING STATION.

The main dressing station is formed by the headquarters of the field ambulance or group of field ambulances responsible for the maintenance of the advanced dressing stations. As it is liable to have to retain the sick and wounded sent down to it for some little time, it is placed sufficiently far behind the advanced dressing station to be out of range of any but heavy artillery fire.

The exact nature of its work depends a good deal on local circumstances, including the character of the fighting in progress. Sometimes it confines itself mainly to administrative work—that is to say, to classifying the cases that arrive, and distributing them for treatment according to their requirements among subsections formed by itself or other units with which it is connected; sometimes it combines this work with actual treatment. However this may be, it always arranges to rest, dry,

warm, and feed the patients that reach it, and for giving them any surgical attention they need before they can safely be sent on elsewhere. It is here, too, that all cases of wounds are examined to see that antitetanus serum has been given.

The first step is necessary because, despite the greatest possible care, the transport of a wounded man from the place where he has fallen to a place as far back as a field ambulance main dressing station must always be very trying, even if his wound be not very severe, and even if his clothes are not, as is commonly the case, soaked with rain and mud. The second step is necessary because in an advance the casualties are certain to be numbered by hundreds, and while many may not need to be sent away from the real front, operations and a period of real rest may be necessary in the cases of many others before their evacuation is possible.

Cases which require evacuation are sent to a railhead hospital or casualty clearing station, and whether their detention at a main dressing station be momentary or prolonged depends—assuming transport to be available—partly on their condition and partly on the distance to be traversed to reach a railhead hospital.

For other cases it provides sometimes by furnishing treatment itself, sometimes by sending the cases on to field ambulances or other medical units set aside for the purpose of special treatment. In every corps area, for instance, if not in every divisional area, provision is made by the field ambulances for the treatment of cases of trifling sickness and injury, or of men who are temporarily exhausted or footsore. Special arrangements are also made for the treatment, without evacuation, of more or less easily cured skin diseases, such as scabies, as also for the

isolation of cases of zymotic disorder and of contacts therewith. Every army, too, has at its service centres which deal with eye cases, dental disorders, and neuroses.

The object throughout is to avoid the unnecessary evacuation of cases that can be treated at the front, for a soldier, once evacuated, is likely, however quick his recovery, to be lost to his unit for a considerable time, since

any patient sent further to the rear than one of the treatment centres mentioned above ceases for the time being to belong to the army in which he had previously been serving, and cannot be restored to it except by passage through a regulated channel. Every patient evacuated from a field ambulance has what is known as a field medical card substituted for his regimental label. It contains particulars as to his name and army status, a



FIG. 14.—The overhead trolley for bringing the wounded through the trenches.



FIG. 15.—A collection of wheeled stretchers and a motor ambulance.

diagnosis of his condition, and details as to whether he has received the requisite prophylactic doses of tetanus antitoxin, and any other information deemed likely to be useful to those who will subsequently treat him.

The accommodation provided for a field ambulance main dressing station varies according to the amount of work that it has to undertake, and may be anything from a village school to a collection of tents. Such accommodation as it possesses is arranged in much the same fashion as at an advanced dressing station, but everything is on a larger scale and the equipment more elaborate. It is thus in a position to undertake formal operations, though it usually limits itself to those essential to a patient's safe evacuation.

The heaviness of the work varies in proportion to that of the units further up the line. If the latter have been hard pressed, many of the cases will reach the field ambulance untouched except for their field dressings, and, even if nothing else be required, special splints may have to be substituted for improvised appliances. On such occasions each corps commonly provides itself with two main dressing stations lying close together, but working independently, one dealing with stretcher cases, the other with "walkers." The patients of the former reach it in ambulance wagons or cars, while those of the latter commonly arrive in char-à-bancs which have been sent up to meet them as far along the road towards the scene of the fighting as these vehicles can be got. This varies, for when a big action is in progress the traffic on all available roads is very heavy, a constant stream of supplies of all kinds being essential to continued fighting.

OTHER FRONT LINE WORK.

When the work of collecting and evacuating the sick and wounded is sufficient to absorb all the personnel of the field ambulances of a division or corps, any other work which they have previously been performing is assigned to those of divisions not in action, or it is provided for in some other way. The general nature of its work is indicated in the list given of the duties commonly performed by field ambulances. When bathing establishments are run as corps or army units, and sometimes even when they are run by single divisions, the arrangements always include the provision of fresh underclothing for every man who has taken a bath.

As commonly not more than ten days elapse between the bathing parades of a battalion most British soldiers change their body linen with comparative frequency, and this counts for a good deal, not only in securing their comfort but in preserving their health. The bathing parades also afford opportunities for picking out men suffering from any form of skin complaint.

Sanitation.

The general sanitation of each army is under the supervision of an expert attached to its Director of Medical Services, while in each division there is a special sanitary section, the officer commanding it acting as sanitary expert, and advising on sanitary matters connected with the division and its component battalions and other units. Each of these sanitary sections has a small staff of non-commissioned officers and men and plenty of equipment, such as disinfecting machines, which accompany the division wherever it goes, while incinerators and the like are rapidly constructed the moment it settles down.

Battalion medical officers draw their supplies of drugs, dressings, etc., from the field ambulances connected with them, and these in their turn from the advanced dépôts of medical stores, one or more of which is to be found in every army area.

MOTOR AMBULANCE CONVOYS.

The field ambulances are responsible for the transport of sick and wounded from the advanced dressing stations to the main dressing stations, and also, but only when working in reserve or resting troop areas, for the conveyance of sick to the casualty clearing stations. The vehicles at their disposal suffice for these purposes, though it may be necessary to supplement them. Should the fighting be heavy and the casualties numerous, they are not intended to transport patients from the main dressing stations to the casualty clearing stations. This is the work of the medical transport units, called motor ambulance convoys, one of which is allotted to every army corps (Fig. 17). It also carries to the ambulance trains the evacuable patients of any advanced hospitals which do not lie immediately alongside a railway line. They are also employed, should pressure on the work of the ambulance trains be severe, in evacuating cases from the casualty clearing stations to the base hospitals by road, and sometimes to transport individual patients whose early arrival at a base is thought advisable, and who can be got there more promptly by road than if detained for the arrival of a hospital train.

Each convoy consists of fifty vehicles, usually divided into two large and one small section. The latter is commonly employed solely for train embarkation, and is then attached to one of the group of casualty clearing stations, and works under the orders of its commanding officer. The other two sections are each under the control of a motor convoy medical officer, who is personally responsible for the safe delivery of all patients loaded on the ambulance cars in his charge. Whenever possible he accompanies his section personally, not only because his attention may be required by a patient, but also in order to regulate the travelling pace. Within limits it is desirable that convoys should get over the ground quickly,



FIG. 16.—A wheeled stretcher, pneumatic tyres.



FIG. 17.—Motor ambulance convoy parked in a village.

and when roads are crowded by ammunition and general supply lorries, all anxious to complete their duties without loss of time, the presence of an officer with the ambulance convoy section ensures it a freer passage than it might otherwise obtain. On the other hand, there may be certain patients for whom a slow travelling pace is desirable throughout, unless the surface of the roads prove excellent—a matter about which there is always uncertainty.

Each motor ambulance car can carry six or eight patients sitting up, or four lying down. To neutralize the tendency to shock exhibited by so many wounded men the vehicles are now generally heated automatically by the exhausts (Fig. 18), and are also provided with hot-water bottles.

The motor ambulance convoys are an outcome of the circumstances of the war in France, and an example of the ingenuity of the Royal Army Medical Corps in promptly adapting its arrangements to the needs from time to time arising. Before the war the Royal Army Medical Corps, in common with the medical services of the armies of all other countries, had to depend for the transport of casualties between advanced formations such as field ambulances, and rearward units such as railroad hospitals, on the use of supply wagons going back empty to the rear. It was the only arrangement feasible at the time, and though admittedly far from ideal, was suitable enough for the small wars in more or less uncivilized

countries to which Great Britain had been accustomed, and not involving any very large number of casualties.

The experience, however, of a few engagements at the beginning of the war showed the Director of Medical Services of the original Expeditionary Force (Sir T.

Woodhouse) that the means in question would not suffice for his needs, while at the same time he found that, in the removal of patients capable of sitting up, ordinary touring cars, of which offers were made to him by various French and other residents in Paris, could be of real assistance. After some of these had been fitted with bodies very like those now used in all motor ambulance work, and others had been sent out from home, he arranged two experimental convoys, which began to work between the Aisne and Paris in the first days of October, 1914. This experiment having proved that motor ambulances could be used with safety for long, rapid transport and over cobbled roads, and not only for short journeys in cities and suburbs, as had previously been supposed, the Director-General of Medical Services (Sir Arthur Sloggett) on his

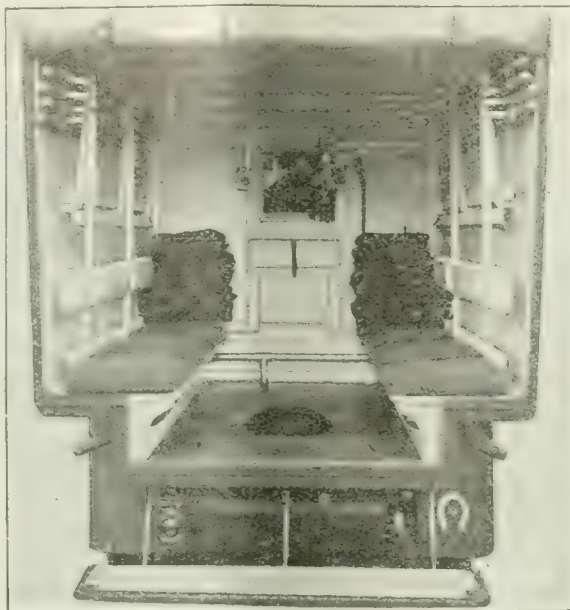


FIG. 18.—Interior of ambulance car heated by hot-air pipe from exhaust.

arrival in France at the end of October decided to adopt motor ambulance convoys as a definite component of the arrangements of the Royal Army Medical Corps in France. It was a decision of whose wisdom convincing evidence was quickly forthcoming.

(To be continued.)

TREATMENT OF TUBERCULOSIS IN TYRONE.

At a meeting of the co. Tyrone Local Medical Committee held on July 21st, the chairman, Dr. E. C. Thompson, D.L., explained his attitude since his election on the County Insurance Committee, and requested the support of the co. Tyrone doctors. He commented adversely on the general tuberculosis arrangements in Tyrone, and expressed a strong opinion that the present expenditure was largely wasteful, and would continue so until the underlying causes producing the disease were tackled in earnest, and properly and scientifically dealt with. Dr. O'Keefe, the tuberculosis medical officer, had been doing his best endeavouring to administer and put life into a system and procedure which could not be dealt with until the foundations of the whole diseased structure were attacked and demolished. It was worse than useless to spend money in attempting to get rid of a growth which would remain and flourish until the roots were dug up. The soil these roots flourished on was prepared by the bad housing, improper and insufficient food, unsuitable marriages amongst members of diseased families, improperly constructed, ill-ventilated and defective schools, the want of medical inspection of school children, over-indulgence in strong drink, and, most prevalent and deadly of all, the non-provision of suitable buildings in which to house persons suffering from the last stages of pulmonary tuberculosis. Until the real reasons were grasped and dealt with the money and efforts spent were wasteful, dangerous, and deceptive. A professional representative on a committee dealing with such a difficult subject, of which the public knew little or nothing, would fail in his duty if he did not try and advise the committee to adopt practical and sane methods, both of prevention and cure. Great expense was being incurred by the institution of new tuberculosis dispensaries which were entirely unnecessary. The tuberculosis medical officer spent a great part of his time driving over the country, and there was a huge outlay on the rent of the new dispensaries, unnecessary nurses, drugs, etc. It would be far better to work

through the dispensary doctors; without their active help all the efforts now made would be largely useless. No man could possibly get into touch with the whole population of Tyrone. The dispensary doctors knew almost intimately every family in their respective districts, and it would be easy for them to hunt up cases of tuberculosis, and, when required in doubtful cases, call in the tuberculosis medical officer. Dr. Patrick, Dr. Lyle, Dr. Bradley, and Dr. Murnaghan having expressed views in substantial agreement with those of the chairman, the following resolutions were unanimously passed:

That we recommend the Tyrone County Council to take the following matters into consideration: (1) Notification of tuberculosis (early cases) and isolation of advanced cases. (2) Improvement of schools and proper provision for feeding of children; medical inspection of schools and children. (3) Proper housing of the working classes, and improvement of the houses of the middle farming class. (4) The Act to be administered through the dispensary doctors and the other medical attendants, using the present dispensary houses and doctors' surgeries for the attendance of patients; notification of cases through dispensary doctors and other medical attendants. (5) Slaughter of infected cattle.

That this committee is of opinion that if patients are to have sanatorium benefit the Tyrone Sanatorium should be opened as soon as possible.

That we endorse the public statements made by Dr. Thompson on the tuberculosis question, and are of the opinion that he deserves the gratitude of the public for his efforts to improve the procedure under the scheme; that it is quite clear that Dr. Thompson's criticisms have been directed against the inefficiency of the tuberculosis portion of the scheme, and not against any individual.

THE object of the Association for the Study of Internal Secretions, founded at Detroit in 1916, is to co-ordinate the work of experimenters in all parts of the world who are especially interested in the study of internal secretions, the ductless glands, and organotherapy. It publishes monthly a small periodical entitled *The Link*, containing information and correspondence; a quarterly bulletin entitled *Endocrinology* is also issued. The Secretary is Dr. Henry R. Harrower, Glendale, California, U.S.A.

British Medical Journal.

SATURDAY, AUGUST 18TH, 1917.

THE SCHOOLS AND THEIR MEDICAL SERVICE.

THE President of the Board of Education, in the lucid speech in which he introduced the new Education Bill into the House of Commons on August 10th, defined its main aim to be "to secure for every boy and girl an elementary school life, up to the age of 14 years, which shall be unimpeded by the competing claims of industry." It does not deal with university, professional, or technical education, but it is a sign of the trend of expert opinion that it proposes to give to the continuation schools for young persons from 16 to 18 years of age a "vocational bias."

Mr. Fisher was careful to make plain that by school life was to be understood a balanced training of mind and body, indeed his insistence all through on the obligation on the country to safeguard the health and improve the physical standard as well as to inform and develop the intellect of children growing in mind and body, was the most striking and in principle the most novel point of his speech. The evidence upon which he rested his case was drawn largely from the facts ascertained by the school medical service, the establishment of which in 1907 Mr. Fisher described as "one of the great events in our social history." Its work has shown how much the value of our educational system is impaired by the low physical conditions of a vast number of children, and how imperative is the necessity of raising the general standard of physical health among the children of the poor. The evil effects of premature or excessive employment have been traced by the school medical service in diminished height and weight, in curvature of the spine, in cardiac affections, and in deficiency of the senses, especially the sense of vision, and in the bad dentition of our working classes. The bill provides for the abolition of the half-time system under which some 30,000 children in Lancashire and Yorkshire between the ages of 12 and 14 are permitted to divide their working day between the factory and the school, and for a stricter regulation of the employment of school children out of school hours. They may now be employed for three hours before the school opens, and for some hours after it closes. The bill proposes to make universal the provision, already contained in by-laws of some large municipalities, that no child under 12 shall be employed for profit. It proposes to allow a child between 12 and 14 to be employed between 6 a.m. and 8 p.m. on Saturdays and during school holidays, but, recognizing that this concession may be abused, to give power to the local education authority, if satisfied, on the report of the school medical officer or otherwise, that the child is being employed in such a way as to be prejudicial to health or education, to forbid or regulate the employment; it would have power also to decide to continue the education in the elementary schools either of the boys or the girls in the area, or of boys or girls following particular occupations, up to the age of 15.

The intention is that the normal school age shall be 5 to 14 without any exceptions between those ages. To meet the case of the earlier ages it is proposed to

encourage the establishment of nursery schools for children under 5, and to empower local education authorities to raise the age at which the normal instruction in elementary schools shall begin to 6. We believe this raising of the age of commencement of normal instruction to be an important move in the right direction. The enormous amount a child has to learn during the first five or six years of its life is not always realized; it has to learn to recognize external objects and their qualities as well as how to use its own limbs—lessons best learnt by playing with other children—and Mr. Fisher recognizes that wherever the home is good the child should be encouraged to stay with the mother. It has also to learn its native tongue. During these years the brain and nervous system are growing rapidly, new channels for the outgo of nervous energy are being formed, and the several paths established linked up. As Mr. Fisher said, at 4 or 5 years of age sleep and play are far more important than letters, and it may be assumed that this will be the governing principle in the conduct of nursery schools. Attendance at such schools would be voluntary, but they would be aided from the rates, and it is intended that they should often be open-air schools.

Another novel feature of the bill is a proposal to require any young person no longer under obligation to attend a public elementary school to attend a special continuation school for a period of 320 hours in a year, or the equivalent of eight hours a week for forty weeks. This compulsory provision would not apply to a young person who had received suitable full-time instruction up to the age of 16, or had passed the matriculation examination of a university of the United Kingdom, or an equivalent examination, or was shown to be unsuitable or deficient for part-time instruction. These continuation schools would be provided either by the local education authority, or under its direction, as, for instance, by manufacturers in their works. The continuation school hours would be by day, and not on a Sunday or holiday, so that young persons attending would be liberated from industrial toil for three half-days a week during forty weeks, two half-days being spent in the continuation school and one as a half-holiday. This proposal is likely to excite some opposition on general industrial grounds, although Mr. Fisher recognizes that different types of schools will be required in different areas, and in particular the rural areas, but we should have liked him to have defined the vocational bias he desires such schools to have more clearly, in relation to agriculture in particular. The direction in which he is moving was shown by the expression of his hope that boys and girls attending these continuation schools would more readily join the scouts or girl guides or some other associations carrying with them intellectual and social advantages. It is a great gain to have a Minister of Education declaring that it is important to secure in such schools a physical minimum for girls and boys. He contrasted this scheme with any form of military conscription, and urged that it was not open to the objections to which any such system is necessarily exposed.

Towards the conclusion of his speech he insisted again on the necessity of taking advantage of this opportunity to assist physical education in every possible way. Physical training, already a part of the work of elementary schools, should be extended to the continuation school, and should be given in every one of them. Further, the bill would empower local education authorities to supply and maintain playing fields, school baths or school game centres, and equipment for physical training. It would also

extend their powers and duties with regard to medical inspection in elementary and secondary schools and in continuation schools.

Sir Clifford Allbutt said very truly and shrewdly a little time ago that the British boy's bent was to do things, not to be talked to about them, and the bent of the British artisan when a new idea in his own line was presented to him to go to his bench and see whether it would work; both love to look on the concrete side and to acquire dexterity. Most of the things the British boy wants to do are out-of-door things, and we may be glad that it is so, and that the Minister recognizes that any sound scheme of education must have regard to the cultivation of the body as well as of the mind. It is a very old story, this, of the sound mind in the sound body. That it is now beginning to be wisely applied to the industrial classes, as it has long been applied in the great public schools and universities, we owe to the labours of countless pioneers during the last three or four generations, brought to fruition through the labours of medical men and women in and out of the school medical service, inspired and directed by the medical officer to the Board of Education. Sir George Newman had a difficult task to persuade not only the public but those of his own specialized department. He is to be congratulated on the results so far obtained; they are very notable, and contain promise of even better things.

ANCIENT WALES.

It is no exaggeration to say that a paper which has just appeared in the *Transactions* of the Honourable Society of Cymmrodorion¹ is the beginning of a new chapter in our knowledge of ancient Wales. Its author, Professor H. J. Fleure, of University College, Aberystwyth, has invented and applied what may be described as a new method of anthropological inquiry. It is not a new idea to suppose that there may be hidden away in upland valleys and moorland recesses pure samples of the races and people who have invaded Britain and settled in it; that is an old idea. Professor Fleure's merit lies in the fact that he has put this basal idea to the test of experiment. He selected as the scene of his inquiry those Welsh counties which lie within reach of Aberystwyth. For many years before the war he and Mr. T. C. James spent every spare day they could steal from their duties in visiting the sequestered nooks of Wales and in measuring and charting the anthropological characters of their inhabitants. Their aim was to prepare an anthropological map of rural Wales. By the ingenious use of a series of hieroglyphic signs they were able to represent on their maps the physical characteristics of the population in each river valley, coastal area, and moorland expanse—the first real anthropological survey ever carried out.

Having prepared such a map, Professor Fleure commenced to investigate and interpret the facts thus brought to light. He found, for example, that along the valley of the Teify, which forms the boundary of Cardiganshire on the south-east, and also in the valleys of Denbigh and Glamorgan, the prevailing type—short in stature, long-headed, dark-haired—was similar in characters to the people who buried in long barrows, the prevailing British type of the neolithic period. In the moorland district of Pliulimmon, in the north-eastern part of Cardiganshire, he found a nest of people whose characters are believed to be reminiscent of the British of the

paleolithic period. It was in the coastal areas that Professor Fleure made his most important discovery—the existence of a dark-haired, round-headed type, a characteristic Welsh type, which he traces to Brittany, and which he supposes may be ultimately followed to the Mediterranean.

The results of these inquiries, so far as they relate to the various anthropological type of Welshmen, are given in full in a recent number of the *Journal* of the Royal Anthropological Institute.² In his paper to the Cymmrodorion Professor Fleure marshals the evidence derived from other lines of inquiry—from a survey of the distribution of ancient megalithic structures, stone implements, bronze instruments, and ancient gold ornaments, folk-tales and traditions, the distribution of Welsh dialects, and of place-names—to see what light they would throw on the time and manner in which the various racial types have come to Wales. As yet his deductions are tentative, but it is very clear that as those methods are pursued and perfected, the time will come when problems which now seem beyond our powers will be fully solved. There can be no doubt that those who have sought to unravel the ancient history of our country have kept their eyes too fixedly on the eastern and southern coasts. All great racial movements were pictured as coming from the east, with a crushing of the ancient population towards the western seaboard. Irish anthropologists have gone to the opposite extreme; to them there was only one route—the sea route leading from Spain and Brittany through the Irish Sea to Scandinavia. For Professor Fleure this is the “west coast route,” and as he passes in review the various lines of evidence the student cannot fail to agree with him that it was by this route that most of the ancient races and ancient civilizations and languages reached Wales. The recognition of two ancient portals of access to Great Britain and Ireland, portals of equal degrees of importance, gives a clue to many circumstances we could not explain before, and perhaps the greatest service Professor Fleure has now rendered is the placing of the west route in its right perspective as a portal of access to Britain.

TERRITORIAL AND TEMPORARY OFFICERS R.A.M.C.

We understand that Sir Alfred Keogh has in contemplation the establishment in the office of the Director-General in England of a branch to deal with questions directly affecting territorial and temporary medical officers. It will be able to collect and collate information on the many problems raised by the incorporation in the Army Medical Service of so large a number of civilian practitioners. The fact that they now constitute some eleven-twelfths of the service is in itself sufficient to justify the new departure. The country has to face the fact that in every direction the drain upon its man-power has become severe, and not least on the medical man-power. The branch will also be in a position to advise on the selection of officers for particular types of work for which they are specially qualified by character and experience. It is, we understand, intended that the staff of the branch shall include a territorial and a temporary officer having recent experience of war conditions. We believe that this announcement will cause a widespread feeling of satisfaction. Territorial medical officers, and the officers of the Special Reserve, as well as a large proportion of officers holding temporary commissions R.A.M.C., are volunteers who have given the best possible proof of their

¹ *Ancient Wales—Anthropological Evidence.* By H. J. Fleure, D.Sc., Professor of the University College of Wales, Aberystwyth. *Transactions of the Honourable Society of Cymmrodorion.* Session 1915-16, pp. 75-164.

² *Geographical Distribution of Anthropological Types in Wales.* By H. J. Fleure and T. C. James. *Journ. Roy. Anthropol. Institute.* 1916, vol. xlv, p. 35.

patriotism and of loyalty to their profession. There has been a feeling among many of them that, to use a current phrase, they were nobody's children, and that there was no one to whom they could carry their difficulties and their suggestions. If, as we hope and anticipate, the new branch supplies this want, it will be able to do not a little for the contentment of the services, and indirectly, therefore, for the welfare of the country and the successful prosecution of the war.

ARMY MEDICAL ECONOMIES.

MR. MACPHERSON, in the course of his reply in the discussion on the Army Medical Vote, reported elsewhere in this issue, said that the War Office was doing everything possible to meet the civilian needs, and that the Central Medical War Committee, a body appointed to consider the claims of the military and civil population, had done its work very well. The primary duty of the War Office was to respond to the demands of the commands in the various theatres of war for medical officers to serve the needs of the fighting men at the front. He admitted that there were many hard cases, such as those mentioned by Sir Garrod Thomas, where the civil population had been hard put to it to meet civilian needs, and he repeated the statement that the Secretary of State for War had determined to send a committee of distinguished men to France—which is the main theatre of war—to ascertain whether there is any misuse of the services of medical men serving there. It is hoped that the names of the members of the committee will be announced in the course of a few days, but it is to be understood that, as at present arranged, the instructions to the committee will be to advise whether medical establishments in France can be reduced without diminishing efficiency. As will be seen by the report published in the SUPPLEMENT, p. 48, the joint meeting of the Committee of Reference of the Royal Colleges in England and the Central Medical War Committee, on August 15th, expressed the desire that the inquiry should be extended to include the working of the service in this country.

A MAIDEN SUCCESS.

OUR Parliamentary Correspondent writes that in an experience of fifteen years he has never known a maiden speech which so quietly and impressively engaged the attention of the House of Commons as that of Sir Watson Cheyne on the Army Medical Vote this week. The assembly, it is true, was small, as members of Parliament are not wildly enthusiastic over the agitation on behalf of bonesetters, but it could easily have been critical, or it might in the general circumstances of fatigue have shown itself weary. Instead, Sir Watson held it under a spell. He was in the naval uniform of his rank as surgeon-general with consultative duties for the navy, and he spoke from a seat immediately behind the Treasury bench. His manner was charming. He did not patronize, nor did he apologize—except once when he found himself about to quote something that was amusing, and brought an instant laugh by an expression of regret that he should so commit himself where every one had the reputation of being so serious. Somebody thought he said "dull," but that was quite a mistake. In a very short time those around him lent themselves to the suggestion of a clinic, and it was symptomatic that the only interruption was the somewhat plaintive appeal from a member below the gangway that Sir Watson would speak louder. A fear on his part (after a lucid little dissertation on the art of bone-setting) that he was drifting into a lecture on surgery, brought the cry of "Go on." This from a more than ordinarily jaded house in the middle of August was compliment indeed. But the most interesting moments were those when he was presenting to the imagination, dispassionately and coldly as a scientist, the risks that were run by those who submitted to a bonesetter with restricted

knowledge. Fortunately Mr. Hodge, who was so proud of his cure, had had the assurance from Sir Watson that Mr. Barker was a distinguished and successful operator, but it was a little awkward for the Labour Minister immediately below to hear the matter treated in this grim fashion. He heard how, after operations by some bonesetters, tuberculous disease had spread, and how after operations by others a local tumour had been distributed through the body. He heard how in consequence Sir Watson had more than once been obliged to amputate limbs of sufferers. Mr. Hodge with one hand upon his knee (presumably the knee) was a study during the story. And Sir Watson did not seem to know the effect he was producing.

CARE OF THE BLIND.

THE Departmental Committee on the Welfare of the Blind appointed in May, 1914, under the chairmanship of Mr. Hayes Fisher, M.P., has this week presented its report. It was instructed "to consider the present condition of the blind in the United Kingdom, and the means available for (a) their industrial or professional training, and (b) their assistance." The report recommends the establishment of a special Government department to secure central control, organization and assistance for existing voluntary agencies, and additional assistance for the blind. It recommends that the new department should be set up in the Local Government Board, but should form a part of the Ministry of Health whenever such a ministry is created. It advises that the department should be administered under the immediate guidance of an Advisory Committee of persons associated with the care of the blind, and that the chairman of this committee should be the Parliamentary Secretary of the office in which the new department is established. This Advisory Committee should consist of seven members, of which the vice-chairman and one member might be paid. All matters of policy should be referred to this committee and all executive functions exercised by the department in accordance with the recommendations of the Advisory Committee. The following uniform definition of blindness is recommended: "Blindness means too blind to perform work for which eyesight is essential." With regard to the causes of blindness, it is stated that ophthalmia neonatorum is the cause of 10 per cent., and it is recommended that uniform and more effectual notification of the disease and the immediate treatment of all cases should be secured. It is also recommended that the provision and wearing of goggles in dangerous occupations should be made more widely obligatory. A series of recommendations are made with regard to the elementary education of blind children and as to the professional and industrial training of blind persons. The committee finds that, except, perhaps, in the case of blind girls, the present accommodation for professional training appears to be adequate, and the accommodation for industrial training not materially deficient. At present in England many more persons receive industrial training than can be afterwards employed in the available workshops. It advises that some three thousand additional places are urgently required, the estimated cost being from £100 to £175 each. This, the only capital expenditure on which the new department should embark, would involve a sum of £500,000. The annual expenditure is estimated at approximately £250,000, which would apparently include an increase in the number and amount of pensions for the blind. The committee praises the arrangements for training provided at St. Dunstan's Hostel, and the work of the National Institute of the Blind to secure their welfare after leaving the hostel, but states that the institute is handicapped by want of funds. At St. Dunstan's the largest number of men learn cobbling; they can learn to sole and heel a pair of boots in six or seven months, and can afterwards make good earnings. The men who learnt cobbling were also taught mat-making as an alternative

occupation; basket-making, joinery, and shorthand writing were also taught, and the men who took up massage had been uniformly successful in passing the severe examinations of the Incorporated Society of Trained Masseurs; wherever possible, however, a man was returned to his original occupation. The report is signed by all the members, but reservations on various points of detail are made by several of them.

ECONOMY IN PRESCRIPTIONS.

We referred last week to the action of the General Medical Council in withdrawing from the *British Pharmacopoeia* a considerable number of galenical preparations containing sugar and glycerin. The committee appointed by the Home Office in 1914 to deal with the matter of economy in the use of drugs is issuing this week to every member of the medical profession a memorandum pointing out the urgency of strict economy in the medicinal use of glycerin and sugar, and preparations containing them. Since the issue by the same committee of a memorandum in January last the position has become more stringent. Glycerin for medicinal purposes is no longer being manufactured, so that the dependence is entirely upon existing stocks. These, it is believed, will be sufficient, if due economy is practised. The memorandum makes suggestions as to the use of substitutes for glycerin and sugar or syrup, prescribed as such, and for preparations formerly official but now non-official containing these substances, and points out the need for refraining as far as possible from using those drugs containing glycerin and sugar which remain official.

THE ROYAL SOCIETY OF MEDICINE.

THE annual report of the Royal Society of Medicine for the session 1916-17 shows that, like other similar bodies, it has suffered through the war; it has, however, on the whole, well maintained its position, both with regard to numbers and to finance. Sixty-eight fellows and four members were elected during the session, and the numbers now are respectively 2,824 and 739. The punctuality in the publication of papers in the *Proceedings* of the society has been impeded by the War Office censorship, but the value and bulk of the publication has not been diminished. On the resignation of the first editor, the council accepted the offer of Mr. J. Y. W. MacAlister, the secretary of the society, to act also as editor without any addition to his salary. He has now performed this self-imposed task for three years to the satisfaction of all, and has added to his labours by introducing notes on books. The meeting adopted by acclamation a cordial vote of congratulation and thanks to Mr. MacAlister on the completion of his thirty years' of service to the society, accompanied by an expression of an earnest hope that his health might permit him to continue his work for many years to come. The report stated that the special work carried on at the Marcus Beck Laboratory for the Medical Research Committee had been brought to a close early in the year, and that the several departments of the laboratory were thus again available for the private work of fellows. The report of the librarian stated that the number of readers during the year was 9,219 and the number of books borrowed 5,127. The number of books and pamphlets added during the year was 4,477; of these, 3,398 were presented, 126 new books as distinguished from periodicals were purchased, and 153 were received gratis for review in the *Proceedings*.

THREATENED SHORTAGE OF RUBBER OPERATING GLOVES.

THE attention of the British Medical Association has been called to the fact that, owing to the action of the Board of Trade in prohibiting the importation of rubber operating gloves, there is likely to be a serious shortage unless the restrictions are removed or diminished. It appears that

the majority of gloves used by surgeons in this country in the past have been imported from America. The demands of the medical services of the army and navy for gloves are now very large, and are being met, it would appear, mainly under special licences to import. It seems that manufacturers in this country have not been able to meet the demands of the army, which take precedence of those of the civil hospitals, so that the case of the latter is parlous. A memorandum has been addressed to the Board of Trade by the British Medical Association urging the issue of licences permitting the importation of supplies adequate to the needs of the civil community. We understand that the Board is prepared to make a concession.

HOSPITAL SHIPS.

We are able to confirm the announcement that, as the result of representations made by the Spanish Government in Berlin, London, and Paris, the German Government has agreed to a safe passage for hospital ships on condition that a Spanish naval officer is on board and guarantees that the vessel is used only for the transport of sick and wounded. The French and British Governments have agreed to the arrangement, and eleven Spanish naval officers, who will be posted to hospital ships under the agreement, left Madrid for French ports about a week ago. The guarantee to be given by the Spanish officers will not involve any departure from the invariable practice of British hospital ships, although the German Government has characteristically professed to believe the contrary.

Medical Notes in Parliament.

Army Medical Vote.

MANIPULATIVE TREATMENT.

THE Army Medical Vote, which was taken in the House of Commons on August 14th, gave Mr. Peto an opportunity of raising a debate on the subject of "manipulative treatment" of soldiers in the army. There was not a large attendance.

Mr. Peto, in the first instance, recapitulated the nature of the offer made by Mr. H. A. Barker and the objection taken by the War Office authorities to the employment of any unqualified practitioner. He next touched on the history of bonesetting, and said that for seventy years the medical profession had stopped its ears and been content to throw stones and injurious epithets at the very few manipulative surgeons. Coming to the immediate controversy, Mr. Peto referred to the suggestion that bone-setting should be legalized by Royal Charter, and that a four or five years' course should be established, as in America. He also read the opinion (already published) given by three legal members of the House (Sir John Simon, Mr. Butcher, and Mr. Pollock) that there was no ground for holding that if the War Office or Admiralty arranged for a disabled soldier to be treated by an unregistered practitioner, such as Mr. Barker, the law was thereby broken or disregarded. That opinion, Mr. Peto reminded the House, had been referred to the law officers of the Crown, and they had held that, subject to conditions, the War Office might lawfully take certain action. They had advised, however, that the opinion of the General Medical Council should be obtained before orders were given with a view to such action. Nothing had been heard of any orders being given. A deputation of sixty members which waited upon the War Secretary on May 4th received the usual official answer that told really nothing whatever. They had a little debate with Sir Alfred Keogh and other eminent gentlemen there, but did not get much satisfaction. The question was purely whether the General Medical Council was going to put such opposition in the way of what he and his friends wanted that the War Office would not think it worth while to use their authority. Mr. Peto then quoted several cases successfully treated by Mr. Barker, mentioning them chiefly, he said, to show the attitude of the medical profession. Some of these have already been published. One of the most recent was the case of Mr. Hodge, the Minister

for Labour. Mr. Hodge stated how he was half-carried to the surgery, but in half an hour walked out without aid of any kind. In conclusion, Mr. Peto asked the Under Secretary for War to say that he had thought out some method by which, without going into any controversial questions or offending medical etiquette, he could do the practical thing—place Mr. Barker and the injured soldiers in contact with one another.

Sir John Simon said that if the War Office thought fit to authorize a soldier to consult one of these unqualified medical practitioners, it might be a wise or unwise thing to do, but it would be perfectly legal. If an officer might avail of such services, the men in the ranks ought to be allowed to take advantage of them also. He thought a case had been made out for the War Office to permit, in a proper case, an ordinary soldier to avail himself of assistance gratuitously offered. If in any given case the War Office authorized and ordered that to be done he could not believe that responsible authorities in the medical profession would visit with punishment any member of their body who took such a course. If that were done something would be heard about it in the law courts, and he was certain that whether it was treated in the law courts or not, it would produce a serious impression on the minds of the public, who would feel that if the Army Council thought the course one to be followed those who served it could not be visited with pains and penalties.

Sir Watson Cheyne, who qualified as member for Edinburgh and St. Andrews Universities on the previous day, said he should not have dreamt of making a maiden speech so soon but for the nature of the subject before the House. He also mentioned, by way of preface, that he had decided to drop private practice from the time he became a member of Parliament, as he wished to speak with complete independence from suspicion of personal gain. He had asked to be allowed to continue his work in the Royal Naval Medical Service, but that was all. Sir Watson went on to say he was in rather a fog as to what proposition had been made in regard to Mr. Barker. Sometime ago gossip had it that he was to be offered a commission and that it was refused. Nothing was said about a commission to-day. Sir Watson said his point was that if something were done for one particular bonesetter it was difficult to see how others could be kept out. He did not dispute the excellence of Mr. Barker's work, but if he were accepted, the Army Medical Service would be flooded with a set of irregular practitioners who were absolutely incompetent. If bonesetters were admitted, where was the thing to stop? Were they to refuse faith healers who gave wonderful accounts of their work? Then there were cancer curers, and plenty of herbalists and all sorts of unqualified persons who had asked to come in. His own experience of bonesetters, as a rule, was that they were not educated for their job. They were usually brought up in places where a considerable number of accidents occurred, and had acquired a reputation for facility in dealing with them. He did not say that there were not some men who, having become bonesetters, had set to work to try to learn something about bones and joints; but the average bonesetter did not. The bonesetter had only one diagnosis—dislocation—and only one method of treatment, and that was to wrench and twist the limb. The human frame was a very delicate organization. It should not be meddled with by people who did not know it as intimately as it was possible to know it after years of study. In this country any man who said he was a bonesetter could be employed, and would have a *clientèle* who believed very strongly in him. Would any business man like to employ a man who had never spent any time in learning that particular business, but had in some way or other acquired a reputation for knowing something about it? It should be necessary to be convinced that he was really good at his work before he was taken. Sir Watson, after giving an instance of what appeared to be to him a very interesting example of want of knowledge on the part of a very distinguished bonesetter in London, said that in spite of want of knowledge on the part of the great majority of bonesetters, they did often produce marvellous cures, and it was a great puzzle for a long time to know how these cures were brought about. They themselves spoke of a dislocation which they reduced, but it was quite

clear that in many cases this was not so. It was only after long study that what had occurred was really explained. It happened often that if a joint was injured a certain amount of inflammation occurred in the lining membrane of the joint, and if it was kept at rest sufficiently long the two folds of the lining membrane stuck together, and sometimes stuck so firmly together that in the course of time the joint could not be worked; not only did the two bones stick together but the muscles and other structures, and the patient got a stiff joint. What happened when the bonesetter operated on what he thought was a dislocation was that he tore through these adhesions and released the joint. Developments of that kind occurred often in former days, and now the surgeon was on the alert in the case of all injuries against such developments; it was chiefly with a view of avoiding these adhesions that massage came into being. They had learnt why it was that these bonesetters sometimes succeeded, but there was no reason why they should set them to treat our wounded, seeing they knew so little about the subject; a competent surgeon could do all that was necessary, though, of course, some were more timid than others. Adhesions might begin in twenty-four hours, but it was not difficult to break them down; after three or four days it was more difficult, and after a month it might need a strong athletic man to break them down, but the result was safer. Another explanation of success of the bonesetter was that he usually did not get the case until many months after, until the adhesions were converted into cords which could be snapped across and the joint freed at once. Nowadays this was so well known that any good surgeon would do what was wanted much more safely and quite as well as the bonesetter. There were certain dangers in connexion with these cases: it might happen as the result of a sprain or slight injury of the joint that disease was set up in the adhesion—for instance, a patient with a tendency to tuberculosis might get a tuberculous cyst in connexion with the injured joint; probably such a joint would get well with careful attention, but, if a bonesetter broke it down with violence, it might set the tubercle growing with rapidity and utterly spoil the joint. He had seen many such cases and more than once had had to amputate. A still more tragic thing was that a tumour sometimes developed in the bone, and he had known cases in which the bonesetter, still thinking it was a case of dislocation, had violently broken up the part, and the disease, which was local, had then spread throughout the whole body. Turning then to cases of dislocation of the cartilage, he said that it might be due not only to injury but to three or four other causes. When it was really a case of dislocation of a cartilage manipulation might give great success; it was necessary, however, to exercise great care in diagnosis. In soldiers it was not usually a case of loose cartilage, but terrible fractures and terrible breaking up of the joint. He had not heard that bonesetters claimed any skill in treating wounds; the treatment of wounds was the whole science of the business of the surgeon among soldiers. Sepsis getting into wounds was the trouble, and to avoid sepsis was a difficult problem not yet fully solved. Was the bonesetter to be allowed to put his dirty fingers into a wound? The whole matter required very careful consideration. Because a man had had success in one particular and small department of surgery the whole of the country's existing system should not be upset, and an immense amount of unnecessary ill-feeling created.

Mr. Noel Buxton spoke of the charm of the speech of Sir Watson Cheyne, and hoped the House would not be carried away by it. It was not accurate to say bonesetters did not spend time in training. The osteopaths passed through a course of study of four years, with not less but more time on anatomy than was given in the regular school. Mr. Buxton added personal testimony to the services which had been rendered by osteopaths.

THE SHORTAGE OF DOCTORS.

Sir Garrod Thomas, in a maiden speech, referred to the medical arrangements generally in the country. His object, he said, was not to find fault, but to set out certain facts and make suggestions. He had only admiration for the way in which the medical necessities of the country had been met when the demands came with such suddenness and on such a colossal scale. They were greatly

indebted to the Director-General of the Army Medical Service. The mistakes which had been made in his department were in the main due to his eagerness to do his very best for it. But he thought that even the Director-General would have been better advised if he had more often consulted the Advisory Board. The fact that the House had to remember was that the supply of medical talent was necessarily limited—the number was about 15,000. The medical man was a plant of very slow growth. The question arose how most economically to make use of that material for the general weal—for the army certainly, but having some regard also to the requirements of the civil population. He agreed with what had been done with regard to Salonica, Mesopotamia, Egypt, and Palestine. The men were there ready to do work, and the less they had to do the better it was. In regard to France the matter was different. The journey was short, and it was a waste of valuable material to keep men for months there working only one, two, or three hours a day. It was a great waste also to employ medical men to do jobs which could be done very well by men without medical training. One man wrote him that he joined the Royal Army Medical Corps in July, 1916. He had at most about two hours' work a day until the battle of Arras—in April, 1917. He had one hard week's work, and in June he had another three weeks' moderately hard work. Since then he had been transferred to a cavalry field ambulance, where he had no medical work to do at all. This case was not exceptional. He knew of three motor ambulance convoys, each with two medical officers who were doing no medical work whatever. Sir Garrod said that another correspondent had informed him that the amount of work he had done requiring medical knowledge during eighteen months in France could be done in a few hours. A third wrote that he had done only a few days' real medical work in two years. In further illustration of waste, Sir Garrod said that during March of this year it was arranged that an extra 1,000-bed unit in France should be staffed by one of the London military hospitals. Specialists, other doctors, nurses and orderlies left for France at the end of March. They had to wait three months, some of them unemployed, before the hospital was ready. Having expressed the opinion that there was also waste in employing so many medical men in the procedure for discharging wounded soldiers, Sir Garrod said it also appeared that many medical officers had their time wholly, or nearly, taken up with clerical work. A well-known physician of a great London hospital said that he was employed doing scarcely anything but clerical work which could be done very well by non-medical officers. He believed that some other cases of waste occurred through what he called "misfits"—that was, through not considering sufficiently to what branch of the profession a medical man had given his life. There should be an inquiry at which all men could speak frankly and fearlessly, and at which the balance could be held evenly between the needs of the military and the civil population. He knew of one cluster of villages, with a population of eleven or twelve thousand, that had five medical men before the war; early in the war three left, and now the junior of the two left had been told to be ready to join the forces, leaving the population with only one medical man; he had two big collieries to look after, and a hospital to which he usually sent his patients was so understaffed that they were unable to cope with their work. Sir Garrod, in conclusion, urged that the matter upon which he had dwelt should be taken up promptly.

Major David Davies afterwards submitted in a vigorous speech that the Director-General should be made a member of the Army Council. He pointed out that before the Esher Report on the reorganization of the War Office was adopted the Director-General had direct access to the War Secretary and was directly responsible to him. After the report, the Director-General was put under the control of the Adjutant-General, and that he regarded as a most retrograde change. After the Crimean war, when great reforms were brought about in the Medical Department of the War Office, the principle was insisted upon that the Director-General of Medical Service should be directly responsible to the War Secretary and through him to the House. For that position to be restored to this officer would, the speaker thought, be the beginning of all reforms in the Army Medical Service, and without it no real good

could be accomplished. He quoted a letter by Lord Esher to the *Times*, on February 5th, in which, in the light of events, Lord Esher repudiated the conclusions of his own committee and appealed to Lord Derby to strengthen the Army Council by placing upon it the D.G.M.S., holding that thus would the work of Sir Alfred Keogh be happily recognized to the infinite advantage of the sick and wounded of to-day and to-morrow. Major Davies asked the House to consider how other countries dealt with this matter. In France one of the Under Secretaries for War was the head of the Army Medical Department, and he was a very prominent medical scientist. In the United States General Gorgas, who was responsible for the whole of the sanitation in connexion with the building of the Panama Canal in the Canal zone, was now at the head of the Army Medical Service of that country, and had direct access to the War Secretary. The same thing also applied in the case of the Russian Government. Apparently, ours was the only country where the importance of the medical profession, of scientific medicine and of all that implied, was not recognized. We were the only country where the doctors and the medical profession were not given their proper place in the organization of the army. He should like to know whether the Director-General, before the expeditions to Salonica, to the Dardanelles, and to Mesopotamia, was consulted. Were our great scientists in tropical medicine consulted before these military operations were undertaken? The medical faculty ought to be given its proper place in the organization of military operations, and in that connexion he urged that the high administrative posts should be opened up to the civilian members of the medical profession.

REPLY FOR THE WAR OFFICE.

Mr. Macpherson, taking up first the question of army medical reorganization as raised by Major Davies, recalled that the Esher Committee unanimously concluded that it was not proper that the Director-General of Army Medical Service should be a member of the Army Council. He acknowledged that this conclusion was reached many years ago, and recognized what Lord Esher had since written in an opposite sense. But he asked the House to remember that the War Secretary was always ready to see the Director-General at any moment when he had business of urgent importance to discuss with him. Mr. Macpherson was unable to say whether a new committee, if appointed, would consider the matter afresh, but he promised to bring it under the notice of Lord Derby. He came next to the complaint of Sir Garrod Thomas as to the misuse of the services of medical men at the front. He reminded the House that there was a Central Medical War Committee, composed of representatives of the civilian profession, who, together with the War Office, considered the claims of the military and civil population. If there was a claim between the civilian population and the soldiers fighting at the front, the House, he was sure, would not hesitate to say that the claim of the soldier should first be met. Lord Derby, however, had said that he would send a committee of distinguished men—he did not care who appointed them—to inquire in France whether there was a misuse of medical men, distinguished or otherwise. This would be done immediately. The House should remember that the old theory of the medical man in the army was that his primary qualification should be that he was a qualified doctor, but the other qualification was (and it must be so in the economy of any regiment) that any officer in a regiment must have administrative knowledge. A Royal Army Medical Corps officer must have at the start of his duties a certain knowledge of administration. It was idle to say that ambulances had been lying idle week after week and month after month. If that were true he was glad, but there would be nothing to which the House would more readily condemn the War Office if at any given moment, when casualties were probable or possible, we had not the number of doctors at the front to deal with them.

Mr. Macpherson next came to the charge against the Army Council of refusing to utilize the services of persons because they were not registered practitioners. He would meet that first by a general claim which he could make without hesitation, namely, that nothing had been more wonderful in the course of this unparalleled war than the work done by the Royal Army Medical Corps. There

was no branch more open to criticism by the House of Commons, and the inefficient treatment of a gallant soldier was the one thing which would make any Government quit. The point he had to make was this: Ought they or ought they not, having a medical staff of the kind they had, to employ any man who was not upon the *Medical Register*? There were two bodies to be considered. The first was the Army Council itself. It had a responsibility to the private soldier. He could not choose his own doctor, and so long as he was a serving soldier, the army was responsible for his treatment. The State had said that any medical practitioner in this country who held himself out to be a medical practitioner must have passed certain statutory tests, and it stood to reason that any Government department must consider whether it would be right or wrong to ask any soldier to undergo treatment except by a medical man duly qualified by having passed those tests. That was a War Office responsibility. There was the other responsibility, which was purely technical and legal. He had nothing to say against the legal opinion of his learned friends, which was practically the same legal opinion which had been given by the law officers of the Crown. There was, so far as he could understand it, no objection to a private soldier going if he wished to have treatment from an unqualified man, but if he did so he must go on his own responsibility; the State could not be responsible. There was, however, the other and more difficult question, and he feared it would be putting an intolerable burden on Royal Army Medical Corps officers. The General Medical Council had the right to say that a man's name should be erased from the *Medical Register* if he employed an unqualified man. If the Army Council were to say that a medical practitioner duly qualified could send a soldier to an unqualified man, and he refused to obey, that being a medical command, the Army Council could dismiss him from the service. If, on the other hand, he did send the soldier to an unprofessional man, he might be obeying the Army Council instructions, but he would be disobeying the General Medical Council, and would have his name erased from the *Medical Register*. That would be putting the Royal Army Medical Corps practitioner in an intolerable position. He preferred, as far as he could, to meet the perfectly fair case that had been put forward. Mr. Macpherson continued: Whatever my private views may be, seeing that the officer is allowed to go there, and has gone whether allowed or not, and has, as my hon. friend said, been cured—some hon. member said that the misses were more numerous than the hits, and that is the point of the difference between us—I am prepared to say that I think the Army Council would not object if any private soldier wished and cared to take the risk and go to an unqualified practitioner if he thought that practitioner was going to do him any good, but he must take all these risks, for the War Office cannot do so. I do not think they could be asked in the public interest to make any further concession. That is as far as I would go; and the other difficulty, I must warn the House again, is, Who is to choose the unqualified practitioner? One man's name has been mentioned, but if you go to any town in Scotland the people there will swear by the local man and not by a man in London of whom they have never heard. All I can say is that I think the Army Council, in the case of the private soldier who cared to take the responsibility to go to an unqualified practitioner, would raise no objection.

The vote was afterwards agreed to.

Civilian Doctors in the Army.—Sir Garrod Thomas asked Mr. Macpherson, on August 8th, whether he was aware that, although the number of civilian doctors now in the Army Medical Service outnumbered members of the regular Royal Army Medical Corps by more than ten to one, the civilian doctors held none of the higher administrative posts which would give them power to introduce reforms or otherwise increase the efficiency of the Army Medical Service; and whether he would consider the desirability of taking action in this direction. Mr. Macpherson replied: At the present moment there are a large number of consultant medical men of the highest attainments employed both at home and abroad with the army, and these distinguished men are in constant touch with the

army medical authorities with a view to introducing reforms and increasing the efficiency of the Army Medical Service in such ways as experience may prove beneficial. Territorial and Reserve medical officers who have been granted commissions in the R.A.M.C. during the war hold a fair share of the administrative posts in the army. Throughout the war the line that has been invariably taken is that the best man should be employed where his abilities have the most scope, but it must be remembered that, however eminent a civilian medical man's medical attainments may be, he would be out of place in certain high administrative posts in the army through his want of knowledge of the administration and organization of the army as a whole. Where this experience has been gained through service during the present war, these officers are equally available with regular medical officers for selection to posts of responsibility. The whole subject has lately been under investigation by the committee presided over by Mr. Churchill. The report of this committee may be shortly expected.

Army Medical Advisory Board.—In reply to a question by Sir Garrod Thomas, on August 8th, as to the Medical Advisory Board of the Army Council, Mr. Macpherson said it had eleven members. Of these, seven were military and four were civilian doctors. The civilian members were paid £200 a year each for their services on the board; two military members received extra pay of £150 a year; five received nothing for this duty. The board held ten meetings in 1913, and seven in 1914. No formal meetings had been held since August, 1914, but all the paid members had been constantly consulted, and had given very valuable advice throughout the war.

Sir William Babbie's Position.—Asked by Major Davies whether the contents of the Vincent-Bingley Report of the Mesopotamia Expedition had been considered by the Army Council before the appointment of Sir William Babbie as Deputy Director-General of Army Medical Services, and if so, what reasons could be given for his selection to this post, Mr. Macpherson replied, on August 8th: Sir William Babbie was appointed Director of Medical Services (and not as stated in the question Deputy Director-General Medical Service) at the War Office on March 18th, 1916. The Vincent-Bingley report is dated "Simla, June 29th, 1916."

The New Education Bill.

The President of the Board of Education introduced his education bill in the House of Commons on August 10th. It proposes to give the Board of Education power to provide for the establishment of provincial associations after consultation with the authorities concerned, the local education authorities being empowered to delegate administrative and educational functions to these associations. County and county borough authorities will be required to submit comprehensive schemes of education for their respective areas larger than those of a county and county borough. The bill also proposes to require local education authorities to make adequate provision either by special classes or by central schools for what Mr. Fisher termed higher elementary education. He admitted the justice of the criticism that in much of the work the pupils of elementary schools do during the last two years they were marking time, and that their education was not fitting them for their future calling. The bill provided for the preparation of children for further education in schools other than elementary, and for the attendance of any child no longer under obligation to attend a public elementary school at a local continuation school for a period of 320 hours in a year, or an equivalent of eight hours a week. This would apply to every young person who had not received a full-time education up to the age of 16, and will continue to the age of 18. The schools would be provided by the local education authority, or by manufacturers in their works. Exceptions would be made in the case of young persons who had passed the matriculation examination of a university of the United Kingdom, or an equivalent examination, or shown to be unsuitable or deficient for part-time instruction. On the days of attendance at the continuation school or classes the young person must not be worked unduly long hours. The classes would be held

by day and not on Sunday or any holiday or half-holiday. There would be a considerable variety of type in these schools, those for the rural population being held mainly in the winter months. Care would be taken to secure a physical minimum in the schools for girls as well as boys, and to give to the instruction a vocational bias. The main features of the bill were summarized as follows:

1. To improve the administrative organization of education.
2. To secure that every boy and girl of elementary school life up to the age of 14 shall be unimpeded by the competing claims of industry.
3. To establish part-time day continuation schools, which every young person shall be compelled to attend, unless he or she is undergoing some suitable form of alternative instruction.
4. Proposals for the development of the higher forms of elementary education and for the improvement of the physical condition of the children under instruction.
5. The consolidation of the elementary school grants.
6. An effective survey of the whole educational provision of the country, all private educational institutions being brought into closer and more convenient relations to the national system.

The speech was received on the whole sympathetically by the House of Commons, but the attendance was very small. Mr. Fisher expressed the hope that the bill would be regarded as non-controversial, and seemed to entertain the expectation that it might be passed before Christmas. Further references to the scope and purpose of the bill are made at page 225.

The text of the bill, which was issued on August 14th, contains forty-seven clauses, including five extending the powers and duties of educational authorities.

Clause 17 gives power to supply or maintain, or aid the supply or maintenance of, holiday or school camps specially for young persons attending continuation schools, centres and equipment for physical training, playing fields, school baths and school swimming baths, and other facilities for social and physical training in the day or evening.

Clause 18 gives power to a local education authority to make provision for the medical inspection and treatment of children and young persons attending secondary schools provided by them; schools provided under the Welsh Intermediate Education Act, 1889; continuation schools under the direction and control of a local education authority; and such other schools or educational institutions, not being elementary schools, provided by them as the Board directs. It will also be authorized to exercise powers under the Education (Administrative Provisions) Act, 1907, in respect of children and young persons attending any school or educational institution, whether aided by the authority or not, if so requested by the management. The Local Education Authorities (Medical Treatment) Act, 1909, will apply where any medical treatment is given.

Clause 19 authorizes local educational authorities to supply or aid in supplying nursery schools and to attend to the health, nourishment, and physical welfare of children attending such schools.

Clause 20 empowers a local education authority in exceptional cases, such as residence far from a school, to provide board and lodging to enable children to receive the benefit of efficient elementary education.

Clause 21 authorizes the local education authority to aid teachers and students to carry on research in or in connexion with an educational institution.

Proposed Ministry of Health.—Mr. King asked the Prime Minister whether an assurance would be given that no bill would be introduced to establish a Ministry of Health until consultation had been had on the Government proposals with leading local government authorities, representatives of approved societies, and other bodies affected, and until at least an outline of the proposed changes had been made available to the public. Mr. Bonar Law, in a written answer, said that no bill would be introduced without full consultation with the parties interested.

Army Medical Re-examinations Committee.

Mr. Macpherson's Evidence.

At the sitting of the Army Medical Re-examinations Committee on August 9th Mr. Ian Macpherson, Under Secretary for War, gave evidence as to the authority for statements made by him in answer to questions in the House of Commons. The principal point was the assurance

he had offered on more than one occasion that no secret instructions had been issued with regard to the number of rejections of recruits. All his inquiries were addressed to a department of the War Office known as C2, which obtained details for him; he had to rely on that department. He had been assured that no instructions, oral or other, were issued except under Army Council instructions. Since the Committee began its sittings he had seen in print the confidential letter sent out by Sir Alfred Keogh. It was not based on an Army Council instruction, but was a confidential document sent out by General Keogh acting no doubt on some instruction. The Minister added that the facts upon which he based his replies in the House were invariably signed by the head of the department concerned. He did not agree that in this matter he had been misled. It all depended upon the view the military authorities took. They distinguished between a secret document and a confidential one. His own mind did not go to the niceties of these distinctions, but in military circles there was a big distinction. Asked what steps were taken to inform departments of any pledges given in the House of Commons, Mr. Macpherson said that Department C2 read through the Parliamentary Reports and cut out anything that was said by himself or any one else who was the spokesman for the War Office. It was then sent to the department concerned. He believed that all the pledges which he had given since he had been in office (since last December) had been embodied in Army Council instructions and kept. The instructions sent out to heads of departments were not looked upon by the military as secret instructions. A department had a right to send out any instructions it liked so long as they dealt with the work of the department. The witness was unable to throw further light upon the meaning the military attached to the terms "secret" and "confidential." He believed that an analogy existed between instructions sent out by a head of a War Office department and battalion orders.

Sir Alfred Keogh's Letter.

In reply to a question by Mr. Hogge as to the letter issued by the Director-General following on the Army Council instruction of September 7th, Mr. Macpherson stated that the letter was issued by Sir Alfred Keogh under proper superior authority. It was intended to deal with what, all those responsible agreed, was a real danger. Whether as the result of the issue of the Army Council instruction of September 7th or not, wholesale rejections, especially in certain parts of the country, were taking place of men who were useful to the army, though admittedly not up to the standard required in combatant units. It was therefore necessary to point out to the officials responsible for such rejections that the army service comprised a great variety of occupations answering roughly to those to be found in civil life, and that men capable of performing such service in the army must not be rejected. This was regarded as a perfectly legitimate corrective to administer to those by whom the mistake was being made, and it was quite properly addressed to them direct by their immediate official superior. The recipients of the letter had already had the Council instruction, and obviously the two were to be read together. The letter was marked "Confidential," and not secret, and if Mr. Hogge would read the rules in paragraphs 1857-1864 of the King's regulations dealing with the military distinctions between these terms he would realize that no official would have marked as "confidential" a letter intended by him to secure what appeared to be alleged by Mr. Hogge—the sinister purpose of securing by a subterfuge a modification of the declared policy of a superior authority.

In reply to a further question, Mr. Macpherson said he had already pointed out that the Army Council instruction of September 7th and the confidential document issued by a superior authority acting under proper instructions had to be read together.

The following members of the staff of the Dublin War Hospital have left for France: Lieut.-Colonel T. E. Gordon, F.R.C.S.I. (Adelaide Hospital), Major A. Blaney F.R.C.S.I. (Mater Misericordiae Hospital), Major Denis Kennedy, F.R.C.S.I. (Vincent's Hospital), Lieut.-Colonel T. G. Moorhead F.R.C.P.I. (City of Dublin Hospital), Major Preston Ball, M.D. (Hospital for Incurables), Captain R. J. Rowlette, F.R.C.P.I., pathologist (Jervis Street Hospital), Captain G. P. Meldon, M.D., anaesthetist (City of Dublin Hospital), Captain Corbett, M.D., oculist, Captain M. R. J. Hayes, F.R.C.S.I., radiographer (Mater Misericordiae Hospital).

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON S. N. TOULMIN, R.N.

Surgeon Stewart Newnham Toulmin, R.N., who was killed on August 2nd, was born in New York in 1892. He was the son of the late Mr. Joseph Toulmin, and received his medical education at the University of Edinburgh. After serving as a surgeon probationer on a destroyer for six months in the North Sea, he obtained leave to sit for his final examination, and took the Scottish triple qualification in 1915. He was shortly afterwards appointed a surgeon on H.M.S. *Endymion*. He then served with the fleet in the Mediterranean for about two years.

Died on Service.

FLEET SURGEON E. C. WARD, R.N.

Fleet Surgeon Edward Copley Ward, R.N., died in the Royal Naval Hospital, Chatham, on August 7th. He was educated at Queen's College, Cork, and at Edinburgh, and graduated as M.D. and M.Ch. of the Royal University of Ireland in 1883. He entered the navy soon after qualifying, and attained the rank of Fleet Surgeon on August, 21st, 1900.

ARMY.

Killed in Action.

MAJOR A. J. MARTINEAU, F.R.C.S.

Major Alfred John Martineau, F.R.C.S., Royal Garrison Artillery, was killed in action on April 17th. He was the youngest son of the late Judge Martineau, and was educated at St. Thomas's Hospital, taking the M.R.C.S. and L.R.C.P. Lond. in 1895, and also the F.R.C.S. Edin. in 1899. After filling the posts of house-surgeon at St. Thomas's Hospital, and at the Hospital for Sick Children, Great Ormond Street, and of house-physician to the Brompton Chest Hospital, he went into practice at Hove, Sussex, where he was surgeon to the Brighton Ear and Throat Hospital. He had served for many years in No. 1 (Brighton) Company of the Sussex Territorial Royal Garrison Artillery, and on August 26th, 1914, was promoted to the rank of major and to the command of the company. During the early part of the war he was stationed at Newhaven, in command of the fort at that port, and subsequently took his company overseas.

CAPTAIN W. R. ASPINALL, M.C., A.A.M.C.

Captain W. R. Aspinall, M.C., Australian Army Medical Corps, was reported killed, in the casualty list published on August 10th. He received the Military Cross just two months previously, on June 10th, 1917.

CAPTAIN G. D. EAST, R.A.M.C.

Captain Gordon Doulton East, R.A.M.C., attached Grenadier Guards, was killed in action on July 31st, aged 28. He was the only son of the late Mr. J. F. East, of Lewisham and Putney, and was educated at Cambridge, where he took a first class in the Natural Science Tripos in 1910, and graduated B.A., and at St. Bartholomew's Hospital. He took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1914. He was house-surgeon at St. Bartholomew's when he took a temporary commission in the R.A.M.C., and was promoted captain in October, 1916.

CAPTAIN A. C. EDWARDS, M.C., R.A.M.C.

Captain Alfred Cecil Edwards, M.C., R.A.M.C., was reported as killed in action, in the casualty list published on August 8th. He was the son of the late Canon Edwards, Vicar of Bingley, and was educated at Kirkby Lonsdale Grammar School, and at Liverpool University, where he graduated M.B. and Ch.B. in 1908, and, after acting as senior resident medical officer and honorary anaesthetist to the Northern Hospital, Liverpool, and as assistant surgeon to the Southern Dispensary, Liverpool, went into practice at Bingley, Yorkshire. He took a temporary commission as lieutenant in the R.A.M.C. on December 5th, 1914, was promoted to captain on completion of a year's service, and received the Military Cross on June 3rd, 1916.

CAPTAIN R. D. B. FREW, R.A.M.C. (T.F.).

Captain Robert Dunlop Black Frew, R.A.M.C. (T.F.), was killed in action on August 3rd, aged 32. He was the son of the late Colonel D. Frew, of Perth, and was educated at the University of Glasgow, where he graduated M.B. and Ch.B. in 1908, and M.D. in 1912; he took the D.P.H. of the Victoria University, Manchester, in 1914. After filling the posts of house-surgeon of Glasgow Royal Infirmary, of assistant medical officer of Monsall Fever Hospital, Manchester, and of resident medical officer of the Manchester Consumption Hospital, he became tuberculosis officer to the Borough of Wallasey Cheshire. He joined the 3rd West Lancashire Field Ambulance as lieutenant on May 14th, 1914, and was promoted to captain on completion of a year's mobilized service. He had previously been wounded in August, 1916.

CAPTAIN H. A. HARRIS, R.A.M.C.

Captain Hubert Alfred Harris, R.A.M.C., was killed in action on July 31st. He was the fourth son of the Rev. Frederick W. Harris of Putney, and was educated at Cambridge, where he graduated B.A., and at St. Bartholomew's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1910. He took a temporary commission as lieutenant in the R.A.M.C. on December 2nd, 1914, and was promoted to captain after a year's service. He had previously been wounded, and was attached to the Royal Field Artillery when killed.

CAPTAIN A. S. TAYLOR, R.A.M.C.

Captain Alfred Squire Taylor, R.A.M.C., was killed in action on July 31st, aged 28. He was the youngest son of the Rev. Dr. Taylor, ex-Moderator of the General Assembly of the Presbyterian Church of Ireland, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1914. At Edinburgh he was president of the University Union and captain of the University Rugby football fifteen. He was also a well-known Rugby International, having played three-quarter for Ireland in three contests. He took a temporary commission as lieutenant in the R.A.M.C. on October 12th, 1914, was promoted to captain after a year's service, and on January 11th, 1917, took a permanent commission in the R.A.M.C. as lieutenant and temporary captain. He was attached to the Highland Light Infantry, and was dressing a brother officer's wound in France when both were killed instantly by the bursting of a shell.

Died of Wounds.

CAPTAIN N. G. CHAVASSE, V.C., M.C., R.A.M.C. (T.F.).

Captain Noel Godfrey Chavasse, V.C., M.C., R.A.M.C. (T.F.), who has been reported as having died of wounds on August 4th, was the son of the Bishop of Liverpool. He was born on November 9th, 1894, and was educated at the universities of Liverpool and Oxford, graduating M.A., M.B., and B.Ch. at Oxford in 1912, and taking the diplomas of M.R.C.S. and L.R.C.P. Lond. in the same year. At Oxford he was a noted athlete, and represented his university against Cambridge in the sports in 1907 and 1908. In the former year he ran a dead heat with K. G. Macleod in the hundred yards, and was second to his twin brother Christopher in the quarter-mile. He had filled the post of house-physician and house-surgeon at the Liverpool Southern Hospital, took a commission as lieutenant and medical officer in the 10th (Scottish Territorial) Battalion of the King's Liverpool Regiment on June 2nd, 1913, and was promoted to captain after a year's embodied service. He received the Military Cross on January 19th, 1916, and the Victoria Cross on October 26th, 1916. The act for which he received the Cross was thus described.

For most conspicuous bravery and devotion to duty. During an attack he tended the wounded in the open all day under heavy fire, frequently in view of the enemy. During the ensuing night he searched for wounded on the ground in front of the enemy's lines for four hours. Next day he took one stretcher-bearer to the advanced trenches, and under heavy shell-fire carried an urgent case for 500 yards into safety, being wounded in the side by a shell splinter during the return journey. The same night he took up a party of twenty volunteers, rescued three wounded men from a shell hole 25 yards from the enemy's trenches, buried the bodies of two officers, and collected many identity discs, although fired on by bombs and machine guns.

Altogether he saved the lives of some twenty wounded men, besides the ordinary cases which passed through his hands. His courage and self-sacrifice were beyond praise.

His three brothers are all serving. His twin brother Christopher as a chaplain to the forces; his second brother, temporary Captain F. B. Chavasse, R.A.M.C., attached Liverpool Regiment, has been reported as wounded this week; and his youngest brother, Aidan, Second Lieutenant Liverpool Regiment, was recently reported as wounded and missing.

CAPTAIN R. W. SHEGOG.

Captain Richard Wellington Shegog, R.A.M.C., was reported as killed in action, in the casualty list published on August 13th. He was the elder son of the Rev. R. Shegog, late Rector of Skerries, and was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., and B.A.O. in 1915, after which he took a temporary commission as lieutenant in the R.A.M.C., and was promoted to captain after a year's service. He had just completed two years' service.

LIEUTENANT J. SCOBIE, L.D.S.

Lieutenant James Scobie, L.D.S., Gordon Highlanders, died of wounds on August 3rd, aged 36. He took the diploma of L.D.S. of the Edinburgh Royal College of Surgeons in 1905, and was in practice at Hampstead till he joined the army in July, 1916.

Died on Service.

LIEUTENANT J. E. FOREMAN, R.A.M.C.

With reference to the death of Lieutenant J. E. Foreman, R.A.M.C., recorded in our issue of July 28th, we are informed that, after practising for a few years at Chiswick, he settled in Bournemouth and gave up an increasing practice to become R.M.O. at the Boscombe Military Hospital, where he won the high esteem of all with whom he came in contact. In spite of the sacrifice he had already made, and a previous rejection for military service on grounds of health, he felt impelled to apply for a commission, was accepted, and ordered to Egypt. While on his journey there the ship was torpedoed, and he had to spend the whole night in an open boat. Immediately after being rescued he developed scarlatina, then dysentery, and lastly enteric fever, of which he died. He was a gifted amateur musician, an excellent billiard player and cricketer, and an amateur mechanic of no mean order. He leaves a widow and three young children.

Wounded.

Captain W. B. Allen, V.C., R.A.M.C. (T.F.).
 Captain G. H. Barry, R.A.M.C. (temporary).
 Captain S. Brown, M.C., R.A.M.C. (temporary).
 Captain S. A. Bull, R.A.M.C. (temporary).
 Captain F. B. Chavasse, R.A.M.C. (temporary).
 Captain D. D. Craig, M.C., R.A.M.C. (temporary).
 Captain W. E. David, M.C., R.A.M.C. (temporary).
 Captain J. Dunbar, R.A.M.C. (temporary).
 Captain E. Evans, R.A.M.C. (temporary).
 Captain W. E. Fitzgerald, R.A.M.C. (T.F.).
 Captain F. S. Fletcher, R.A.M.C. (T.F.).
 Captain A. T. McCreddie, R.A.M.C. (temporary).
 Captain D. McVicker, R.A.M.C. (temporary).
 Captain H. R. Partridge, M.C., R.A.M.C. (T.F.).
 Captain G. A. Renwick, R.A.M.C. (temporary).
 Captain T. D. Renwick, R.A.M.C. (temporary).
 Captain G. C. Robinson, R.A.M.C. (T.F.).
 Captain H. Robinson, R.A.M.C. (temporary).
 Captain J. Ross, R.A.M.C. (temporary).
 Captain D. C. Scott, R.A.M.C. (S.R.).
 Captain C. W. Treherne, R.A.M.C. (S.R.).
 Captain J. Warwick, R.A.M.C. (temporary).
 Captain R. Young, R.A.M.C. (temporary).
 Lieutenant H. Deardon, R.A.M.C. (temporary).
 Lieutenant J. E. de Robillard, R.A.M.C. (temporary).
 Lieutenant G. L. Gell, R.A.M.C. (temporary).
 Lieutenant W. S. Kidd, R.A.M.C. (temporary).
 Lieutenant D. S. Pracy, R.A.M.C. (temporary).

Missing.

Lieutenant J. Rickards, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Chronnell, H., M.C., Captain Loyal North Lancashire Regiment, only son of Dr. Chronnell, of Hindley, Lancashire, killed July 31st. He was educated at Stonyhurst, where he was a sergeant in the O.T.C., and entered Manchester University as a medical student in 1913. He got his commission on October 5th, 1914, went to France in February, 1915, was mentioned in dispatches in November, 1915, got the Military Cross in

January, 1916, and served throughout last year's battle on the Somme.

Crerar, Ian Donald, Second Lieutenant Argyll and Sutherland Highlanders, elder son of Dr. Crerar, of 6, George Square, Greenock, killed July 31st.

Francis, Wilfrid Frederick, Second Lieutenant Hertfordshire Regiment, killed in action July 31st, aged 20. He was the third son of Dr. L. A. Francis, of Uxbridge, was educated at Berkhamsted, where he gained a scholarship at St. Mary's Hospital in October, 1914, but, after six months' hospital work, he joined the army, being gazetted second lieutenant Hertfordshire Regiment in April, 1915. He was wounded in France in July, 1916, but returned to the front in November last, and had not been in England since.

Green, C. L., Second Lieutenant 11th Essex Regiment, attached R.F.C., elder son of Dr. Edward F. S. Green of South Norwood. He passed his first examination in Edinburgh University, October, 1914, and joined the first Sportsmen's Battalion as a private, but obtained his commission in December, 1914. He was in the trenches in France from October, 1915, to August, 1916. He transferred to the Royal Flying Corps in September, 1916, and in January, 1917, he had a crash and broke his jaw, but rejoined in March and soon got his wings. He went to France on June 6th and was killed in action on June 9th.

Greenhill, Lieutenant C., M.C., killed in action on August 10th, eldest son of Dr. Robert Greenhill of Rutherglen. He was educated in the High School of Glasgow and joined up at the outbreak of war as private in the Lowland Division of Engineers (T.), and subsequently got a commission in the Royal Worcesters. He was awarded the Military Cross on June 3rd and promoted lieutenant after Messines.

Porritt, Thomas Handley, Second Lieutenant Coldstream Guards, died of wounds received in the last British offensive. He was the second son of Dr. William Porritt, Greytown, South Africa. Educated in South Africa, he had embarked upon a mercantile career, which he threw up, and, like so many colonials, came to the mother country at the call of patriotism and duty. He was given a commission in the Coldstream Guards, and had seen much service in France. He had been previously wounded, and had been awarded, but had not received, the Military Cross for exceptional bravery in leading his men in a raid into the German lines. His elder brother, who was wounded in the fighting in East Africa, is now in the Royal Flying Corps, whilst his father has joined the R.A.M.C.

Strain, John Loudon, Captain Royal Garrison Artillery, eldest son of Dr. W. Loudon Strain, of Wimbledon Hill, formerly of Sao Paulo, Brazil, killed August 1st, aged 20. He was educated at Kelvinside Academy, Glasgow, at Westminster, and at Trinity College, Cambridge, where he had passed the first M.B. He went to the front in September, 1916, and was promoted to captain in May, 1917.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on August 8th contains a further list of distinctions and promotions awarded in connexion with the war.

The following honours have been granted to medical officers for valuable services rendered in connexion with military operations in the field:

To be C.B.

Surgeon-Generals: John Chislett Culling, Richard Henry Quill, M.B. (retired pay).

Colonel (temporary Surgeon-General) Robert Samuel Findlay Henderson, M.B., K.H.P.

Colonels: Alfred Peterkin, M.B. (retired pay); Robert John Shaw Simpson, C.M.G., M.B. (retired pay).

To be K.C.M.G.

Colonel (temporary Surgeon-General) Michael Thomas Yarr, C.B., F.R.C.S.I.

To be C.M.G.

Lieut.-Colonels: Joseph Montagu Cotterill, M.B., F.R.C.S.; Harry Littlewood, F.R.C.S.; Bernard Ehrenfried Myers, M.D., N.Z.M.C.; George Speirs Alexander Ranking, M.D.; James Currie Robertson, C.I.E., M.B., I.M.S.; William Turner (retired).

Surgeon-Lieut.-Colonel and Hon. Surgeon-Colonel David Hepburn, M.D.

Temporary Lieut.-Colonels: Willie Netterville Barron, M.V.O.; William Lawrence Wright Marshall.

Majors (temporary Lieut.-Colonels): Hugh Thomas Dyke Acland, F.R.C.S., N.Z.M.C.; David Storer Wylie, M.B., F.R.C.S., N.Z.M.C.

The following officers of the home service have been promoted for valuable services rendered in connexion with the war:

To be Brevet Colonels.

Lieut.-Colonels: C. Averil, M.D.; H. L. Battersby (retired pay); J. P. Bush, C.M.G.; H. Charlesworth, C.M.G. (retired pay); C. P. Childe, F.R.C.S.; A. M. Connell, F.R.C.S.; H. E. Deane (retired pay); A. Dodd (retired pay); A. B. Gemmel; T. Gowans, M.B.; L. K. Harrison, M.B.; H. P. Hawkins, M.D.; T. H. Haydon, M.B.; A. G. Kay, M.B. (retired pay); J. R.

Kaye, M.B.; J. Marnoch, C.V.O., M.B.; F. Marsh, F.R.C.S.; W. J. Maurice, M.B.; R. R. H. Moore, M.D. (retired pay); D. V. O'Connell, M.D. (retired pay); S. P. Phillips, M.D.; J. A. Rooth, J. W. Smith, M.B., F.R.C.S.; C. J. W. Tatham (retired pay), H. J. Waring, M.B., F.R.C.S.; H. W. Webber, F.R.C.S.; F. H. Westmacott, F.R.C.S.; W. H. White, M.D.; G. S. Woodhead, M.D.

Brigade Surgeon Lieut.-Colonel J. F. Beattie, M.D. (retired list).

Lieut.-Colonel and Hon. Surgeon-Colonel A. Napier, M.D.

To be Brevet Lieut.-Colonels.

Majors (temporary Lieut.-Colonels): R. A. Bolam, M.D.; W. Butler, M.B.; A. B. Prowse, M.D., F.R.C.S.; C. Rundle, M.D.; J. Smart, M.B.

Major (acting Lieut.-Colonel) C. A. Lees.

Majors: T. D. Acland, M.D.; D. T. Belding, H. A. Berryman (retired pay), R. of O.; C. R. Browne, M.D.; A. Butler-Harris, M.B.; J. H. Drysdale, M.D.; C. H. Fagge, M.B., F.R.C.S.; T. A. M. Forde, T. Forrest, M.B.; C. E. P. Fowler, F.R.C.S. (retired pay), R. of O.; W. M. Gabriel, J. W. Gill, M.D.; H. W. Laing, M.D.; F. W. Lamballe, M.B.; A. P. Luff, M.D.; D. Renmet, M.D.; B. M. H. Rogers, M.D.; J. E. H. Sawyer, M.D.; H. Stott, D. Wallace, C.M.G., M.B., F.R.C.S.; G. W. Watson, M.D.; F. E. A. Webb, J. Wilson, M.B.

Surgeon-Major R. E. Lauder.

To be Brevet Majors.

Captains (temporary Lieut.-Colonels): E. H. Fenwick, F.R.C.S.; H. M. Rigby, M.B., F.R.C.S.

Captains (temporary Majors): W. C. Bosanquet, M.D.; D. W. Boswell, M.D.; E. S. Forde, R. L. Guthrie, M.D.; H. A. Leebody, M.B.

Captains: S. T. Beggs, M.B., R. of O.; J. A. Bennett, M.B.; C. R. Box, M.D., F.R.C.S.; R. C. Elmslie, F.R.C.S.; J. Ewing, J. Fawcett, M.D., F.R.C.S.; W. Guy, F.R.C.S.; H. P. Horne, M.D.; J. L. Joyce, F.R.C.S.; J. N. McLaughlin, M.D., S.R.; A. W. Ormond, F.R.C.S.; C. W. Rowntree, M.B., F.R.C.S.; A. Sellers, H. Sharpe, E. G. Smith, N. W. Stevens, M.B.; H. H. Taylor, F.R.C.S.; A. Walker, T. H. Ward, M.D.; W. J. Wilson, M.B.

To be Honorary Major.

Quartermaster and honorary Captain J. Wilson.

To be Honorary Captains.

Quartermasters and honorary Lieutenants: G. E. Barfield, E. C. Bennison, L. N. Blake, T. J. Spratley, J. C. Symonds.

All the above-mentioned officers belong to the A.M.S. or R.A.M.C. unless otherwise indicated.

Staff-Surgeon Gilbert Bodley Scott, R.N., has been appointed a Companion of the Distinguished Service Order in recognition of his services with the Royal Naval Armour Car Squadron in France, Russia, Turkey, and Rumania. The *Gazette* announcement records that on active service he has shown a devotion to duty and a forgetfulness of self which cannot be too highly praised.

The Emperor of Japan has conferred the order of the Rising Sun, second class, upon Surgeon-General George Welch, R.N.

NOTES.

MEMORIAL TO NAVAL OFFICERS.

ON August 1st, at the Royal Naval Barracks (St. George's Church), Chatham, three windows and a marble memorial tablet were dedicated to the memory of the officers and men of H.M.S. *Russell*, which was mined in the Mediterranean in April, 1916, and of H.M.S. *Swiftsure*, which lost thirty officers and men between 1913-16. Among the names of officers of H.M.S. *Russell* are those of two medical officers—W. R. Center, Fleet Surgeon R.N., and Philip D. Pickles, R.N.V.R.

England and Wales.

TUBERCULOSIS IN WALES.

THE Welsh National Memorial Association to the late King Edward, established mainly through the efforts of Major David Davies, M.P., has made another attempt to justify its title by securing the co-operation of the county of Pembroke, which hitherto has held aloof from the movement for the alleviation and eradication of tuberculosis in the Principality. At a meeting of the Pembrokeshire County Council at Haverfordwest the Public Health Committee reported that it was unable to recommend the council to join the association, and was of opinion that the time had now come to allow the Insurance Committee to make its own arrangements with the funds at its disposal. Mr. W. T. Davies moved the adoption of the report. Colonel Roberts, in seconding, said that the case of the county council was "that the only hope of eradicating the disease of tuberculosis lay in their retaining full powers of control. He was not willing to surrender the powers

vested in them by statute to an oligarchy at Cardiff" (the official head quarters of the Memorial Association).

An amendment referring the report back to the Committee was proposed by the Rev. Henry Evans and seconded by Sir Evan D. Jones, Bt., who characterized the report as the most hopeless confession of administrative bankruptcy that had ever been presented to any county council in the United Kingdom. He appealed to the council not to let pass the opportunity of dealing with an urgent necessity during the period of the war because of sundry fancied views of the "oligarchy at Cardiff." General Sir Ivor Philipps, M.P., on the other hand, asked the council not to surrender its powers to a private body like the Memorial Association; while another member said that the council was asked to join the association in the interests of "Home Rule for Wales." On a division, 10 voted for the amendment and 20 against. The Committee's report was adopted, and Pembrokeshire remains outside the National Memorial Association.

THE PROPOSED HEALTH MINISTRY.

A circular letter has been sent to Insurance Committees by the National Association of Insurance Committees conveying resolutions passed by the Executive Council of that Association with regard to the Ministry of Public Health. It appears that the Executive Council in June received a deputation from the standing committee of the National Conference of Industrial Assurance Approved Societies and the Joint Committee of Approved Societies, and after hearing their views, passed certain resolutions which in substance were as follows:

1. The Council urges the establishment of a Ministry of Health.
2. The Ministry of Health should be a separate department of the Government, and should co-ordinate all matters pertaining to the health of the nation.
3. The present scheme of National Health Insurance should be preserved.
4. A committee representative of all bodies now concerned with the administration of matters relating to public health should be appointed by the Government to inquire into and report to Parliament as to the powers and duties that shall vest in the proposed Ministry, and no bill be introduced until such report has been presented.

The Executive Council has also adopted a resolution received from the Derby and Derbyshire Insurance Committees expressing the opinion that it is eminently desirable that the machinery set up under the National Insurance Acts should be utilized to the fullest extent in any schemes relating to maternity and child welfare, and in any legislative proposals dealing with these matters. The circular letter asked for the support of Insurance Committees throughout the country. The Salford Insurance Committee has unanimously resolved to support the recommendations with the exception of the words "and no bill be introduced until such report has been presented." With regard to maternity and child welfare the Salford committee went a step further, and passed a resolution pressing on the Government the importance of hastening through the House of Commons a bill dealing with the matter during the present session, and sent copies of this resolution to the Prime Minister, the Chairman of the National Insurance Joint Committee, the President of the Local Government Board, to the members of parliament for Salford, and to all Insurance Committees. It was fully recognized that the state of public business in Parliament might prevent legislation this session, but every possible endeavour will be made to hasten legislation, especially in the matter of maternity and child welfare. The resolutions of the National Association of Insurance Committees represent a large and influential body of opinion which the medical profession cannot afford to neglect.

Scotland.

SIR WATSON CHEYNE, Bt., M.P.

SIR WATSON CHEYNE was elected on August 10th the parliamentary representative of the Universities of Edinburgh and St. Andrews without a contest. He was nominated by Professor Harvey Littlejohn, Dean of the Faculty of Medicine in the University of Edinburgh, and Dr. Barrie Dow, Dunfermline, Assessor of the University

of St. Andrews. Sir Watson Cheyne, in returning thanks, said that many problems had arisen, especially in connexion with education, which called for careful consideration. In regard to medicine, there was the problem of what to do with men who had given their all in the service of their country, for many had been ruined in doing patriotic work, and it would be necessary to do a great deal to set them on their feet again. The war had shown the great value of early scientific education, which was the main reason why the Germans had been able to make such a great fight. The organization of the universities as places where every sort of scientific training could be obtained required careful consideration, and in other directions—chemical research and commerce—much had to be done in the development of teaching facilities. He intended to go on with his surgical consultant work for the Royal Navy till the end of the war, but hoped to give up private practice in the near future and devote his energies to learning a new science—the business of politics.

Correspondence.

A NEW SCHOOL FOR THE STUDY OF HEART DISEASE.

SIR,—I think Dr. Poynton is not aware of what has been doing in this country for the prevention of heart disease and guidance of sufferers from heart disease. When in general practice I had twenty-five years ago in my private clinic carried on work specially to this end. When I joined the Mount Vernon Hospital in 1909 a clinic for this purpose was started. The opportunities there were not very great, but when I joined the staff of the London Hospital we started clinics specially devoted to this object. Before the war broke out there were half a dozen of us at work. We had started observations on all cases of rheumatic fever that came into the hospital and were watching the effect of enucleation of the tonsils on the rheumatic. We had another special department devoted entirely to ambulatory cases of heart affection where we watched the cases of damaged hearts and gave them suitable treatment to enable them to keep at their work, and studied the effects of remedies when thus employed. We also advised and helped others to get employment suited to their strength. This clinic was going strong and was being visited by physicians from all parts of the world when the outbreak of war interrupted our work.—I am, etc.,

London, W., Aug. 10th.

J. MACKENZIE.

ARMY MEDICAL ECONOMIES.

SIR,—Your correspondent "Train M.O." (July 28th, p. 135) seems to have been unfortunate in his experience.

Most divisions find additional work for their M.O.'s attached to divisional troops to fill in their—admitted—spare time, while at a time like the present he should, if in a battle area, be more than fully occupied assisting to cope with battle casualties at a dressing station.

With regard to their implied immunity from risk, I am at present sharing a tent with an engineer M.O. who has been decorated for gallantry in the field in the course of his ordinary duties.—I am, etc.,

August 3rd.

ANOTHER TRAIN M.O.

SIR,—A letter which appeared in your issue of July 28th by "Train M.O." contains such very inaccurate statements in regard to the duties of M.O.'s to R.E. units that I can only conclude it must have been based on very inadequate knowledge of the nature of their work. He states that "they never go near any fighting, and never do a full day's work." That is true of medical officers to divisional train, and divisional ammunition column, who are hardly ever exposed to enemy fire of any kind. The medical work of a divisional ammunition column can always be satisfactorily carried out in one hour a day. The R.E. medical officer is often the hardest worked in a division. He is usually billeted at divisional head quarters, where he is responsible for the health of never less than 500 troops, and often more. In addition he has three field companies, which sometimes are so scattered that it takes three to four hours or more on horseback to

complete their inspection, and this often under shell fire. Moreover, in an attack he is very frequently sent by the A.D.M.S. to the advanced dressing station of a field ambulance, or to a battalion to relieve a casualty M.O. Having acted as an R.E. medical officer for close on two years, and having met probably during that period not fewer than twenty M.O.'s of other divisional R.E.'s, I can affirm that it is the exception rather than the rule for them to be out of any big fight in which their division is engaged. It is only fair to these officers, several of whom have been wounded, that "Train M.O.'s" statements should be at once refuted.

On the question of economy I agree with him. The field ambulance of each brigade could look after these units quite well.—I am, etc.,

August 5th.

M.O., R.E.

RECRUITING MEDICAL BOARDS.

SIR,—With reference to your remarks on recruiting, in your issue of August 4th you state: "The mistake, it seems to us, has been that the presidents of these boards have been in so many instances retired regular medical officers unacquainted with civil conditions." I am at a loss to conceive what you mean by this statement. Surely the only duty of recruiting medical boards is to medically examine the men who come before them, and therefore "civil conditions" are a question for tribunals.

So far as my own experience on recruiting medical boards goes, all civil medical practitioners who have served on these boards have done their duty without "fear, favour, or affection," but it has been a most invidious task for a local medical man, in view of the fact that, with the exception of young lads just of age, practically every man who has been called up has been doing his best to avoid service. The task will become even more difficult when the civil medical practitioner can no longer shift the onus on to the shoulders of a military president who has been held by the War Office responsible for every classification.—I am, etc.,

August 7th.

W.

SIR,—It would be interesting to know how many ex-members of the R.A.M.C. were employed during the war, and what duties they performed. An opinion seems to prevail among the public that all medical boards on recruits for the army were presided over by members or ex-members of the R.A.M.C. or of the Indian Medical Service. That is not my experience. I live in a town of nearly four hundred thousand people, and during the war only one ex-army medical officer was employed in examining army recruits; and he did not preside at all the medical boards he attended. It should be clearly understood that, speaking generally, regular officers of the Royal Army Medical Corps of the executive branch did not perform duties at home during the war. All were engaged abroad. Therefore a distinction should be made between the regular officers of the R.A.M.C. and those civilian medical gentlemen who joined the army for the first time, with temporary rank to enable them to deal with soldiers. The medical examination of army recruits is not a simple matter. It requires sound professional knowledge, which our civilian medical brethren can furnish, but it also requires a thorough knowledge of the soldier and his duties under all conditions of service. This will be the most difficult condition with recruiting by civilians. It was stated in the House of Commons that recruiting in France is in the hands of civilians. It is forgotten that, except women and children, there are no civilians in France, where all men physically fit have been, or are now, serving in the army.—I am, etc.,

August 14th.

SURGEON-GENERAL (retired).

Universities and Colleges.

MEDICAL SCHOLARSHIPS.

THE following medical scholarships have been awarded by the London Intercollegiate Scholarships Board at the institutions indicated:

UNIVERSITY COLLEGE.—Bucknill Scholarship: A. J. Morland. *First Medical Exhibition: C. D. Shapland. *Second Medical Exhibition: V. Feldman.

* Subject to the confirmation of the College Committee.

KING'S COLLEGE.—Warneford Scholarships: M. Melgrave; P. M. Acheson and H. W. Snell, equal.

WESTMINSTER HOSPITAL MEDICAL SCHOOL.—Chemistry and Physics Scholarship: J. Pearce.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—St. Dunstan's Exhibition: E. V. Adams, Isabel Thorne Scholarship: D. N. L. Leverkus. Mabel Sharman-Crawford Scholarship: E. M. Store. Mrs. George M. Smith Scholarship: E. J. Williams.

UNIVERSITY OF LONDON.

ST. THOMAS'S HOSPITAL.—The following scholarships have been awarded:—Entrance Science (first £150, second £60): J. C. Churcher and N. S. Macpherson, being equal, divide the two scholarships. Arts (two, £15 15s. each): W. H. Dunn, E. G. Housden.

The Services.

EXCHANGES.

OCCULIST R.A.M.C., ophthalmic centre, France, wishes to exchange with officer holding similar appointment in United Kingdom.—Address, No. 2700, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

R.A.M.C. Exchange wanted. M.O. to a reserve park (horse transport) in France desires exchange with M.O. of a home service unit. Write for particulars to M.O., No. 2 Res. Park A.S.C., B.E.F.

Obituary.

ALEX. REID URQUHART, LL.D., M.D. ABERD.,

F.R.C.P. EDIN.,

FORMERLY PHYSICIAN SUPERINTENDENT OF THE JAMES MURRAY
ROYAL ASYLUM, PERTH.

WE regret to record the death, on July 31st, at Eastbourne, of Dr. A. R. Urquhart, for many years physician superintendent to the James Murray Royal Asylum, Perth. Dr. Urquhart, who was 65 years of age, graduated M.B., C.M. Aberd., with honours, in 1873, and M.D. in 1877; and in 1914 his university conferred on him the honorary degree of LL.D. He became F.R.C.P. Edin. in 1894. After graduating he held appointments as assistant medical officer at Dr. Newington's private mental hospital, at the Warwick and Berkshire County Asylums, and finally at the Perth County Asylum. He found his life work as physician superintendent of the James Murray Royal Asylum and Hospital for the Insane at Perth, an office to which he was appointed in 1880. When he retired in 1913 he was appointed consulting physician, and his many friends in Perth presented him with his portrait in oils by Mr. Fiddes Watt, A.R.S.A.

Dr. Urquhart for many years took great interest in the work of the British Medical Association, was honorary secretary of the Perthshire Branch, and for many years a member of the Parliamentary Bills Committee and of the central Council of the Association. He was secretary of the Section of Psychology at the annual meeting at Glasgow in 1888, its vice-president at Newcastle in 1893, and its president at Leicester in 1905. He was also a member of the special subcommittee of the Parliamentary Bills Committee on incipient insanity.

He was for some time joint editor of the *Journal of Mental Science*, and contributed to its columns a number of articles, especially on asylum organization, construction, and administration. He was the author of the article on asylum construction in *Tuke's Dictionary of Psychological Medicine*, on mental weakness in *Allbutt's System of Medicine*, and of numerous articles on insanity to the *Encyclopaedia Medica*. His eminence as an alienist was recognized in many ways; he delivered the Morison lectures on insanity before the Royal College of Physicians of Edinburgh in 1907, and was an honorary member of the Belgian, Italian, French, Canadian, and American associations and societies concerned with the speciality to which he devoted himself.

J. C. J. writes: Dr. Urquhart's reputation as an alienist and as an authority on all matters dealing with the treatment and control of the insane was world-wide, and no member of his speciality in this country was more closely in touch with the practice and views of those engaged in psychiatry on the Continent of Europe. He had travelled much and read much, and was a man of singularly broad and cultivated mind, keenly interested in art, literature, architecture, and all the refinements of life, but practical and business-like in all his conduct, and never satisfied if he was not taking a part in the affairs of his profession

and his community. For many years he acted as secretary to the Scottish Division of the Medico-Psychological Association, and had filled the presidential chair; a few days before his death he was elected an honorary member of the association, a distinction conferred on few.

Dr. CHARLES MERCIER writes:

How fast the old guard of alienists is disappearing! The ink is scarcely dry upon my tribute to Hayes Newington when I hear of the death of another old and dear friend, Urquhart, late of Murray's Royal Asylum at Perth. Dr. Urquhart was a physician of the highest type. Polished, urbane, well read, highly cultured, a master of his profession, learned in its history, and personally acquainted with the leaders of it, both in this country and abroad, he was the very model and exemplar of the highest class of physician. Of all my antagonists in controversy, Urquhart was the most satisfying. Humorous, witty, imperturbable in temper, deft in argument, and tenacious of his opinions, he was an ideal adversary, and as we never met without sparring, so we never parted without feeling that our friendship was increased. He gave me many a fall, but he always contrived that his antagonist should fall soft, and I found it impossible not to join in the laugh that he raised at my expense. It is not very long since he came to visit me, and to my great pleasure brought most of his family with him, and I saw little of the mental weakness of which he complained. It was certainly not apparent in his conversation, but he found himself unable to read, a great deprivation for so scholarly a man. He was a good speaker, and a better talker—but what was there that he undertook that he did not do well? May I, when my time comes, leave as fragrant a memory behind me!

MISS MARIAN WILSON, M.B., Ch.B. Edin., surgeon to the Scottish Women's Hospital (Hôpital Auxiliaire 301), Royaumont, France, died on August 1st, of acute appendicitis, at St. Martin-Vésudie, Alpes Maritimes, while taking a few weeks' rest with her relatives. Miss Wilson belonged to a Scottish family, and graduated in Edinburgh in 1906, but lived for some years in Lausanne, where she acquired a mastery of the French language. She had held the post of medical officer to York Dispensary, and subsequently spent several years in Palestine as a medical missionary in Jaffa and Hebron. On the outbreak of hostilities Miss Wilson returned to Lausanne, and joined the staff of Royaumont in November, 1915. Her surgical ability and conscientious work made her a most valuable member of the staff, and her distinguished services to the French wounded were recognized in February, 1917, when the French Government awarded her the Médaille des Epidémies en Vermeil. Miss Ivens, Médecin Chef of the hospital, Royaumont, writes of Miss Wilson that "her personal charm and extreme interest in and solicitude for her patients gained her their affection in an unusual degree, and after their return to the front they not infrequently walked many miles and spent many hours of their short leave in paying her a visit. In spite of a frail physique, with an admirable spirit Miss Wilson rose to the occasion during many periods of stress and fatigue. The news of her untimely death caused the deepest sorrow to her friends and comrades, in whose ranks her loss has created an irreparable gap."

LIEUT.-COLONEL COLIN WILLIAM MACRURY, Bombay Medical Service, retired, died in London on August 4th, aged 74. He was the son of the late Angus MacRury of Dunruadh, in the island of Benbecula, Outer Hebrides. He took the diplomas of L.R.C.S. and L.R.C.P. Edin. in 1866, that of F.R.C.S. Edin. in 1869, and the D.P.H. Camb. in 1883. He entered the I.M.S. as assistant surgeon on April 1st, 1869, became surgeon on July 1st, 1873, surgeon-major on April 1st, 1881, and brigade surgeon lieutenant-colonel on April 16th, 1893. He retired on March 31st, 1896. Most of his service was spent in the sanitary department of Bombay, where he was Deputy Sanitary Commissioner in various districts; in May, 1888, he was appointed Sanitary Commissioner, and held that post till he retired. He continued to take great interest in all questions affecting sanitation in India after his retirement, and in particular held strong views with regard to the measures which should be taken to check the prevalence of plague.

OUR BELGIAN COLLEAGUES AT HOME AND ABROAD.

At a meeting of the committee of the Belgian Doctors' and Pharmacists' Relief Fund, held on August 2nd at the offices of the *Lancet*, the accounts for the half-year ending June 30th, duly audited by Messrs. Crowdsen, Youatt, and Howard, chartered accountants, were submitted as follows:

Receipts.			Payments.		
	£	s. d.		£	s. d.
December 1st, 1916:			Relief	5,638	15 0
Balance	10,588	5 3	Clothes	37	3 1
June 30th, 1917:			Administration		
Donations	348	3 6	peuses	23	2 10
Interest	240	5 6		5,699	0 11
			Balance at bank, £2,511		
			13s. 11d.; Treasury		
			Bills at cost, £2,955		
			19s. 5d.	5,477	13 4
Total	£11,176	14 3	Total	£11,176	14 3

The Treasurer, Dr. Des Voeux, said that the receipts since the last meeting had been small, but no appeals had been made for some time. The expenditure on relief in England was also small now, but £800 a month had been sent to Belgium during May, June, and July. The committee decided to continue to send this mensuality, being assured of its safe receipt by those for whom it is intended. The Clothes Bureau is now at the St. Andrew's parish rooms, Palace Street, Westminster, and as the year goes on the need of clothes will again become acute.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitology*, Westrand London; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY and BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand London; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Mediscra*, Westrand London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

S. desires to know whether there is any contraindication in the use simultaneously of potassium iodide and the appropriate vaccine in the treatment of actinomycosis.

INCOME TAX.

J. A. received about £500 as army pay in 1916-17 and lost about £200 on his practice during that year. The local surveyor of taxes declines to pool his earnings and assess him on the net total of £300, but proposes to treat his civil income as nil.

*. The War Office is responsible for the tax on the army pay and the pooling suggested is impracticable. But our correspondent is entitled to prefer a claim under the Customs and Inland Revenue Act of 1890 to be repaid on the amount of his loss through the conduct of his civil practice, which would lead to the same result. We therefore suggest that he write to the surveyor of taxes referring to the Act of 1890 and offering to supply any necessary particulars of his receipts and expenses for 1916.

REMOVAL OF MERCURY COATING ON RING.

H. has been consulted by a patient who, after using mercurial ointment on her child's head, finds a coating of quicksilver on her wedding ring. We are asked how it can be removed.

*. Thin films of mercury on the surface of any other metal disappear spontaneously in time owing to the fact that metallic mercury is slightly volatile even at ordinary temperature; the process, however, is very slow, usually requiring several months at least. If it is desired to

accelerate matters, by far the best method is to expose the article concerned for a short time to a temperature of about 400° C. and remove any mark or discoloration remaining by a little polishing; if, however, circumstances forbid resort to a high temperature, the following alternatives may be tried: (1) If the patches are not in contact with the skin, the cautious application of dilute nitric acid (concentrated nitric acid 1, water 2) will slowly remove the mercury; acid of this strength does not quickly stain the skin yellow, but is still strongly caustic and therefore too dangerous to be applied by the patient herself. (2) The only remaining practical method is to remove the adhering mercury, together with the surface of the gold, by mechanical abrasion with a powder such as precipitated silica, pumice, or very fine emery; if the film is only a thin one, this could probably be done fairly easily and without losing much of the gold, the surface being subsequently polished with jeweller's rouge.

LETTERS, NOTES, ETC.

THE ROWAN BERRY: A SIALOGOGUE.

H. DOWNES, M.B., F.L.S. (Ilminster), writes: Rowan berries contain a large amount of malic acid and a small quantity of hydrocyanic acid; probably the former is answerable for the sialogogue action. Malic acid is situated in the pericarp; its function is to prevent birds from eating the berries before they are quite ripe, or over-ripe, as we should consider it. As ripening proceeds the malic acid splits up the glucosides (probably assisted by a ferment), with the formation of sugar; the berries are then eagerly devoured by birds and the seeds thereby disseminated. An excellent substitute for currant jelly may be made from the berries.

A TOO-PUNGENT MOUTH-WASH.

MR. J. T. HALL (Bournemouth) writes: Dr. Goodrich asks on what I found my assertion that highly pungent washes, powders, and pastes are a source of marginal gingivitis. I reply, on clinical observation over a long period of years. The primary factor in the causation of pyorrhoea is, of course, dietetic; but there are contributory factors, and this is one. Perhaps the most flagrant example is to be found in the popular carbolic dentifrices, some of which are so pungent as almost to bring tears into one's eyes. Such powerful irritants cannot be used day after day without seriously affecting the oral tissues. Their discontinuance in favour of milder preparations has in many of my patients been speedily followed by marked improvement in the health of the mouth.

DEFORMED FEET IN WOMEN.

DR. WALTER KIDD writes: The present fashion of short skirts has afforded the opportunity of seeing that a very large proportion of women in our country have deformed and inefficient feet. This is almost entirely a matter of flat-foot, other deformities being trifling as to numbers. The subject was brought forward in *Nature*, May 10th, and in the *National Review* for July. It is not one which seems of immediate importance to the medical profession, for most of the sufferers are not affected enough to make them seek advice, and the present overburdened state of mind of most medical men makes them indisposed to look into a matter which can well wait till greater things are settled. But the fashion of short skirts, and its revelation as to women's faulty ankles and feet, may not be longer with us than other fashions have been. That the number of active young women with flat-foot, in one or both feet, is very large, no one with his eyes open can deny. Precise statistics may be useful; in any case the collection of them will have the effect of delaying or deferring *sine die* any general acknowledgement of the fact. But such statistics are not necessary. I have examined over a thousand persons, observing from behind as they walked, and am satisfied that not more than 10 per cent. of these had plumb-straight ankles, and that this is a generous allowance. A larger number might reveal 30 per cent. or 20 per cent., or perhaps only 5 per cent., but the deformity in question is so prevalent that it should be brought before the education authorities in order that foot drill may be enforced in all elementary schools.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

Observations

ON

TRENCH NEPHRITIS, ITS LATER STAGES
AND TREATMENT.

BY

J. MICHELL CLARKE, M.D., F.R.C.P.,

LIEUT.-COLONEL R.A.M.C.(T.).

SOUTHEAST SECTION, 2ND SOUTHERN GENERAL HOSPITAL;
PROFESSOR OF MEDICINE, UNIVERSITY OF BRISTOL.

THIS paper deals with cases of nephritis in a base hospital, the initial stage being over. All the patients came from France, except about six from Salonica, who showed no special features. The cases were taken in order of admission without selection. They were all under my immediate observation, and eighty cases seemed a sufficiently large number to represent the chief features of the disease.

The occurrence of nephritis on the large scale of the present war has afforded an opportunity of studying the first attack of the primary disease in young adults, which rarely occurs in civil hospitals, because in them the majority of cases of nephritis are exacerbations of a pre-existing disease. One would therefore be prepared for possible variations in the course and symptoms of the disease from those met with in civil practice, and possibly even for a new clinical type of nephritis, either as the result of the unprecedented physical conditions under which the men were placed and of a diet which mostly contained a relative excess of protein, or as the result of infection by a specific micro-organism. At the stage in which these cases were seen it seemed too late to make it worth while to carry out bacteriological investigations. The general result seems to point to a diffuse nephritis, chiefly affecting the convoluted tubules, focal in distribution in the kidney, and presenting a corresponding clinical syndrome with some special but no absolutely distinctive features.

In view of the youth of most of the patients, it might be expected that some cases classed as nephritis would in reality turn out to be examples of "functional albuminuria" or "albuminuria of adolescents," but this was not the case, and, speaking generally, this form of albuminuria has hardly been seen at this hospital throughout the war.

Taking the 80 cases admitted to the hospital with the label "nephritis," there were only 6 in which the diagnosis was at fault, and in which the patient was suffering from some disease with secondary albuminuria.

The remaining 74, for convenience of reference, are placed in four groups:

I. Thirteen cases in which there was either a distinct history of a previous attack of nephritis or definite signs of an affection of the kidneys of some standing.

II. Ten cases in which the nephritis was found to have cleared up on admission, though the symptoms of an attack before admission were quite definite.

III. Nineteen cases which completely recovered in hospital and were discharged cured.

IV. Thirty-two cases which left this hospital not cured, though the majority were greatly improved.

CAUSATION.

With regard to causation: In Group I, five, probably six, patients had had attacks of nephritis at some antecedent time, and one gave a family history of Bright's disease; four patients had had scarlet fever severely, two recently, one diphtheria followed by general anasarca, and four were either painters or plumbers before the war. In Group II, two had had scarlet fever, one recently, one trench fever shortly before, and one diphtheria three years before. In Group III, one had had scarlet fever, three bronchitis, and two malaria shortly before. In Group IV, three had scarlet fever in childhood, two diphtheria, four had recently suffered from malaria, but not severely, and in one the affection of the kidneys followed pneumonia eighteen months before. Twelve patients attributed the illness to standing in cold water, and four admitted alcoholism.

In three the illness began with a sharp attack of bronchitis, in two with pneumonia, in one with pleurisy and bronchitis, and in two with an attack of malaria.

There was no case in which the nephritis came on directly after being "gassed," and very few of the patients had been "gassed" at any time.

AGE.

The average age of the patients in Group I was 31.8 years; in II, 24.9; in III, 27; and in IV, 31.7 years. Those in Groups II and III, with early recovery, were thus decidedly younger than the others. Length of service appeared immaterial both to the incidence of disease and to its severity.

ONSET.

The onset in nearly all appears to have been sudden, and oedema of the face and limbs, with pains in the back, and dyspnoea the chief symptoms; the latter was only partly accounted for by the frequency of bronchitis. Oedema at onset was present in 57 out of 74 patients. Haematuria, generally slight, occurred in many.

LATER SYMPTOMS.

The chief symptoms of the disease whilst in hospital were oedema, most often of the face and limbs, much less often general anasarca; as a general rule oedema showed a disposition to clear up fairly quickly, but in bad cases was, of course, persistent, sometimes for many weeks, and in a few attended with ascites and pleural effusion; dyspnoea, often but not always associated with some bronchial or pulmonary complication; pains in the limbs and back, headache, less frequently vomiting, only occasionally diarrhoea, a feeling of great prostration, and sometimes mild cyanosis; anaemia was only present in the more severe cases and uraemic fits in one only.

Changes in the Cardio-Vascular Apparatus.

The changes in the cardio-vascular apparatus are summarized in the table. The greater frequency of all cardio-vascular changes in Group I, where there was evidence of past kidney trouble, is to be noted, also that the blood pressure affords a fair index of the severity of the case. The pulse pressure seems a little large in all, and especially in the severe cases.

Table showing Changes in Cardio-Vascular System.

	Hypertrophy of Left Ventricle.	Thickened Arteries.	Alteration in Heart Sounds.	Retinal Changes.	Average Blood Pressure in mm. Hg.		
					Systolic.	Diastolic.	Pulse Pressure.
Group I (13 cases) ...	5	5	11	5	147.9	90.8	57.1
Group II (10 cases) ...	0	0	5	0	123	76	47
Group III (19 cases) ...	0	0	9	2 (14)	131	83.7	47.3
Group IV (32 cases) ...	8	7	23	8 (29)	143	91.2	52
Total (74 cases) ...	13	12	48	15 (66)			

In most cases several observations on blood pressure were made. The highest systolic pressure taken was 193 mm. Hg, and the lowest diastolic 65 mm. Hg. The figures in brackets indicate the number of cases in which the particular symptom referred to was investigated. The blood pressure was taken in 10 cases in Group I; in 6 cases in Group II; in 13 cases in Group III; and in 23 cases in Group IV.

The blood pressure was estimated by the auscultatory method with French's sphygmomanometer, and the diastolic pressure was taken as the point of disappearance of the loud third sound. The changes in the heart sounds consisted of a ringing or accentuated aortic second sound, with occasionally a systolic murmur or reduplicated first sound at the apex, and except in Group I displacement of the apex-beat outwards, when present, was never great.

The retinal changes comprised two cases with intense retinitis, optic neuritis, numerous haemorrhages and yellow-spot changes—both died; one of mild optic neuritis, who also died; three of mild oedema of the optic disc; two of pallor or oedema around the disc, and five of decided thickening of retinal arteries (one "silver wire" in a painter at 41). No other instance of retinal haemorrhage was noted.

Urinary Changes.

The quantity of urine was generally small for some days after admission; in severe cases 10 to 20 oz. a day.

Later the quantity varied from 30 to 60 oz. a day, and was sometimes larger. Exceptionally the amount passed was small throughout, and some of these cases did quite well. Quite apart from treatment, there were periods of increased diuresis, as occurs in most forms of nephritis. An increased quantity of water did not always carry with it any considerable increase in the daily amount of urea.

The specific gravity of the urine was, generally speaking, low, the average being from 1015 to 1018, often below 1015, rarely over 1025, and fixation of specific gravity was seen in the more severe cases.

The quantity of albumin was often very large on admission, but in most soon diminished. In Group I on admission the average amount in 9 cases was 0.89 per cent., and in 3 a trace, and on discharge in 4 a trace, in the rest 0.26 per cent.; in Group IV the average quantity of albumin on admission in 22 cases was 0.46 per cent., in others a large to a small trace, and on discharge from 0.1 per cent. to a faint trace (Esbach's tubes).

Urinary casts were numerous on admission in most cases, except the mildest, and very abundant in the severe ones. They consisted generally of the epithelial, hyaline, and granular varieties, and fatty casts were rarely seen. In cases that recovered, the casts rapidly diminished, but were very persistent in small numbers. These statements apply to centrifugalized urine.

Decided haematuria in hospital was exceptional; in many cases the urine was smoky on admission and for a short time afterwards, and this condition was apt to recur occasionally; in still more the only evidence of blood was microscopic.

With regard to the nitrogenous excretion, in 4 cases in Group I, several estimations in each, the nitrogen excreted as urea was 53 per cent. of the total nitrogenous intake; and in 10 cases in Groups III and IV, several estimations in each, the average excretion was 67 per cent. of the intake. Urea was estimated by the hypobromite method, as more exact methods were not available. These cases may be taken as typical examples of varying degrees of severity.

As to excretion of NaCl, the amount in the food would vary from 4.5 to 6 grams a day; on the whole there was a deficiency in excretion of NaCl, but not to any great degree; it was most marked in severe cases and on admission, and improved as the case improved.

Thus in Group I the average excretion of NaCl was 4.9 grams a day (average of 5 cases with several estimations in each), whilst in a fatal case it was only 3 grams a day, and in Group IV the average excretion in 5 severe cases was nearly the same, 4.7 grams; and in 7 less severe cases it was 7.9 grams a day. In 3 of these it was at first as low as 1.5 to 2.2 grams.

Before estimations of urea and NaCl were made, the patients had been on a fixed diet of known quantity for some days. Three teaspoonfuls of salt were given in water to two cases of average severity and the excretion in the subsequent twenty-four hours was 10 and 12 grams respectively.

Phenol-sulpho-naphthalein tests were made on several occasions, and although in severe cases elimination was practically nil, unfortunately I can make no positive statement on this point, as the drug used was afterwards found by control tests to have deteriorated.

DURATION OF ILLNESS.

The average duration before admission to this hospital was two to three weeks, and that of the whole illness until the cases were sufficiently recovered for discharge was, in Group I, 9.6 weeks, in Group II (convalescent on admission) three weeks, in Group III (recovered in hospital) 6.8 weeks, and in Group IV, 8.1 weeks.

RESULTS.

The results were far worst in Group I; of these 13 cases, 1 died, 5 were discharged *in statu quo*, 5 showed some improvement, and in 2 only had the albumin and casts disappeared, and they might be considered well. Groups II and III are composed of cured cases. Of 30 cases in Group IV, 2 died, 3 were discharged not improved, 5 with casts and a considerable amount of albumin in the urine, and 12 with only a faint trace of albumin, or on some days none, and with a few casts present at intervals. The last 17 patients were sent to auxiliary hospitals and subse-

quent inquiry has elicited that 5 have fully recovered, 6 are much better and doing light work, and 2 unchanged.

To sum up: Of 68 patients, 3 died, 8 were discharged slightly improved as permanently unfit, 11 much improved but the urine contained casts and more than a trace of albumin, 6 fairly well and able to do light work, and 32 recovered completely; of 8 patients I have not sufficient information. It has already been pointed out that the younger patients gave the highest proportion of recoveries. It may also be noted that the only two cases in which there was intense retinitis and the only one with distinct optic neuritis died.

Ultimate Prognosis.

I think that in those cases who left the hospital with urine free from albumin and casts, with a kidney functioning well, with a normal blood pressure and without signs of any cardio-vascular impairment, it is reasonable to expect a permanent cure, provided they are not placed under too unfavourable conditions. Probably the same may be said for those in whom the above conditions obtained, with the exception of a faint trace of albumin, and results of inquiry as to the subsequent condition of several of them support this view. If, as is probable, the nephritis is of focal distribution in the kidneys, persistence of a trace of albumin and a few casts in the urine may be attributed to the slow healing of a focal patch, the rest of the kidney being unimpaired, and the condition may be expected to clear up in time, though for this it is obviously essential that the patient should lead a careful life.

If there have been previous attacks of nephritis or evidence of pre-existing (to the attack) cardio-vascular-renal changes, then it is unlikely that the patient will completely recover.

With regard to cases in which, after a first attack, moderate or considerable albuminuria remains after three months, or there is evidence of cardio-vascular changes, further lapse of time is required to show the result, but the prognosis may be regarded as unfavourable, especially in men over thirty-five years of age.

TREATMENT.

Rest in bed was insisted upon at first, and in all cases until either the albuminuria and casts had cleared up and there was a fair balance between the intake of nitrogenous foods and salt and the output by the kidney, or until it seemed that there was no prospect of the albumin and casts disappearing. The presence of blood in the urine was a further reason for complete rest, and also for great caution in increasing the amount of food, especially as to the addition of egg-yolk, fish, and chicken to the diet.

Diet.

Severe cases were placed on milk only on admission. The large majority were on a fixed diet of milk 2½ pints, bread 6 oz., rice 1 oz., butter ½ oz., potatoes 4 oz., greens 4 oz., jam 1 oz., and fruit occasionally. As improvement took place the bread was increased to 8 oz. and the yolk of one or two eggs was added. Later on, 4 oz. of cooked fish or chicken were added and sometimes more bread and butter. Salt was not used as a condiment, nor added by the cook, except in cooking green vegetables. The amount of water was not restricted when once the kidney began to secrete freely. It is essential to know the amount of food by weight that a patient with nephritis is taking, and reliance cannot be placed on the ordinary hospital dietary unchecked, as the amount taken by individual patients varies greatly.

Drugs.

Many of the patients had only a simple diaphoretic mixture with a saline or other purgative when required. Hot-air baths were used when free diaphoresis was necessary. Nitroglycerin was given when the blood pressure was raised. Iron was given in the later stages if there was anaemia.

In many cases with deficient urinary excretion on admission, the treatment with sodium carbonate, suggested by Dr. Martin H. Fischer, was used with very satisfactory results in establishing a free flow of urine. Dr. Fischer attributes nephritis to an abnormal production and accumulation of acid in the kidneys, and the oedema, anasarca,

and other symptoms of nephritis to a similar process occurring in the tissues, and the object of his treatment is to diminish the concentration of acid by giving water freely and to neutralize it by an alkali. This may be given by mouth, or if not absorbed thus, by rectal or intravenous injection. The treatment is not suitable for chronic interstitial nephritis, which has a different origin.

alkaline treatment with digitalis and caffeine is efficient when they fail singly as diuretics.

Although the excretion of urea was also increased to a varying extent in different cases—for instance, in the foregoing case, on one day with 90 oz. urine, specific gravity 1010, urea excreted was 28.5 grams, or N 12.38 grams (with intake of N about 10 grams), albumin 12.75 grams

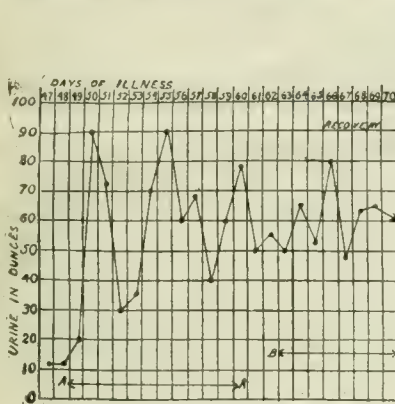


CHART 1.—Illustrating the rapid and free diuresis produced by administration of sodium carbonate (see also Chart 2). A—A, Sod. carb. gr. xv hourly; bowels moved once daily. B, Trinitrin $\frac{m}{j}$ of 1 per cent. solution four-hourly.

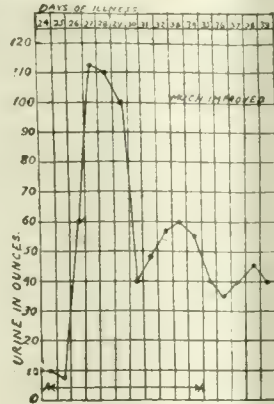


CHART 2.—From the 24th to the 29th day of illness sod. carb. gr. xij was administered every hour, and from the 29th to the 35th day every three hours. Bowels moved twice daily.

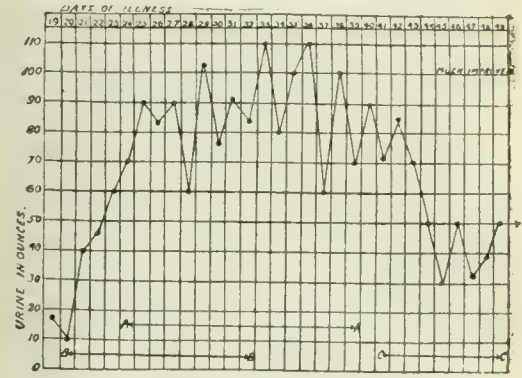


CHART 3.—Shows a slower effect of sodium carbonate. A—A, Adrenalin, 1 in 1,000. mij t.i.d. B—B, Sod. carb. gr. xv hourly; bowels moved once daily. C—C, Tr. digitalis mxx twice daily. Patient had had scarlet fever twelve months before.

Whatever view be taken of this explanation of the pathology of nephritis, there is no doubt that the treatment is often most efficient in producing free diuresis in about forty-eight to seventy-two hours with disappearance of oedema and relief of accompanying symptoms, such as dyspnoea, headache, etc.

Pure crystallized sodium carbonate ($Na_2CO_3 \cdot 10 H_2O$) was given in doses of gr. x–xv in 8 oz. of water every hour during the daytime; the interval was increased to two to three hours after free diuresis had lasted two to three days. In two cases where administration per os was not feasible the rectal injections advised by Fischer (sod. carb. 10 grams, sod. chlor. 14 grams, water to 1 litre) were given every six to eight hours, but without success.

Most patients took this large quantity of fluid well, without special discomfort; two or three objected to it, and in three cases it had to be stopped because of nausea or vomiting. No other outward effects were observed. Reference can only be made to a few cases typical of many treated in this way. Charts 1 and 2 illustrate the rapid and free diuresis produced. Chart 3 shows a slower effect, the urinary excretion

rising gradually with some fluctuation during four to five days and then maintaining a level of 80 to 110 oz. for eighteen days. The diuresis was followed by disappearance of oedema and amelioration of symptoms.

Chart 4 illustrates a very severe case in a patient, aged 20, with uraemic symptoms and extreme general anasarca. The effect of the alkaline treatment was remarkable; as the chart shows, in ten days the anasarca had disappeared, and from an apparently hopeless case he had become convalescent. In this case and in one or two others it has seemed to me that the combination of the

NaCl 28 grams—the chief effect was on the excretion of water and salts.

In a few cases the treatment failed for no ascertained reason.

In one case uraemic fits, the only instance in the whole series of cases, occurred on the sixth day of treatment, but they did not recur; free diuresis set in next day, dropsy disappeared gradually, and he made a good recovery.

Adrenalin.

One other point in treatment may be mentioned.

Several patients complained of feelings of great prostration, attended with a low blood pressure. Relief was given by the administration of adrenalin chloride (1 in 1,000) mij every four hours.

PATHOLOGY.

With regard to the pathology I have little to say. Of the three fatal cases, a *post mortem* was allowed in one only. This was a patient in Group IV, of 23 years of age, with no history of previous illness except bronchitis as a child. He had never had scarlet fever, nor been "gassed." He was admitted with oedema of the face and legs and general bronchitis, with coarse, moist râles over both lungs, slight enlargement of the left ventricle of the heart, and a systolic apex murmur. The systolic blood pressure was 198 mm. Hg, and the diastolic 140. Liver and spleen not enlarged. He had double optic neuritis and intense retinitis, with numerous haemorrhages. The urine was scanty, specific gravity 1013 to 1016, contained a large quantity of albumin, no blood, and abundant hyaline, epithelial, granular, and fatty casts. He died of diffuse bronchopneumonia, with some haemoptysis. The sputum contained pneumococci.

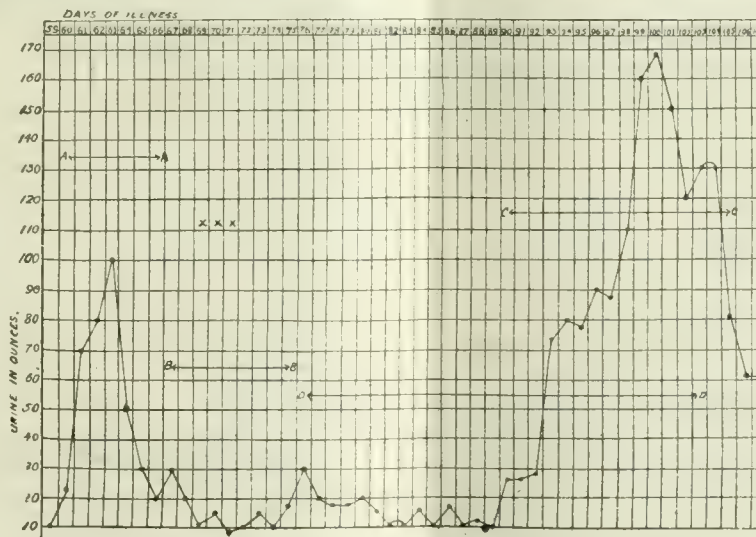


CHART 4.—A very severe case of trench nephritis. A—A, Sod. carb. gr. vij hourly. xxx Saline enemata every six to eight hours on these days. B—B, Tr. digitalis mxx every six hours. C—C, Sod. carb. gr. xij hourly from the ninetieth to the ninety-fifth day, every two hours for the remainder. D—D, Tr. digitalis mxx , caffeine gr. v. every six to eight hours; twice daily after the 103rd day of illness; anasarca and dropsy disappeared.

with coarse, moist râles over both lungs, slight enlargement of the left ventricle of the heart, and a systolic apex murmur. The systolic blood pressure was 198 mm. Hg, and the diastolic 140. Liver and spleen not enlarged. He had double optic neuritis and intense retinitis, with numerous haemorrhages. The urine was scanty, specific gravity 1013 to 1016, contained a large quantity of albumin, no blood, and abundant hyaline, epithelial, granular, and fatty casts. He died of diffuse bronchopneumonia, with some haemoptysis. The sputum contained pneumococci.

The following is the report of the condition of the kidney:

This shows a condition of focal nephritis with evidence of several acute attacks recent in date.

Capsule thickened in patches. Blood vessels do not show arterio-sclerotic changes. Glomeruli normal in places; in others they show capsular fibrosis and fibrosis or atrophy of glomeruli; elsewhere there are intracapsular exudation, cell proliferation, and fibrosis. The interstitial tissue is increased in patches, and contains many areas of lymphatic spaces laden with fat.

The convoluted tubules are almost normal here and there, but to a great extent show cellular degeneration, especially fatty desquamation and degradation of the lining cells and granular debris in the lumen. Some show dilatation, and a few cystic spaces are present in the subcortical area.

The heart shows interstitial myocarditis in some areas.

The spleen, suprarenal, and pancreas are normal.

So far as this case goes it would confirm the clinical evidence, which points to this form of nephritis as being a diffuse nephritis, affecting chiefly the convoluted tubules, but not especially the vascular elements of the kidneys. The characters of the urine, with its rather low specific gravity, excretion scanty at first and later as a rule abundant, moderate or large amount of albumin, and with numerous hyaline, epithelial and granular casts in the early stages, correspond to a change of this kind.

To sum up, in cases of nephritis at a base hospital, the general clinical features perhaps especially characteristic are the benign character of the nephritis in the large majority, the frequency of pulmonary complications, especially bronchitis, oedema of lungs, and broncho-pneumonia, apart from these complications a not infrequent dyspnoea, the generally good appetite, clean tongue, and maintenance of fair nutrition, and, on the other hand, infrequency of anaemia, of marked uraemic symptoms, and of a high blood pressure or cardio-vascular changes. The short duration of the illness in most cases would explain some of these latter departures from the usual symptoms of other types of nephritis. Severe retinitis or optic neuritis is uncommon—3 out of 80 cases.

I regret that more thorough investigations on the blood and on the excretion of uric acid, creatinin, etc., could not be carried out, and in conclusion it is my pleasing duty to thank the resident medical officers at Southmead Hospital, especially Captain H. H. Carleton, R.A.M.C., for much help in taking blood pressures and other investigations, and Professor Walker Hall, of the University of Bristol, for pathological reports, and to express our great indebtedness to the Medical Research Committee for their help in maintaining the pathological laboratory at Southmead Hospital, in which the urinary examinations were carried out.

REFERENCE.

¹ Davies and Weldon: *Lancet*, 1917, vol. ii, p. 118.

REAMPUTATION.

BY

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ASSEMBLING that a reamputation of a limb has to be done, at what period after the primary amputation should it be undertaken?

The practice of surgeons differs widely. Some wait for healing and a "clean" operation which often takes months. But an experience of the use of button-sutures threaded through vulcanite boat-shaped buttons or india-rubber tubing acting as a support for the flaps and taking all the tension off the skin stitches shows that it is possible to reamputate in the presence of suppurating surfaces with almost complete certainty of union either by first intention or a kind of second intention, with preservation of the apposition of the flaps and the covering of the end of the bone.

Men upon whom an urgent amputation has been done in France arrive at hospitals in Britain after an interval varying from several days to a week or two.

If the amputation has been of the guillotine variety, the incision in the skin has been clean and circular, the skin is retracted up the limb, the muscle surfaces have retracted to a lesser degree, the end of the bone is exposed and protruding, and all the surfaces are bathed in pus.

Sometimes flaps have been attempted and a similar

condition exists, with the addition that the flaps may be large, hanging, and ragged at the edges from stitches which have cut through owing to suppuration.

My own invariable practice ever since the commencement of the war has been to allow these cases to settle down in hospital for a few days and then to reamputate, stitching the skin edges together as for a clean operation. During the waiting days the exposed surfaces are dressed with moist antiseptics, and when the general condition (usually disturbed by the journey and the necessary handling) has improved, the resistance has reached its maximum and the temperature has become steady, though slightly elevated, the patient is considered ready for operation.

When there was nothing other than the condition of the stump to consider reamputation has, as a rule, been done within a week or ten days of the patient coming in.

In no case have the skin and soft tissues failed to heal over the end of the bone by either first or second intention, with at worst, and rarely, a small granulation area at the point where the drainage tube was left in for the first twenty-four or forty-eight hours; or where some pus had formed at a skin stitch or between two stitches. Even when this pus has formed it has not interfered with the complete healing of the soft tissues over the end of the bone and the union of the skin, usually within twenty-one days. In no case has the end of the bone appeared or been exposed even to the probe after a reamputation. That this is not the general rule there is abundant evidence at the Pavilion Military Hospital for Limbless Men. It would appear that reamputations have been done and the bone shortened, but that the condition of the stump has reverted to its original state, the skin and other soft tissues retracted, and the bone exposed, the only difference being that the limb is shorter.

The secret of healing by primary or by secondary, or rather delayed primary, union in septic cases is the relief given to the skin stitches by the "button-sutures" planted well back from the incision, and arranged staple-wise in such a way and position as to bear the whole weight of the flaps and keep them in apposition.

The "second intention" to which I have referred is a union in the presence of or following suppuration affecting the skin edges, but not sufficient to separate those edges from each other (either by the stitches cutting through or by sloughing) to such a distance as to prevent the epithelial margins from uniting without the intervention of a granulation area.

As the button sutures carry all the weight of the flaps and bear all the tension, the skin stitches have no other function than to keep the skin edges opposite one another and prevent bulging of subcutaneous tissues. In short stumps the loss of another inch of bone by reamputation may seriously curtail locomotion. With button-sutures less provision has to be made for long flaps to meet contraction, and therefore valuable length is saved. These button-sutures tend also to keep the severed tendinous ends and muscle edges in apposition over the end of the bone. This either gives attachment between the two groups of locomotor muscles over, or it gives attachment to, the end of the bone. If it unites by close fibrous intervention over the end of the bone the result is a greater muscle purchase, and therefore a greater power of movement of the stump than would follow an attachment higher up the shaft, which is usual when muscles are allowed to retract after amputation. Moreover, a muscle shortened by contraction and attachment higher up suffers the disadvantage in "pull" that a rower does at the end of his stroke, as compared with the advantage at the commencement, when his arms are fully stretched and the point of "attachment" to the oars most distant from the base to which they have to be drawn. It should never be forgotten that a stump is a locomotive organ as well as a weight-carrying organ, and will have to swing and control an artificial limb often as heavy as 7 lb. It is also of advantage to get a substantial boss of soft tissue over the end of the bone. Even if atrophy takes place under muscle pull or from the pressure on an end-bearing stump the residuum is something to the good. In my opinion an effort should always be made to get a stump that will stand the pressure of the body weight. Even if this may not be urgently required, as in a short thigh stump, it has certainly two advantages—it shares the body weight with the tuber ischii, and, from the sense of firmness and

compactness it gives the man, he has a better control over his artificial limb.

The normal heel is the ideal stump. It is dome-shaped; it is covered with true skin, which thickens and hardens with use; it has a boss of fat, honey-combed with connective tissue, and it has a dome-shaped bone-end covered with periosteum. Every amputation should aim at giving a stump having these characters.

As a typical case of reamputation through the thigh, take an emergency operation done in France through the knee-joint. The condyles of the femur are exposed, the cartilaginous surfaces are ulcerating off, and the bone is carious when the case comes to Britain.

Four weeks have elapsed since the first amputation. A long anterior and a short posterior flap are dissected up in the lower third of the femur, sufficient of the muscular tissues being included in the flaps (but at a slightly higher level) to cover the end of the bone completely and easily with muscle. A circular incision is made through the periosteum well to the distal side of the point in the femur where it is to be severed with the saw, and a cuff of periosteum turned back little by little with the aid of a periosteal elevator, care being taken not to split or tatter or buttonhole this periosteal cuff. If the periosteum is rolled back one-eighth of an inch at a time, it will not split into ribbons, a defect in technique that tends to favour the formation of spurs. These spurs in many cases appear to be the result of grafts arising from osteoblastic cells from the sawdust distributed along the line of the saw edge. To prevent this I follow the plan of having the muscle and soft tissues well covered and retracted by a cotton-cloth retractor during the sawing and then washing the bone dust away thoroughly with 1 in 1,000 perchloride solution before the retractor is removed. Any muscle tissue that has been torn with the saw should be snipped away.

After the bone has been sawn through and the sharp edges rounded by a file or cutting forceps, and the vessels picked up with artery forceps, the nerves are found and cut back. I have followed the practice of making a circular incision through the sheath of the larger nerves, and then with a dry gauze swab rolling up the sheath beyond the point at which it is intended to sever the nerve. This allows the nerve end to be covered with its sheath in a manner somewhat similar to the periosteal covering provided for the end of the bone.

After all vessels have been tied, a purse-string catgut suture is stitched round the free edges of the periosteum, and then tied in such a way as to cover the end of the bone completely. If suppuration take place beyond this, the bone is protected.

The next step is to put in the "button-sutures." If boat shaped vulcanite buttons are not available, rubber tubing can be used and button-sutures prepared by the theatre sister. These consist of two silkworm-gut sutures knotted through a piece of rubber drainage tube 1 in. to 1½ in. in length and the size of a slate pencil, or through the vulcanite boat shaped buttons.

If rubber tubing is used, the silkworm-gut threaded on a needle is passed through the substance of the tube near its cut end, and then along the lumen of the tube to about the centre of its length. The needle is then made to pierce the tube and emerge on its outside. The other silkworm-gut suture follows a similar route from the other end of the tube, and then the two ends are knotted with a reef knot on the outside of the tube at its centre.

This double silkworm-gut suture thus prepared is now inserted in the lower flap about 1 in. or 1½ in. from the skin edge, staple fashion, with the tube parallel to the line of incision, and the ends are then carried through the anterior flap about 2 in. or 2½ in. from the skin incision. The ends are then threaded through a piece of tubing (b) similar in length and size to its mate (a), but having an eye cut out of its middle by the scissors, through which the ends of the silkworm-gut are made to emerge from the lumen of the tube after having been passed through either end.

The ends are then knotted after the flaps have been compressed well in apposition, and the skin edges are then sutured in the ordinary way, a small drainage tube being

placed in one angle of the wound. The whole wound and the buttons are then sprayed with iodine, and the stump bound upon a Gooch splint.

These button-sutures keep the flaps in apposition and prevent sagging. They also prevent oozing of blood between the flaps and the formation of a miniature haematoma. They thus tend to prevent haemorrhage by the pressure which the flap surfaces are made to exert against each other. But their great virtue is that they defy the results of suppuration. The skin underneath the buttons may, and sometimes does, ulcerate at the point of passage into the skin of the silkworm-gut, but in my experience the skin has rarely given way or failed to support the pressure of the buttons in such a manner as to allow the flaps to part. The skin has thus no tension to bear and the edges readily unite. Tension, and not pus, is the enemy of union.

If profuse suppuration occur, and pus oozes between and around the skin stitches, they can still be left *in situ*, and small tubes may be inserted here and there between them. These skin sutures may even in the course of eight or ten days cut through, but as there is no tension to speak of tending to part the edges, they do not part. All the time the button-sutures, being some distance back beyond the troubled edges of skin, are free from pus and carry the whole weight of the heavy flaps and counteract contraction. The channels of these button-sutures may even suppurate and pus may well up along one or more of the strands of silkworm-gut. But they do not give way and the healing and restoring processes are going on all the time, till, in from ten to fourteen days, the wounds are either quite healed or sufficiently healed to do without the aid of the skin sutures, and finally in a few days later the button-sutures also.

The importance of this method of dealing with stumps lies in this, that the reamputation can take place at almost any time after the primary operation, notwithstanding that the stump is septic, with the practically certain assurance that the flaps will not part nor the end of the bone uncover.

The following are individual cases illustrating these points:

CASE I.

Pte. D., wounded August 6th, 1916. Thigh amputated in lowest third three days later (August 9th). He arrived in England twelve days later (August 21st). The stump had been covered by anterior and posterior flaps, but the whole had suppurated, the stitches had cut through, the flaps had separated, were bathed in pus, had sloughing edges in parts, and were hanging free. The bone, denuded of periosteum, was protruding about 1½ in. It was seventeen days later before the sloughs had separated and the flaps were brought to a condition of normal cleanliness for granulating surfaces. One of the flaps had several "fingers" made in the margin by the original stitches having cut through.

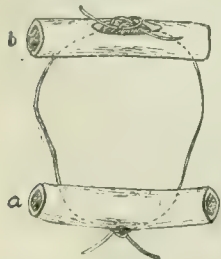
On the seventeenth day after his arrival in hospital here, the stump was reamputated. The bone was removed at a point beyond the ring of callus and high enough to give a periosteal cuff; the "fingers" were trimmed off, the flaps slightly extended upwards by incisions at their base, and the whole stitched up and completed as if it were a "clean" operation. Button-sutures were put in, the skin edges were closely stitched, and two small drainage tubes were put in at either angle of the wound.

In this case the granulating surfaces of the flaps were brought in apposition by the button-sutures, but in some parts granulating surface came in apposition to a clean cut surface. Sero-pus discharged from the tubes and they were kept in for five days. Pus appeared at three other points in the incision. No skin stitch completely cut through, and on the tenth day several of the looser ones were removed. Between most of the skin stitches the edges had united by first intention.

Small quantities of pus oozed from some parts of the edges and the stitch channels for several days longer, but by the twelfth day all the skin stitches were out and all the edges were united either by first intention or by second intention, except at three points—the two drainage tube openings and one small point in the centre where the edges were sufficiently parted to allow of granulations to appear. The button sutures were removed on the twelfth day. In three weeks the whole had healed.

CASE II.

Pte. B. was wounded in France on June 25th, 1916; was amputated through the middle of the thigh four days later, and arrived in hospital in England on August 21st about eight weeks after his first amputation. The skin and soft tissues had retracted and about one inch of bone protruded. On August 26th—that is, five days after his arrival—he was reamputated. The incisions necessary to prepare anterior and posterior flaps of equal length were made at the edge of the skin just before it merged into the epithelial margin, so that skin to skin was brought into apposition by the skin sutures. The rest of the operation was similar to Case I and the whole



healed by first intention, a little moisture from sero-pus being not sufficient to interfere with this process or delay it.

CASE III.

Pte. E., wounded July 4th, 1916. Amputated in uppermost third of thigh August 4th. The thigh was massive, and the patient was fat. The stump was very short. A large cauliflower granulation covered the end of the bone. This was surrounded by a broad band of cicatricial healing, and beyond this there were retracted and fleshy soft tissues.

On November 30th an incision was made along lines separating the skin and the cicatrix and the whole cicatrix and the granulation mass dissected off in one piece. On separating the cauliflower granulations a ring sequestrum was struck, and this was separated also. The skin and subcutaneous tissues were freely dissected up to allow of sufficient flap area to cover so large an exposed area and the protruding bone. This was accomplished, and two sets of button-sutures were put in. The skin edges were closely sutured as for a clean operation, and two small drainage tubes were put in at opposite angles in the wound.

The whole of these extensive edges healed by first intention, except the drainage tube openings, which united by second intention. The button-sutures were removed on the twelfth day, two days after the last of the skin stitches.

On the thirteenth day, all the edges having been firmly united, the temperature rose, there was much pain, and fluctuation appeared at the outer angle of the stump. So securely were the edges united even over this area that neither a sinus forceps nor a sharp probe was able to penetrate the cicatrix, and the abscess had to be opened along the line of union by a sharp-pointed bistoury in the ordinary way.

After three days this abscess evacuated, and the whole was securely united on the twentieth day. The man says his stump is lengthened, which is true. It is lengthened by the thickness of the skin and subcutaneous tissues covering the end of the bone.

CASE IV.

Pte. W. Amputated through lowest third of thigh. On arrival at hospital the end of the bone covered by granulations protruded about $\frac{1}{2}$ in. beyond the epithelial margin of new skin, and the band of new cicatrix was about $\frac{3}{4}$ in. wide. The skin and soft tissues were much retracted.

On November 11th, two elliptical incisions were made in front and at back of the protruding bone, and about two inches of bone was dissected out and removed. Similar treatment to the above was followed. This stump suppurated badly. The temperature was high, the pain was considerable, and the stump swelled considerably, putting much tension on all the sutures, so much so that the buttons of the button-sutures were half buried in the skin. Pus welled out from between the skin stitches and from the drainage tube openings. But the button-sutures stood the test, and the edges united by the second intention. The two tube openings and one central point where a small tube had been put on the fourth day showed granulation points of the size of split peas for several days longer, and then healed over on the twentieth day, and he left for a week's leave on the twenty-first day.

In the absence of button-sutures all the above cases would have hopelessly broken down, and the last state would have been worse than the first—the bone shorter, the granulating surfaces greater, and convalescence much protracted.

There are two factors that favour union in this method of reamputation. One is the increase in general vascularity that follows primary amputation. The largest vessels atrophy, but the small ones dilate. This dilatation of the numerous small blood vessels makes provision for a more general blood supply throughout the operation area, and guarantees a higher vitality. The pressure of the buttons is therefore of little or no consequence.

The other factor is that the skin and muscular tissues have already contracted to their maximum. There is little fear, therefore, of a further contraction when the attachments that have followed the primary amputation are disturbed by the reamputation. Shorter flaps will therefore suffice, and the "pull" over the end of the bone exerted against the button-sutures is less than one would suppose.

A consideration of these points would lead one to suggest:

1. Early reamputation and the saving of weeks of painful and tedious healing.
2. The control of bony proliferation, the avoidance of spurs, and the protection of the bone-end from infection, by careful technique in the treatment of the periosteum.
3. The covering of the end of the bone with muscle fascia and skin in such a way as to (a) approach the normal heel as a model and (b) provide for the most distant muscle attachments possible.
4. The use of button-sutures in every case of primary and secondary amputation where the flaps are large and the skin is stitched, in order to (a) keep severed muscles and tendons as nearly as possible

in apposition, (b) give immunity from the results of suppuration if it occur, (c) prevent haemorrhage between the flaps, (d) give the minimum area of flaps and the maximum length of stump where shortness is a locomotive disability.

A METHOD OF FLAPLESS AMPUTATION, WITH SUBCUTANEOUS DIVISION OF THE BONE AT A HIGHER LEVEL.

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THE guillotine method of amputation as practised during the present war conveys at the first glance an impression of brutal simplicity which carries one back to the primitive ages. Nevertheless, it is probable that this method is one of the most valuable innovations the war has brought forth, and that for certain conditions it is the Omega as well as the Alpha of the subject of amputation. Its introducer, Captain Fitzmaurice Kelly,¹ is to be congratulated on his clear vision and courage. The main advantage gained by the method is that it exposes to infection the absolute minimum of raw surface.

The method is, however, attended by certain disadvantages and inconveniences. In some cases the skin eventually succeeds in spreading over and covering the exposed end of the bone. But even in these rare and favourable cases the bone is adherent to the skin. In the majority of cases the exposed end of the bone undergoes necrosis, owing to a simple acute osteomyelitis extending a little up the medullary canal. After the separation of the necrosed fragment a really good stump might conceivably result. But in point of fact the end of the bone always becomes adherent to the skin. Two cases recently under my care presented very similar conditions, and may be taken as typical. A bare necrosed piece of bone, still continuous with the living portion of the bone, projected from a raw, granulating surface corresponding to the original section of the limb. This surface was much smaller than the original cross-section owing to the spread of epithelium over the end of the stump and the contraction which always accompanies this process. In the neighbourhood of the bone this layer of granulation tissue becomes calcified or ossified almost up to its free surface, and adhesion of the bone to the skin is the inevitable result. Thus, in nearly all cases of guillotine amputation a secondary operation is imperative. The object of this paper is to suggest the trial of a method which, while retaining all the important advantages of the guillotine method, will obviate the necessity of a secondary operation. It is also, I think, the best way of doing the secondary amputation in cases previously submitted to the Kelly method, and with such cases I propose first to deal.

Secondary Amputation Following the Kelly Amputation.

In such cases it is necessary (a) to remove such a length of bone that an adequate covering of soft tissue is provided for what remains. (b) To excise the calcified granulations, which do not afford a suitable bed for the spreading epithelium. If calcified granulated tissues are allowed to remain, it is certain that ultimately the skin will be adherent to the end of the bone. (c) To do what is necessary with minimum exposure of fresh raw surfaces, since all these cases are necessarily accompanied by sepsis.

It is obvious that a formal flap amputation is unnecessarily extravagant and that it fails to fulfil the third requirement of a minimum exposure of fresh raw surface. This method, therefore, need not further be considered.

In the first case upon which I operated I made two lateral cuts upwards through the soft tissue at the side of the stump, thus fashioning two rough flaps. The bone was sawn through at the base of these flaps and they were then brought together by a few points of suture. This operation was followed by an alarming febrile disturbance, which, however, subsided in a few days. Its ultimate result was not satisfactory, for the skin was adherent to the bone. I had omitted to observe the second requirement—namely, to remove the ossified granulation tissue

MAJOR W. A. CHAPPLE: REAMPUTATION.

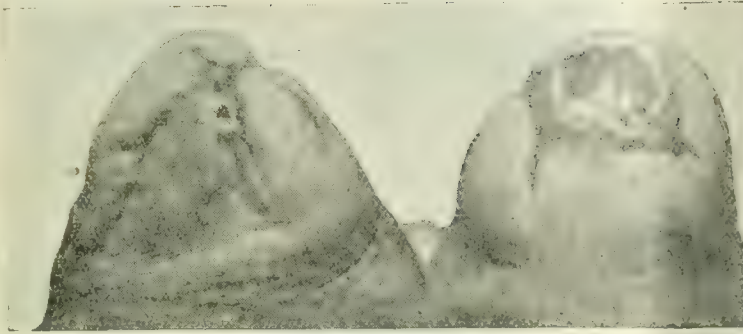


FIG. 1.—Pte. K., condition when left thigh was reamputated.



FIG. 3.—Pte. W., condition when reamputated.

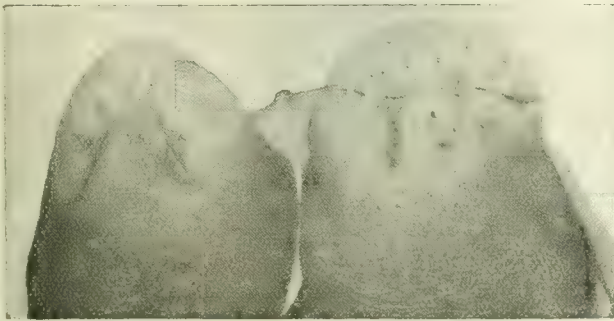


FIG. 2.—Pte. K., sixteen days after reamputation of left thigh.



FIG. 4.—Pte. W., four days after reamputation.

SIR WILLIAM J. COLLINS: FRAGMENT OF SHELL CASING EMBEDDED IN ORBIT.

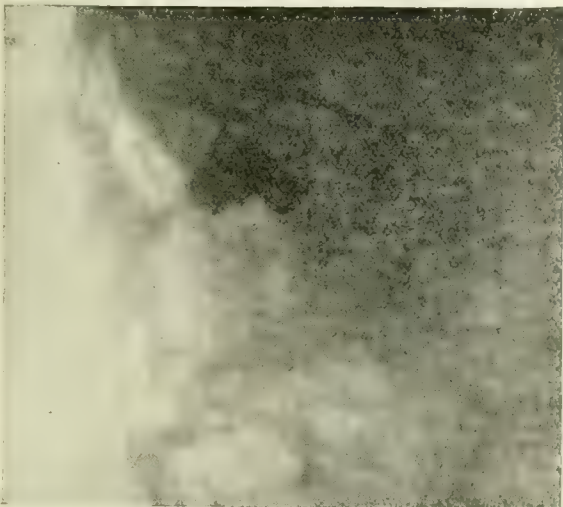


FIG. 1.—Side view.

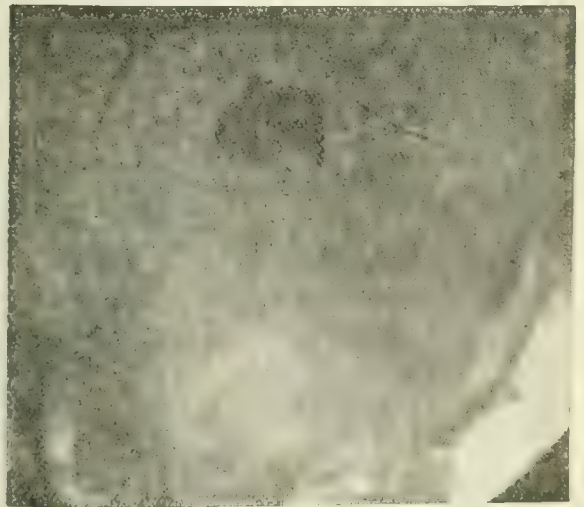


FIG. 2.—Front view.

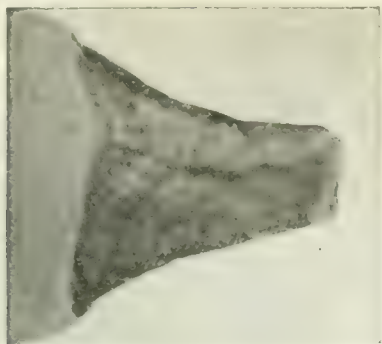


FIG. 1.—Guillotine amputation of thigh, showing extreme retraction. The patient was admitted under the writer's care to the 3rd London General Hospital several weeks after the primary operation in France. A plaster extension would probably have prevented much of the retraction.

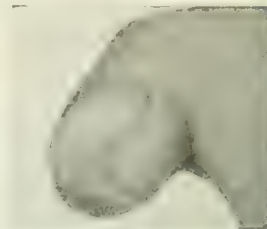
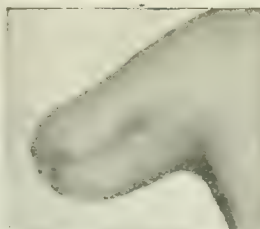


FIG. 2.—Complete healing of a flapless amputation. Note the close adhesion of the skin to the bone at the end of the stump. A secondary operation was necessary. Photographs kindly lent by Mr. Edred M. Corner, under whose care the case was admitted at the King George Hospital.

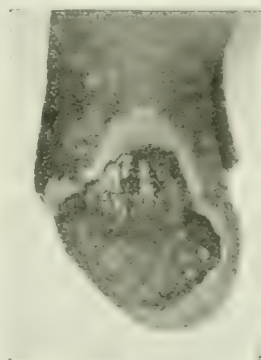
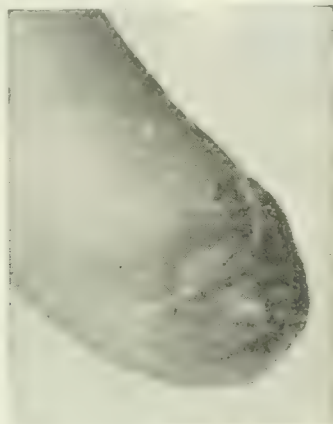


FIG. 3.—Guillotine amputation of the arm performed about six weeks before the photographs were taken. From a case under the care of Mr. Edred M. Corner.

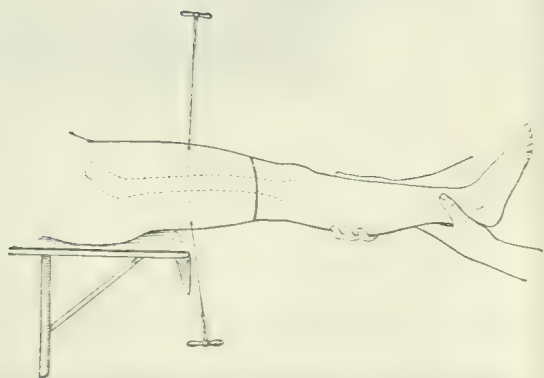


FIG. 4.—Illustrating first stage of amputation of the thigh—the subcutaneous division of the bone.



FIG. 5.—Final stage of removal of limb. The assistant pulling strongly on the limb withdraws it from the stump almost like a cork from a bottle, the operator meantime dividing the muscular attachments to the bone.

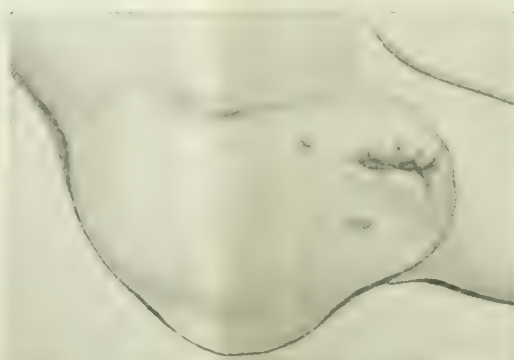


FIG. 6.—Guillotine amputation of the thigh. Secondary amputation by the Gigli saw method. The stump nearly healed. The depressed cicatrices of the Gigli saw punctures are well shown. The stump is soundly healed with very little retraction. From a case under the author's care at the 3rd London General Hospital, Wandsworth. Drawing by Private E. Martin, R.A.M.C.

round the projecting necrotic bit of bone. Shortly afterwards I was faced by the same problem again—a guillotine amputation of the thigh about the middle, with projection of the necrotic end of the femur. It seemed feasible to minimize the exposure of raw surface by dividing the bone at the selected level by a Gigli saw. Two punctures were made at the end of the bone at the outer side of the limb, separated by about one-third of its circumference. Each of these punctures was situated four inches above the end of the stump. Through one of them a curved pair of forceps was introduced closed, and was insinuated round the bone until it was able to seize the end of the Gigli saw introduced through the other puncture. The pair of forceps was then withdrawn, bringing with it the saw. The bone was now divided, care being taken not to rasp the soft tissues. It would be possible to employ a pair of tubular guards to prevent the saw from bruising the soft tissues, but this is a refinement which is not essential. The punctures are made on the side of the limb remote from the main artery so as to avoid all risk of injury to the large vessels by the action of the saw. The end of the bone was now seized by lion forceps and with the aid of a periosteal elevator was easily separated from the soft tissues and removed. It only remained to excise the layer of calcified granulated tissue and to insert one or two sutures, making ample provision for drainage.

In this case there was only slight febrile reaction, and healing was rapid and satisfactory. The healing is now nearly complete, and the soft tissues are not adherent to the bone—in fact, the stump is very satisfactory. I venture to bring forth this method as being probably the best secondary operation for cases of guillotine amputation.

Division of the Operation into Two Stages in Exhausted Patients.

In patients exhausted by long-continued suppuration it may even be advisable to perform the little operation in two stages. The first stage is the subcutaneous division of the bone at the selected level. This operation should run an aseptic course. In a few days the ends of the marrow canal will be sealed by a layer of granulation tissue, and the isolated distal end of the bone can be removed with a minimum risk of osteomyelitis in the proximal end.

Amputation with Subcutaneous Bone Division as a Substitute for the Flapless Method.

It is evident that the method could be used for primary amputations, and I have successfully employed it on several occasions. The case now to be recorded illustrates its use.

On July 31st, 1915, I was asked by Dr. Erskine of Epping to see with him in consultation Miss X., a Red Cross nurse. Dr. Erskine informed me that when he first saw her, on July 25th, she was suffering from pain and swelling of the left thumb. Between July 21st and 25th she had been on duty each night at the hospital. On the night of July 24th she had acute pain in the thumb and felt ill, and the following morning, when Dr. Erskine was called in, the thumb was very inflamed and septic. The condition became worse and the inflammation spread to the forearm. When I saw her on July 31st there was extensive suppuration between the muscular planes of the forearm, and the patient was in a high fever and seriously ill. I judged that an attempt could safely be made to save the arm, and, after amputating the distal phalanx of the thumb, I made many free incisions of the forearm as high as the elbow and secured very free drainage. Temporary improvement occurred, but the patient again became worse, in spite of vigorous and able treatment by Dr. Erskine, and on August 7th I saw her again. In a specimen of blood taken on this date pure growth of streptococcus was obtained, and it appeared imperative, in view of this examination, to amputate the arm. This was done on August 12th through the middle of the humerus.

The amputation was performed by the method described in this paper. Two punctures, separated by one-third of the circumference of the arm, were made down to the humerus at the level selected for the saw cut. A Gigli saw was passed round the bone by the manoeuvre already described, and then the bone was divided. The soft tissues were now divided circularly at a lower level, the muscles being cut rather shorter than the skin. A few touches of the knife now sufficed to detach the muscle from the bone up to the point where it had been sawn.

The amputation wound suppurated freely; and this is not surprising in view of the infection of the blood which was known to be present. From the time of the operation the septic symptoms rapidly subsided, the temperature fell, and the patient made a good recovery.

In the healed stump the two punctured tracks made for the introduction of the saw are represented by two puckered

dimples on the skin. Evidently the band of fibrous tissues attaches the skin to the bone along the course of the tracks. This might be held as a disadvantage of the method, but I believe in reality it is an advantage, for these two bands of fibrous tissue serve during the healing of the stump to prevent retraction of the soft parts and exposure of the end of the bone. The method also has the advantage that the bone is divided as the first step in the operation. The length of the circular cuff of soft tissue required to cover it can then be precisely calculated. In the ordinary methods of amputation it is very easy to make the mistake of dividing the bone lower than was intended, especially if the assistant does not retract the soft tissues vigorously. The operator then finds that he has provided inadequate covering for the end of the bone.

I am inclined to think that this method may usefully replace the guillotine operation except in cases where extreme rapidity is required, and that in this way the necessity for secondary operation on guillotine stumps may in future be avoided.

The important object of the guillotine operation is to reduce raw surface to a minimum, and in this respect the method described in this paper is practically as advantageous. I trust, therefore, that the amputation method here described may receive a trial at the front. The situations where the method is applicable are in the thigh and the upper arm. It is possible that the method may be extended to the forearm and leg, but, owing to the presence of two bones in these situations, and to the relative thinness and easy retraction of the covering of soft tissues, the ordinary methods of amputation would seem to be preferable. The advantages of the method come out most strongly in amputations through the femur, and I believe that in this situation the method will supersede all others, not only on the grounds of simplicity, but also because the resulting stump is well-cushioned and non-retractile. In these respects I claim that the stump is perhaps better than can be obtained by any other method.

The passing of the Gigli saw round the bone may be difficult if the tissues are stiff and rigid from inflammatory infiltration. In these circumstances a suggestion of my friend Mr. Lawrie McGavin may be adopted, namely, to divide the bone subcutaneously by an Adams's saw. At the present time it is difficult to obtain efficient Gigli saws, since most of them before the war were made by an enemy firm, and some of those now upon the market do not cut hard bone very easily. In situations where the main artery lies close to the bone, the use of an Adams's saw requires care, and the rule should be to cut towards the artery and to fracture the last portion of the bone.

The skin should be retracted before the muscles are divided.

The only superiority of the flap amputation over the circular amputation is that it affords access for division of the bone at such a high level that a plentiful covering of soft parts is assured to the stump. In such a fleshy part as the thigh long flaps are necessary for this purpose, and the severity of the operation is thereby considerably increased. The method I have described is attended by the minimum of shock, haemorrhage, and division of tissue, virtues it shares with the Kelly method, while averting the necessity of any secondary operation.

REFERENCE.

¹ M. Fitzmaurice Kelly: The Flapless Amputation. *British Journal of Surgery*, April 16th, p. 676.

THE library of the College of Physicians of Philadelphia at the end of 1916 contained over 115,000 bound volumes, and nearly as many unbound theses and pamphlets. A considerable falling off was noted in 1915 in the number of books published in the French and German languages, and in Great Britain. During 1916 there was a relative increase in the case of Great Britain and a greater diminution in German publications. This, as is pointed out, is not to be taken as an indication of the number of books published. One of the features of the library are study-rooms, where a Fellow engaged in some particular research can work in peace and leave the books he is using from day to day. The popularity of these rooms is increasing. The librarian, Mr. C. P. Fisher, laments the difficulty of excluding dust from his stacks and shelves. The dust contains a large percentage of soot, which cannot be removed entirely even with a high-power vacuum cleaner. It is thought that electric lighting, combined with forced ventilation, and windows as nearly air-tight as possible, will afford a remedy.

A NOTE ON THE THOMAS SPLINT FOR FRACTURES OF THE FEMUR.

BY

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To many surgeons the Thomas splint for fractures of the thigh is one of the "finds" which they will take back with them into civil practice, if they are lucky enough to reach that desired haven. Nearly every fractured femur travels to the base now in a Thomas splint, and this universal adoption is its greatest testimonial.

Too little care is taken in the method of use, however, and in no case, out of a very large number coming under my observation, has the fixation been such that I felt justified in passing the patient along without completely readjusting the splint. Badly fitting splints, with wrong material for slings and poor extension, improperly fixed, tend to bring a first class and extremely simple and good method into disrepute. Accordingly an endeavour is here made to illustrate and describe a technique which has proved satisfactory and has given good results.

The Splint and Slings.

The splint must be of a suitable size. The ring must not be too much padded. Some rings are padded so as to make it impossible for the patient to pass urine because of direct pressure on the urethra, and also make the use of a bedpan very difficult.

The slings must be made of a suitable material. Calico, linen, and strong flannel have all proved satisfactory. Gauze, gauze bandages, and perforated zinc have proved unsatisfactory.

Three different types of slings are illustrated (Figs. I, II, and III). Linen, calico, or flannel may be used.

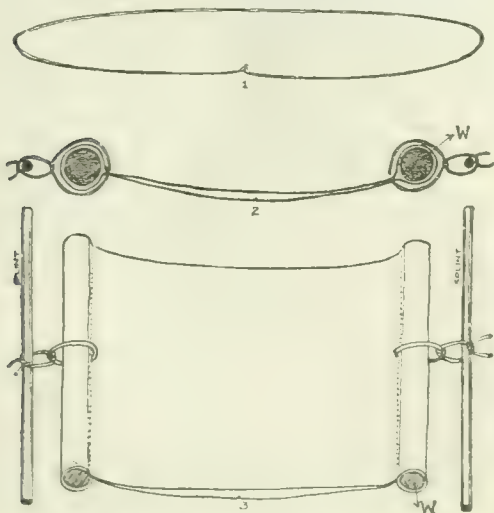


FIG. I.—Slings prepared in advance: stocked in three sizes.

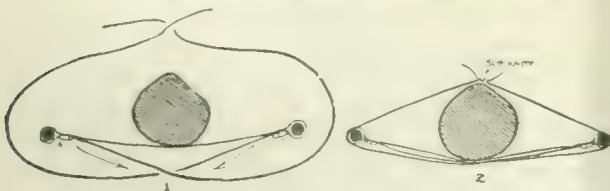


FIG. II.—Alternative methods of using a triangular bandage folded up into short slings of varying breadth.



FIG. III.—Alternative method with double layer of linen, calico, or flannel material. Loosely woven bandages and gauze are quite unsuitable. S, Safety-pin.

The breadth of the sling must be properly regulated. Triangular bandages also can always be obtained. The special slings illustrated in Fig. I (1, 2, and 3) require

previous preparation, and should be stocked in three sizes. The wooden rods (w) may be shaped from pieces of Gooch splinting, so that all the necessary materials are easily had. Tape, strong string, and good strong safety-pins complete the armamentarium.

The Extension Bands.

No adhesive strapping which I have tried, and I have tried many, has proved satisfactory. But the problem is perfectly solved by making use of a double layer of ordinary white gauze as it is unwound from the package, snugly bandaged with a flannel bandage to the limb which has been previously well smeared with Sinclair's glue.¹ (Mastisol is reported to act well also.) Where possible, the extension is always carried above the knee, and when it has been properly applied there will be no need to remove it for weeks. In no case in which I have used the glue has any skin irritation arisen. Care, however, must be taken to prevent pressure on prominent points, and the glue must stop well short of the ankle. As an extra precaution, a layer of gamgee tissue may be bandaged on to the ankle so that it will take all direct pressure off the malleoli.

The "give" in the extension bands requires to be corrected daily, and in order to do this without completely loosening the bands I make use of a method illustrated in Figs. IV and V. The long tail of one of the bands (A) is



FIG. IV.



FIG. V.

FIG. IV and V.—A method of keeping the extension up in using the Thomas splint. A, Long tail. B, Crossing. C, A reef knot is tied here in Fig. IV, one strap having come below and the other above the splint. In Fig. V a slip-knot is tied so that the daily adjustment may be easily done.

slipped through above the crossing (B) and pulled well down. Thus all the slack is taken up and the quadrilateral space is converted into a triangular one with the base toward the sole of the foot. A slip knot is then tied at the point C with the tail of the other extension band, and each morning, or whenever it is found necessary, it is the easiest matter to take up the slack and retie the bow. In this way the extension is kept up perfectly.

The last sling is put well behind the ankle and the foot left unsupported, so that the patient may keep the ankle-joint exercised. I have had no reason to regret this, or to adopt any foot fixation when dealing with fractures of the thigh. For all of the so-called "improvements" and "modifications" of the Thomas splint, in the way of spats and mechanical extension producers, etc., there is but one fitting use in my opinion, and that is to make a bonfire on which to burn the originators.

I desire to express my thanks to Lieut.-Colonel E. C. Hayes, R.A.M.C., for permission to publish this note, and to Major G. W. Crile, U.S.A., and Major W. E. Lower, U.S.A., American Base Hospital, for kindly getting their artist to make the excellent illustrations.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, July 14th, 1917, p. 60.

DAKIN'S "DICHLORAMINE-T" IN THE TREATMENT OF THE WOUNDS OF WAR.

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(Report to the Medical Research Committee.)

[AFTER a short preliminary discussion of the advantages and disadvantages of such chlorine-containing solutions as eusol, Dakin's solution, and Daufresne's modifications thereof, Professor Sweet states that Dr. Dakin entrusted the honour of testing the surgical value of dichloramine-T (toluene-para-sulphodichloramine), described by Dunham and Dakin in the BRITISH MEDICAL JOURNAL of June 30th, to Dr. Walter E. Lee, of the Pennsylvania Hospital, and himself. The results obtained there are being published in America (*Journal of the American Medical Association*), but Professor Sweet, working with the United States Army Base Hospital No. 10, has since been able to test the effect of the new preparation on war wounds in a British general hospital in France. With regard to the results there he reports as follows:]

We have treated some eighty patients with Dakin's "dichloramine-T"; some have been old cases with foreign bodies lying in the bone, and suppuration did not stop until the foreign body was removed. Fresh cases, in which enough integument was left to permit it, have been treated with dichloramine once and immediately closed, and have healed by secondary intention. Sixteen cases, old and fresh, were cultured after treatment with "dichloramine-T" for varying periods, of which eleven gave no growth whatever; of the five in which a growth appeared, four were old cases of deep bone involvement; the only growth was the *Staphylococcus aureus* in four cases and in one case the *pyocyaneus*.

The wounds fill rapidly with granulation tissue of healthy colour, which exhibits no tendency to exuberant growth and no tendency to become water-soaked and indolent; the skin edges grow in very rapidly.

These results are no different from those which can be obtained by other methods, and no one would believe them if they were any better. Let me say, therefore, that the surgeons of the unit are agreed that the wounds treated by "dichloramine-T" are in every way as satisfactory as they have ever seen under any method; and two of our surgeons have had previous experience in France, while all are surgeons of long experience in civil practice.

The results along other lines are capable of more definite demonstration, and it is on these that I would lay the most emphasis.

The new "dichloramine" solution is made by dissolving the crystals of "dichloramine-T" in chlorinated eucalyptol and then diluting this solution by the addition of chlorinated paraffin oil. It is best applied by an oil spray, an ordinary hard rubber or all-glass atomizer being the most practical method. Metal atomizers are not suitable, since the metal is attacked by the chlorine. This oily solution presents the first great advantage—the dressings do not stick to the wound and the entire act of dressing is relatively painless. The gauze does not have to be separated from the granulations by soaking. It is therefore not even necessary in the average wound to place a waterproof protective covering over the bed-linen while dressing, and the necessity of moving the part or the patient is obviated. The old dressing is simply lifted off, and the wound sprayed; the force of the spray will dislodge sloughs, and the wound is covered with a fresh dressing. It is evident that a very important saving of time results from this simplicity of dressing. One surgeon has repeatedly dressed thirty wounds in ninety minutes—an average of three minutes to each dressing. These figures and the figures to be given later, refer to the acute wards, where the patients are all bed patients.

The solution contains enough available antiseptic so that one dressing every twenty-four hours is ample for large, deep wounds, and one dressing every forty-eight or seventy-two hours is enough for the simple or more superficial wounds. Since the solution contains so much

available chlorine and does not have to be renewed every few hours, the use of the Carrel tube is entirely done away with. The oily solution of "dichloramine-T" creeps into all the wound crevices and corners, and it can be readily introduced into sinuses by means of a cotton swab dipped into the solution.

The amount of this new solution needed for wound dressing should be emphasized. At first thought it would seem that a solution containing oil of eucalyptus and paraffin oil would be far too expensive for general use in comparison with eusol. Forty-two wounds were dressed by one surgeon with 35 c.cm.; another surgeon dressed 154 wounds with 115 c.cm. These figures apply to the acute wards, and include many compound fractures and extensive buttock and thigh wounds. The fact that so little fluid has to be used, and that therefore only the wound discharge has to be cared for, results in a tremendous saving of gauze and cotton. I give below a table of the results of a comparison of the amounts of gauze and cotton used during different periods in the four acute surgical wards of the hospital. Each ward is in charge of surgeons of equal skill, and all trained in the same hospital; the nurses are also all graduates of the same hospital training school; in other words, the comparison is not between workers trained in different schools of surgical technique.

TABLE I.—Gauze and Cotton-wool Used July 5th, 1917.

Wards.	Gauze (6-yard rolls).	Cotton (1-yard rolls).	Treatment.	No. of Patients.
1	12	2.5	Eusol	23
2	10	4	Eusol	22
3	3.5	2.5	Dichloramine-T	23
4	6	2.5	Eusol	25

Taking a longer period, the amount of gauze and cotton used in seven days by three of the acute surgical wards is given in Table II. Ward 2 changed during this period from the use of eusol to the use of dichloramine-T; the figures from this ward are therefore not available. The number of patients was the same in the three wards, and the proportion of relatively slight and extensive wounds in each ward was the same.

TABLE II.—Gauze and Cotton-wool Used from July 4th to July 10th, 1917, inclusive.

Ward.	Gauze (6-yard rolls).	Cotton (1-yard rolls).	Treatment.
1	72	38.5	Eusol.
3	33	7	Dichloramine-T.
4	45	18	Eusol.

This saving of material is of importance in several ways. Not only does it effect a saving of labour from the cotton field to the hospital, not only a saving of transport, but an important saving in the hospital itself; the time taken by the nurses in the preparation and sterilization of material can be utilized for the care of the patients, and to this can be added the saving in time, labour, and material by doing away entirely with the need for the Carrel tubes. The need for so little solution in wound dressing, and the fact that the dressing need only be sufficient to care for the wound discharge means that the bed-linen is not wet, with a consequent saving in the moving of the wounded, and an increase in their comfort and well-being.

The dichloramine-T solution, like all the other chlorine compounds, is a very active lymphagogue in fresh wounds, and the amount of wound excretion may be considerable. The lymphagogic effect may be directly watched in suitable wounds. As granulation tissue develops, the lymph discharge greatly decreases until the wound becomes comparatively dry. The dichloramine-T also possesses to a marked degree the characteristic power of the chlorine solutions in aiding the digestion and removal of necrotic sloughing tissues. The new solution seems more effective in cleaning up sloughing tissue than the older chlorine compounds. While the majority of our cases come from

the casually clearing station in excellent, clean condition, a sufficient number have reached us with necrotic tissue in the wound amply to satisfy us of the rapidity with which the dead tissue is freed under the dichloramine-T. The tendency to secondary haemorrhage is certainly not increased. We have had only one secondary haemorrhage in the series, which includes a number of deep buttock wounds, and cases of exposed great arteries of the arm and leg.

The solution is not irritating to the skin or mucous membrane, except possibly in the rare individual who possesses an idiosyncrasy to the eucalyptus oil. Such individuals have been reported in dermatological literature. Among the patients treated here we have encountered only one case of dermatitis, but since it did not develop until after two weeks' use of the solution and was accompanied by high temperature, it is not clear that it should be ascribed to the eucalyptus oil or to the well-known action of wound excretion.

The constituents of the solution are stable although the final combination is not indefinitely stable nor can it be exposed to strong light. It is easily prepared from the constituents. The dichloramine-T which I have was put up in packages of 10 grams each; the content of one package is dissolved in 75 c.cm. of chlorinated eucalyptol and diluted with equal parts of chlorinated paraffin oil as needed, making, therefore, approximately a 6.5 per cent. solution of dichloramine-T.

The first application of the solution to a fresh wound produces a smarting or burning sensation, which passes away in a very few minutes; in some individuals this seems quite severe, but I have yet to see the patient who does not prefer this slight smarting to the real pain of removing a wet dressing which has dried around the edge of the wound. After the second or third application this smarting sensation on applying the solution seems to have disappeared.

Since the time to treat an infection is before the infection starts, it is hoped that the dichloramine-T solution can be given an early trial at the field ambulance and casualty clearing stations.

Conclusions.

Dakin's "dichloramine-T," in solution in eucalyptol and paraffin oil, is of great advantage in wound treatment—even if the final results in wound healing were no better, because—

1. It saves the pain of wound dressing.
2. It effects an appreciable saving of dressing material.
3. The amount of solution needed is of small bulk.
4. The number of wounds which a surgeon can dress in a given time is far greater than by any other method.
5. The elimination of the Carrel tube simplifies the dressing and the problem of transportation of the wounded.
6. The elimination of the Carrel tube saves the time taken by the nurse for the periodic flushing.

AN EXPEDITIOUS METHOD FOR THE STUDY OF ENTERIC STOOLS:

A REPORT ON THE EXAMINATION OF 1,200 SPECIMENS OF FAECES FOR ENTERIC ORGANISMS.

BY

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(Report to the Medical Research Committee.)

DURING six months in 1916 the examinations of faeces for enteric organisms (*B. typhosus*, paratyphoid A and B) made at this laboratory numbered 1,200. No claim for originality is made for the technique adopted, and the procedure is reported as having been, in my experience, efficient as well as simple. A minimum of culture media, glass-ware, etc., is required, and the culture media are easily prepared.

Nearly all the samples were sent from a hospital which admitted only patients convalescent from enteric fever or dysentery, and Army Council instructions in regard to the routine examinations were carried out carefully.

Each patient was given a numbered basin, and the specimen was obtained from this. We have always used

specimen containers (supplied by Messrs. Baird and Tatlock) consisting simply of small, wide-mouthed bottles, well stoppered with an ordinary cork, in the centre of which is fastened a small child's toy tin spoon, the whole enclosed in a wooden case.

Materials Required.

1. Peptone Water.

Peptone (Baird and Tatlock) ...	...	10.0
Sodium chloride ...	...	5.0
Water ...	...	1,000.0

To dissolve, place in autoclave for five minutes. Shake well, filter, and tube. Sterilize in autoclave at 15 lb. for fifteen minutes. Each tube should contain about 5 c.cm.

2. Endo's Medium.

Liebig's extract of beef ...	...	10.0
Sodium chloride ...	...	5.0
Peptone ...	...	10.0
Water ...	...	1,000.0

Dissolve in autoclave at 120° C. for five minutes. Add 30 grams of washed agar, and autoclave at 120° C. for fifteen minutes. Filter and neutralize to litmus. Add 10 c.cm. of a 10 per cent. solution of sodium bicarbonate and 10 grams of lactose. Place in steamer for one half-hour. When plates are to be poured, the above stock (1,000 c.cm.) should be melted and 5 c.cm. of alcoholic basic fuchsin solution (basic fuchsin 3 grams, alcohol 57 c.cm.) added, and 25 c.cm. of a 10 per cent. solution of sodium sulphite. Then steam for fifteen minutes and pour into plates. Allow to cool and store in the dark till ready for use.

By placing a circle of blotting paper in the lids of the Petri dishes before sterilizing them, all the water of condensation is absorbed; this aids greatly in making successful cultures.

3. Hiss Medium.

Liebig's extract ...	...	5.0
Sodium chloride ...	...	5.0
Distilled water ...	...	1,000.0

Dissolve in autoclave at 120° C. for five minutes, add 8 grams of washed agar and melt in autoclave at 130° C. for five minutes. Add 80 grams washed gelatine, dissolve and cool to 45° C. Clear with the white of one egg in the autoclave at 120° for five minutes, filter, and to filtrate add 1 per cent. of dextrose and sterilize in the steamer for one half-hour. Put about 5 c.cm. into each tube and sterilize in the steamer again. This medium at 37° C. remains quite solid, and will retain gas bells.

I have found that the following procedure saves twenty-four hours in the examination of suspected colonies.

The tubes containing the Hiss medium are placed upright in a basket in a basin containing ice water, and a few cubic centimetres of a fairly stiff plain agar is poured into each tube and the tube immediately sloped, producing the result shown in the diagram.

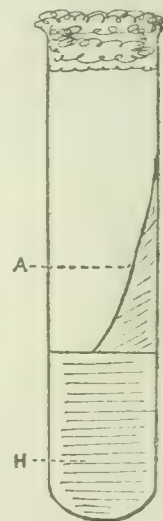
4. Standard Agglutinating Serums.—We have obtained these from the Royal Army Medical College, Millbank, and from the Standard's Laboratory, Oxford.

Procedure.

Each specimen is given a number and a peptone water tube the same number. A piece of faeces the size of a pea is removed with a wooden applicator from the specimen bottle and thoroughly emulsified in a tube of peptone water. Each specimen is allowed to stand about half an hour and is then ready for plating.

The Endo's medium having been poured, the plates should be a very faint pink in colour and as dry as possible. A curved glass rod is passed through a flame and when cool plunged into the peptone water emulsion and then removed. The lid of the Endo's plate is removed with the left hand, and while revolving the plate the glass rod is smeared from the centre to the margin like the spokes of a wheel; the same procedure should be carried out on a second plate without recharging the rod.

These plates are incubated overnight and examined for suspicious colonies. *B. coli* being an acid producer will appear as beautiful golden metallic-looking colonies, and streptococci as small crimson dots; any colonies grey in colour with no metallic lustre should be regarded as suspicious. These are fished off with a platinum needle and stab cultures made into the Hiss tubes, and at the same time streaks are made on the superimposed agar



A. Plain agar slope.
H. Hiss medium.

slopes. These are now placed in the incubator at 37° C. overnight. If any gas bubbles appear in the medium, the tube is discarded. If the stab shows a clean growth with no bubbles the tube is set aside for further examination.

Having arranged the suspicious cultures in a rack, the next procedure is the agglutination of these organisms to identify them definitely.

Different dilutions of the standard serums are made, say from 1 in 20 to 1 in 500. Drops of the serum in these different dilutions are placed on a clean slide and a small loop of twenty-four hour culture of the homologous organism is emulsified in the serum dilution. The slide is now rocked from side to side, and in a satisfactory dilution agglutination of the organisms should be seen easily in a few seconds. Each serum is tested in this way with each type organism, to learn the proper titre to use in testing the unknown cultures.

Having obtained the proper titre, the same procedure is adopted with regard to all the unknowns, and although in some instances agglutination reactions may overlap, the culture may be called positive and higher dilutions used in definitely determining the organisms as being "para" A or "para" B. An emulsion of *B. coli* should also be used each day as a control with each serum dilution.

Of 1,200 specimens examined from enteric convalescents, 45 were found positive for paratyphoid A, 12 positive for paratyphoid B, and 13 positive for typhoid bacilli. Two cases were definite carriers of paratyphoid A, and from these occasionally plates showed pure cultures of this organism.

Following the publication of the paper by Leitch,¹ who used brilliant green and telluric acid with excellent results, we began a series of experiments, using these substances in the peptone water; unfortunately, the cases were suddenly ordered to be sent elsewhere, and we could not continue the work, but 100 specimens were put through in this way, and one positive was found which had been overlooked by direct plating on Endo's medium.

In examining specimens of urine about 2 c.cm. is added to a melted Hiss tube, and plates are poured and smears made on Endo's medium at the same time. Suspicious colonies are then treated in the same way as the cultures from faeces.

Summary.

In a laboratory where pathological examinations of all kinds are asked for, and where a large amount of work is done with a small and sometimes inexperienced staff, a routine as uncomplicated as possible must be used. The procedure for examination of faeces as described here is not recommended as being the best, providing one has time to prepare other media, such as the different sugars; but where a large number of men may be waiting for release, the reports must be given in as short a time as possible, so long as this does not interfere with their reliability.

Endo's medium I have always found superior to any other for plating, and it is the most easily prepared. The slope agar Hiss tube is a valuable adjunct, and saves at least twenty-four hours in identifying a suspicious colony.

The results of these examinations would seem to compare favourably with those reported when other methods have been used.

June 1st, 1917.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, September 2nd, 1916, p. 317.

In 1913 (*Deut. med. Woch.*, March 15th, 1917) there were 620,455 deaths in Prussia—321,980 males and 298,475 females. In 1914 the deaths increased to 766,828 (males 449,645, females 317,183). The average relative mortality of males and females in the period 1886-1913 was as 109 to 100. According to this ratio, the deaths among males in 1914 should have been 345,729. By subtracting from this hypothetical figure the actual number of deaths among males in 1914, the figure 103,916 is obtained, representing the number of deaths due to the war. The death-rate per 1,000 in 1913 (not including stillbirths) was 14.9. In 1914 it had risen by 3.2 to 18.1. It was, however, almost as high (17.9) in 1906, and in 1905 it was higher (19.6).

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DISORDERS AND DISEASES OF THE HEART IN SOLDIERS.

No one engaged in military medical work could fail to read with interest and advantage Sir T. Clifford Allbutt's article in the *BRITISH MEDICAL JOURNAL* of August 4th. The responsibility of estimating the degree of disability in cases labelled "D.A.H." (disordered action of the heart) and "V.D.H." (valvular disease of the heart) is no light one, and it has been some consolation to read Sir T. Clifford Allbutt's very modest statement in his article "Overstress of the Heart" (Allbutt and Rolleston's *System of Medicine*, 1909) that, after an experience dating from 1870, he still approached with diffidence the problem of distinguishing the "functionally fretful" from the "strained" heart. This attitude of a very eminent authority, one of the pioneers of investigation of "the soldier's heart," is in striking contrast to certain loose but confident opinions, as to diseases and disorders of the heart, expressed during the war.

No doubt undue importance was at one time attached to murmurs, and the value of concomitant physical signs and symptoms was not fully appreciated. Nevertheless one has viewed with uneasy suspicion Sir James Mackenzie's dictum that bruits may be disregarded (wherever they may be heard) in estimating capacity for military service. Safe enough in Sir James Mackenzie's hands, this doctrine seemed calculated to engender a too cheery optimism in practitioners called upon to form (without the polygraph or the electrocardiograph) a prognosis as to the patient's capacity for further military service. Moreover, it is a moot point whether the practitioner's duty ends with a prognosis "for the duration of the war." The patients in 90 per cent. of cases are young men, and they may claim not unreasonably that more remote effects of wear and tear demand consideration.

During the winter of 1916-17 I gave all the time I could spare to the investigation of myocardial efficiency in cases of "D.A.H." and "V.D.H." under my care, employing, in addition to the usual physical examination, Dr. Strickland Goodall's exercise-blood-pressure test, with certain modifications.¹ My results were embodied in a short paper, read before the Reading Pathological Society, and I showed charts in which the systolic and diastolic pressures, pulse, and respiration rates were recorded before and at intervals after exercise. I drew attention to the fact that in a considerable proportion of cases of "D.A.H." a murmur is audible, which in my opinion is too lightly dismissed as "functional," "haemic," "transitory." The murmur is systolic in time, and it is audible in the third, fourth, and fifth left intercostal spaces along the left border of the sternum—that is, in the tricuspid area. The cases presenting this murmur (and others in which it does not occur) show an increase upwards of superficial cardiac dullness in the left parasternal line; the dullness extends usually to the upper border of the third interspace. In most of these cases there is a variable degree of displacement of the apex beat outwards. It seems difficult to resist the conclusion that the murmur indicates dilatation of the right heart and regurgitation through the tricuspid valve. Sir T. Clifford Allbutt explains the importance of such murmurs, even when they are transitory, and he points out that "the efforts cast upon such a heart should not be immoderate"—in other words, the murmurs have a significance, and are not to be disregarded.

The important part played by infections in causing disability of the myocardium and rendering it liable to strain is duly emphasized in the article under consideration. Unfortunately, both in civil and military practice, the more remote effects of acute infections, apart from rheumatic fever, upon the myocardium are apt to be forgotten.

Reading.

GORDON LAMBERT.

In the correspondence in the *BRITISH MEDICAL JOURNAL* on soldier's heart it has been stated that the systolic murmur heard at the base over the pulmonary area is due, in the vast majority of cases, to the friction between the

¹ Dr. Strickland Goodall: The Estimation of Myocardial Efficiency, *BRITISH MEDICAL JOURNAL*, October 14th, 1916.

pulmonary artery and the chest wall or adjacent structures. I am in charge of a camp of over 2,000 lads under 19 undergoing military training, a large number of whom are classed in low categories, and I am much struck by the number of cases in which this systolic murmur occurs, and by the fact that it is generally associated with poor physique in lads who are undersized and showing bad or retarded development. It may be that their chests are smaller and the friction more likely to occur, but my impression is that although there are seldom signs of cyanosis, the under-development also applies to the heart itself, and that there is probably some relative or actual narrowing of the pulmonary artery, such as occurs in the commoner forms of congenital heart disease. Certainly the symptoms associated with D.A.H. (disordered action of the heart) are very common with these lads, and I have advised a more graduated course of physical training for some of them.

It would be very interesting if those who have had the opportunity of making *post-mortem* examinations on patients who have complained of symptoms of D.A.H. would report on the condition of the pulmonary artery and valve in these cases.

H. M. RAVEN,
Lieutenant R.A.M.C.

TREATMENT OF SCABIES.

I HAVE read with great interest the paper by Captain Clark and Captain Raper on the chlorine treatment of scabies, published in the BRITISH MEDICAL JOURNAL on July 28th.

My interest, however, was chiefly aroused by the details these medical officers give of the history and previous treatment in the fourteen selected cases. Six had already been treated by sulphur before they were subjected to the gassing process; four of these must have suffered from very severe sulphur dermatitis, for it is stated that they had received three months' sulphur treatment (Case 2); three months' treatment, probably irregularly (Case 4); many treatments with calcium sulphide during five months (Case 9); and sulphur treatment for two weeks (Case 12).

If Captain Clark and Captain Raper will try the effect of sulphur ointment applied for *three days only*, after a preliminary hot bath, they will find, if the details are properly carried out, that a cure of the scabies has been effected in practically every case.

General Hospital, B.E.F., France. HENRY MACCORMAC, M.D., F.R.C.P.,
Major R.A.M.C. (T.C.).

ADIPOCERE IN THE BODIES OF THE DROWNED.

THE dead body of a middle-aged man was recently recovered from the sea outside Milford Haven. The scalp, with skin of forehead and eyelids, were missing, also the lips; both forearms were absent. The boots and clothing were fairly well preserved. There was complete absence of all unpleasant smell or odour; the surface was white and covered with minute marine growth of barnacles. The tissues had, instead of disintegrating, undergone a change into adipocere, which covered chest, back, and abdomen like a solid case, and no doubt prevented escape of gas, etc.

It would be hard to answer the question, How long has this body been in the sea? I think much longer than might be supposed possible for a dead body to float—possibly for months. If it had not been for this formation of adipocere this body would have sunk long ago, and would not have been recovered.

I think it possible that this dead body will be in just as good preservation years hence as it is to-day. It was not possible to identify the individual.

Dale, Milford Haven. H. W. BERNARD,
Lieutenant R.A.M.C.

THE DETECTION OF DEAFNESS.

MEMBERS of medical boards occasionally meet with men who state that they are "stone-deaf" in one or both ears, and much more frequently men who state that they are "hard of hearing" in one or both ears. In a number of these cases the examiner suspects malingering, or at least an exaggeration of the deafness. The usual tests, such as the watch and the tuning-fork, take time, depend upon

the statement of the subject as to whether he hears them or not, and are therefore open to serious objections.

Some months ago, while examining with the speculum a man suffering from chronic otorrhoea, I noticed his eye blinking in the normal way, and it occurred to me to make use of this to discover simulation or exaggeration of deafness, because the act may be said to be involuntary.

I employed the following plan on the next subject, who stated that he was "very hard of hearing." First, I asked him which ear was the deafer, and then requested him firmly to close it with the index finger of the hand of the corresponding side. Next, standing on his opposite side, with my face about six or eight inches away from the other ear, and having pretended to examine the ear carefully for a few seconds, I whispered quickly, "Shut your eyes." He was a malingerer, and having been taken by surprise he closed them before he could take thought.

This method may also be employed as a ready, but perhaps a rough, test for varying degrees of deafness, by gradually raising one's voice or bringing one's mouth nearer the ear of the subject.

JOHN J. EYRE,
English Physician to the Baths of Salsomaggiore,
Italy; Member of the Shoreditch
Medical Board.

London, W.C.1.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

THE KING GEORGE V HOSPITAL.

LARGE FRAGMENT OF SHELL CASING EMBEDDED IN ORBIT;
FRACTURE OF ORBITAL WALL AND LACERATION OF
GLOBE: SUCCESSFUL REMOVAL AFTER LOCATION
BY X RAYS.

(By Sir WILLIAM J. COLLINS, M.P., K.C.V.O., M.S., M.D.,
B.Sc.Lond., F.R.C.S.)

PTE. G. A., aged 20, 54th Canadians, was admitted to King George's Hospital on October 24th, 1916. He was wounded on October 21st at Courcellette, he states, by "shrapnel." The left eye was markedly proptosed and apparently perforated, the tension being -2. There was great chemosis of the conjunctiva, some blood visible in the anterior chamber, and the fundus was unilluminable. An inch and a quarter behind the left external angular process was a small wound, with ecchymosed margins, and some subcutaneous blood clot. There was great tenderness of the eye and parts adjacent to the orbit. There was no perception of light. Temperature 100°; pulse 64. No other wound, and the other eye was normal.

A radiogram taken by Mr. Ironside Bruce showed a "large fragment of shell casing lying behind the eye in the upper part of the orbital space, the posterior wall of the space being involved." On October 27th, under chloroform administered by Mr. Harwood, after disinfection of the eye and wound, Sir William Collins enucleated the lacerated globe. With the index finger he located the piece of shell casing fairly firmly fixed into the orbital roof, while portions of bone, apparently from the great wing of the sphenoid, were extracted from the orbit. The fragment of shell was cautiously freed from surrounding semi-organized clot and periosteum, and then seized with sequester forceps and gently extracted. The wound in the temporal fossa had clearly been the site of entry, and some portions of the outer and upper wall of the orbit had been fractured. The impact of the fragment thus arrested in its course had, after penetration, been sufficient to rupture the upper and posterior part of the globe of the eye. Drainage tubes were inserted in both the orbit and the temporal wound, the edges of the latter having been excised. Convalescence was uninterrupted, and by the end of November the wound was healed, the socket healthy, and only some stiffness of the left temporalis muscle remained.

The piece of shell casing, erroneously but commonly described as "shrapnel," measured 17 mm. × 11 mm. × 8 mm., and was of the irregular contour shown in the accompanying radiograms (p. 245).

Reviews.

THE METHOD OF ENZYME ACTION.

THERE is no one man who has done more to advance our knowledge of enzymes and enzyme action than Professor Bayliss; by general consent he is acknowledged the foremost authority upon this subject. It must, however, be admitted that he writes for the trained physiologist, and that he credits his readers with a familiarity with the facts and theories of physical and colloid chemistry akin to his own deep knowledge of these branches of science. As a result, his writings are apt to be "caviare to the general." Hence the need of a monograph which shall place before the intelligent student and the medical man wishful to keep abreast of the physiology of to-day an account of present views regarding enzymes and their nature that can be followed without undue difficulty. The book on *The Method of Enzyme Action*, by Captain JAMES BEATTY, M.D., D.P.H., R.A.M.C.,¹ very largely fulfils the need; so largely, that when it is realized that the work is a *tour de force*, that it was written and sent to the press while the author was serving in the Near East, away from any library, it seems ungracious to call attention to any defects. Our criticism, let us assure him, is afforded in the belief that his little book will reach a second edition.

Having regard to the medical man whose training in physiological chemistry antedates the beginning of the century, there are sections which might with advantage be expanded. We refer more particularly to the important chapter upon hydrolysis and to the final chapter. In both instances what is needed is a full, reasoned presentation of material that is unfamiliar to the reader rather than what might be termed a succession of lecture headings, and Captain Beatty can easily provide this, as is shown by his clear presentation of the results of other workers upon catalysis, adsorption, colloids, and enzyme action. The summaries at the end of each chapter are most valuable.

Captain Beatty's own conclusions regarding the nature of enzyme reaction, while given with greater wealth of detail, appear to be somewhat akin to those formulated by Professor Adami in his recent Croonian lectures. It is a view which, as Euler points out, is receiving general acceptance in enzymology. Bayliss also agrees "that there is abundant evidence that a combination of some kind is formed between the enzyme and the substrate preparatory to the action of the former. There is also similar combination between enzyme and products." Captain Beatty holds that in solution there is a weakening of the bonds between the atoms comprising a salt, and that enzymes possess a double action—on the one hand a general or unspecific power of attraction of one or other of the free, or freed, hydrogen or hydroxyl ions existing in a water solution; on the other, a specific power of adsorbing a particular substrate. It is in the promotion of this hydrolysis of the substrate—or synthesis, for the reversibility of enzyme action is admitted—that we have the essential nature of enzyme action.

Captain Beatty doubts if there be actual chemical union between enzyme and substrate; he is prepared to admit that there is "molecular combination." But if, as he admits, in solution there is weakening of the bonds between the components of a salt, the demarcation between chemical combination and molecular combination in a solution must in itself be somewhat loose. Briefly, his hypothesis is based (1) on the possibility of combination between molecules in a watery solution, and (2) the hypothesis that this molecular combination loosens the internal bonds in one or both of the combining molecules. We would suggest to Captain Beatty that in a future edition he affords graphic representations of the different stages of the process as conceived by him, and that in his formulae also he represents the enzyme by some conventional sign so that what he regards as the exact relationship in the various stages be more clearly grasped. For example, we are still uncertain as to what he regards as the course of events in proteolysis—whether

the enzyme first withdraws a peptone radicle from the compound protein, which radicle then undergoes hydrolysis, or whether hydrolysis (or synthesis) through the agency of the enzyme is the first stage, the very act of hydrolysis in itself weakening the bond between a particular peptone radicle and the remainder of the compound protein molecule, so that this *ipso facto* floats free from its companions and *ipso facto* becomes loosened from the enzyme, which now is free to repeat the process. To repeat, Captain Beatty has performed a distinct service in bringing together much valuable material which it is not easy to obtain in a collected form elsewhere; evidently he is on the threshold of a fertile hypothesis. But, for the sake of lucidity, his material in parts needs expansion.

NOTES ON BOOKS.

THE forty-first volume of the *Transactions of the American Gynecological Society*² is of special interest in that its first 428 pages are devoted to the relation of syphilis to obstetrics and diseases of women independent of pregnancy, parturition, and the puerperium. The effects of syphilis on the middle and upper part of the female genital tract remain ill defined. Hence, perhaps, the profession will award special value to Drs. Gellhorn and Ehrenfest's paper on syphilis in the internal genital organs in the female, and Dr. Charles G. Norris's on syphilis of the body of the uterus. The former authors allow that our actual knowledge about syphilitic lesions of the uterine body is extremely meagre, while Dr. Norris observes that it is remarkable how seldom the disease has been observed in the uterus above the cervix. The treatment of cancer forms the subject of several instructive monographs in the volume.

² *Transactions of the American Gynecological Society* for the year 1916. Vol. 41. Philadelphia: Wm. J. Dornan, 1916. (Med. 8vo, pp. 726.)

MEDICAL AND SURGICAL APPLIANCES.

X-RAY FILMS.

FILMS have been employed in x-ray work for a long time but hitherto have not displaced plates. A new type of film has been placed on the market by Austin-Edwards Limited, Warwick, England, and from the results of the trials so far made we are able to say that these films are good, and will be found to give very satisfactory results if proper precautions in handling them are observed.

The film is coated upon both sides of the celluloid support; the thickness of the celluloid is only $\frac{1}{16}$ of a millimetre, so that the sharpness of the photograph, which consists of two negatives, one on each side of this flexible support, is excellent. They appear to be about twice as rapid as the best x-ray plates, and if placed in the usual cassettes with a reinforcing screen on both sides they ought to prove the fastest on the market. They have the advantage of lightness and are unbreakable. They are supplied in black envelopes with a cardboard support, so that they can be handled in the same way as glass plates. In development care must be taken not to injure one or other of the gelatine films, because, unlike a plate, which is always developed with the gelatine film uppermost, here, perforce, one of the sensitive films has to be below; it must be thoroughly soaked in water for a few moments before being carefully floated into the developer, and repeatedly and carefully turned so as to get even development. For the same reason care has to be taken in drying these films. As sent out, they have two small holes already punched in two corners, which allow pins to be passed through for support. Full directions are printed on the cover of the boxes, and there is no difficulty in carrying them out. For stout patients and in deep, difficult parts of the body these films ought to prove of great use, and specially for extremely rapid exposures. Sandwiched between two reinforcing screens and well pressed together they ought to prove of exceptional value. For use in this way they would, of course, have to be taken out of their envelopes and put into cassettes. All can be done in the dark room as usual. As has been indicated, the main difficulty likely to be encountered is in developing, and unless care is taken there will be a risk of spoiling the negative. The agents for the sale of these films are Houghtons, Ltd., 88, High Holborn, W.C., and Glasgow.

¹ *The Method of Enzyme Action*. By James Beatty, M.A., M.D., D.P.H. With Introduction by Professor E. H. Starling, M.D., Sc.D., F.R.S. London: J. and A. Churchill, 1917. (Demy 8vo, pp. 145. 5s. net.)

THE ROYAL ARMY MEDICAL CORPS AND ITS WORK.

(Concluded from p. 234.)

CASUALTY CLEARING STATIONS.

THE railroad hospital or casualty clearing station may theoretically be described in several ways.

1. As the administrative junction between the lower limit of the collecting zone or front with the upper limit of the evacuating zone or lines of communications.

2. As the focal point to which converge all roads leading from the front, and from which diverge all roads leading to the base.

3. As the spot where road transport ends and railway or analogous transport begins.

4. As the place where all casualties collected from main dressing stations are deposited until the moment comes for their transport through the evacuating zone to the base or distributing zone.

In practice the casualty clearing stations justify all four definitions more or less precisely, but the fact is rather obscured by their multiplicity and the great length of the front. It will be found, however, that whatever may be the position of a given casualty clearing station there are always roads that lead to it from the front, and that, however far beyond the general level of the evacuating zone it may seem to lie, it preserves its theoretical relation thereto, because a tongue or spur has been thrust up to meet it.

SELECTION OF SITE.

Two of the essentials in the selection of a site for a casualty clearing station are ready access from the front for motor convoys and free communication with the base by ambulance trains. A third is plenty of room for the necessary tents or huts, a free water supply, and safety from any but extreme range artillery fire. To find a suitable site is often difficult. Adequate room and protection from artillery fire are generally easy to secure, and water can be piped from a considerable distance, but to find a place which, besides being suitable in other respects, is readily accessible by road from the main dressing stations concerned, and lends itself to evacuation to the base by train, is much more difficult. It is a problem, in fact, which can often be solved only by running a special branch railway up to the proposed site, or by choosing a site which is on an existing railway but at a considerable distance from the main dressing stations that have to be cleared.

The first plan involves heavy expenditure of time and labour, and is usually adopted only when later on the site may be useful for some other purpose, or when the branch line can be made to serve more than one end.

The second solution is therefore the commoner, but it is to be remembered that accessibility and shortness of distance as the crow flies are not interchangeable terms. The old proverb, "The longest way round is the shortest way home," has a particular application to the transport of wounded men. Once a man is in a well-sprung pneumatic-tired ambulance car the exact distance that he travels is of less importance than the character of the roads over which he is borne. Hence, independently of all other considerations, a site which communicates with the front by good roads is always to be preferred, even if the distance to be traversed be treble, to one which can be reached only by lanes and cart-tracks.

This is one reason why the casualty clearing stations as a whole are distributed irregularly in regard to their distance from the main dressing stations they serve. The same reason also helps to account for the differences in the habitations of casualty clearing stations. Some are in permanent buildings in towns or villages, some in huts far away from all other buildings; others in huts and tent-marquees, others in tent-marquees alone. The completely tented casualty clearing stations are usually found to be in the new parts of the line. As they settle down they acquire huts for operating theatres and administrative purposes, and if, later on, when the line moves forward, the sites that they occupy are likely to prove suitable for stationary hospitals, all the tents are replaced by huts.

THE FUNCTIONS OF A CASUALTY CLEARING STATION.

A casualty clearing station is in principle a mobile unit, since it must always keep within reasonable distance of

the main dressing stations; and therefore be prepared to move when these are moved, in conformity with any change in the tactical situation of the troops they serve. Primarily it is an evacuating unit, and only intended to act as a hospital so long as it is forced by circumstances to retain its patients, and it was probably in order to keep its status well in the foreground that not long after the war began the title "casualty clearing station" was substituted for the original term "clearing hospital." For a corresponding reason every casualty clearing station is provided with three lorries of sufficient size to transport at a moment's notice all the equipment that strictly speaking it is entitled to possess.

But however thoroughly casualty clearing stations may justify the suggestion of their title, they always go a good deal beyond it; for their functions and personnel have been adapted to existing circumstances by the D.G.M.S. in France. Hence they are no longer mere stations but real hospitals, despite the fact that some are only about six miles from the fighting line, and few lie further off than double that distance. The patients are nursed by trained women nurses; ordinary hospital beds are provided for the more serious cases; the operating theatres have usually four operating tables, are equipped with electric light, and the appliances familiar in the hospitals of large towns; and while some have x-ray annexes of their own, all have at their command the services of travelling x-ray outfits, and clinical laboratory work is done for them by the mobile laboratories which are commonly to be found in their neighbourhood.

When a casualty clearing station has been established for some little time, the chief differences between it and a base hospital are attributable to the diversity of duties that the casualty clearing station has to fulfil. In addition to acting as a true hospital for a short or long period, it must always be ready to operate on a very large number of patients, and to evacuate forthwith those that can safely be moved, and must also be able rapidly to prepare for immediate evacuation a very much larger number of slight cases. It must also be ready suddenly to receive and accommodate in one fashion or another an almost unlimited number of sick and wounded. Consequently, in addition to whatever accommodation in the way of actual beds it may possess, it must provide also:

1. Tents in which men lying on stretchers can be kept under cover, and receive what they require in the way of food, warmth, and surgical attention.

2. Accommodation for classifying the cases that arrive according to whether they must undergo operations under an anaesthetic, or merely require some such attention as the redressing of a wound or the replacing of a splint.

3. Accommodation for men who have received all the attentions they need, and are merely waiting to be loaded on the train.

4. Accommodation for the performance of minor surgery.

THE WORKING OF A CASUALTY CLEARING STATION.

There are considerable differences in the way different casualty clearing stations meet these needs, but in regard to definite operations the general practice is to provide sufficient accommodation and personnel for the performance of at least four operations simultaneously and continuously for an unlimited number of hours or days. Even when a battle is in progress, of the wounded men who arrive at the casualty clearing station at least 10 per cent. must visit the operating theatre before they can be sent to the base hospitals.

In regard to other matters the general procedure is usually as follows: As soon as a convoy arrives the patients are all off-loaded promptly so that the ambulance shall not be detained. They are carried into a distributing room, where, while a clerk takes down particulars of his army status, etc., a medical officer decides to what class of case each patient belongs, being guided in this matter partly by his condition, partly by what is stated on his field medical card.

Thus, for instance, A, who has an abdominal wound, is sent straight to the operation-theatre preparation room. So, too, is B, who has a wound of the head and is insensible. C, who has a wound of the thigh, is sent to the stretcher case dressing-room; but D, who has an apparently corresponding wound, is for some reason in a state of profound collapse, and is therefore sent to the observation ward. E has a perforating wound of the upper thorax,

and is sent to the chest ward; while F, who has a flesh wound of the shoulder, is sent to the walking case dressing-room.

When A arrives in the preparation room all his clothes are removed, and he is got ready for a laparotomy, which takes place as soon as a table in the theatre is free. B, in addition to other preparations, has his head shaved, and is sent to the theatre as soon as a surgeon and anaesthetist are ready for him. It may be decided that no craniotomy should be performed, at all events until the patient has reached a base hospital, but the case must be thoroughly examined before this conclusion is reached.

C's stretcher is placed on trestles and his wound carefully examined to see whether any operation is required; if so, he too is sent to the operation-theatre preparation room; otherwise his wound is redressed and an extension or other splint suitable for train travelling is applied. D, on his arrival in the observation ward, is put to bed and submitted to various antishock measures until his condition is sufficiently good for an elaborate treatment of his wound. E, on his arrival in the chest ward, is examined by a medical officer who specializes in internal medicine.

When F enters the walking-case room his bandages are taken off and the required treatment applied, unless his general condition and his field medical card clearly indicate that no further interference with the wound is likely to be desirable until he reaches a base hospital. From the dressing tent for walking cases F goes to the evacuation tent for walking cases, where he is given food and cigarettes and waits for the ambulance train; a train is usually available every day, and even oftener in times of activity; but, if there is any delay, F is given a stretcher bed and his wound is redressed in due course.

Meantime, into another evacuation tent men who belong to the various classes, A, B, C, D, E, and who have come down with the same or a previous convoy, are being brought on stretchers from the wards or other places where they have been prepared for evacuation. The standing regulation is to send on all cases to the base as soon as suitable transport is available, but any case at all likely to suffer by transport is detained as a matter of course; chest cases are never sent down until all danger of haemorrhage is presumed to have ceased, and abdominal cases are detained until they have so far recovered that they can be sent straight through to Great Britain without further treatment at the overseas base.

In any case the number of men detained is usually quite sufficient to afford the personnel plenty of ordinary hospital work between the arrival of convoys, and in order to secure time for its due performance, even when fighting is heavy in the part of the line served by the casualty clearing station and casualties are numerous, every casualty clearing station has a partner located at the same rail-head, and the two are alternately "open" and "closed" for the reception of patients. When times are quiet the commonest plan is for the casualty clearing stations concerned to open and close on alternate days. During active fighting a casualty clearing station usually declares itself "closed" when it has a given number of unevacuated patients on its hands; its partner then takes the next convoys. Should it happen that the partners are both "closed," the D.M.S. of the army concerned sends later convoys to the casualty clearing stations of some other area under his command.

Specialist Surgeons.

As a convoy does not represent a specific number of patients, and the number of convoys dispatched from any main dressing station in any twenty-four hours depends entirely upon the state of the fighting, the amount of work thrown upon a casualty clearing station varies greatly from time to time. Sometimes it resembles that of an ordinary hospital in a manufacturing town where accidents are frequent; sometimes that of a main dressing station of so elaborate a type as to be able to perform both aseptic and septic operations, and so large as to be able to deal with 1,000 or more patients a day. Its permanent staff consists of seven medical officers, but when the fighting is heavy it is reinforced by medical officers drawn from casualty clearing stations, field ambulances, or other medical units in other parts of the line. On its permanent staff are always at least two surgeons experienced in all classes of operative work, including abdominal surgery, and the reinforcements sent when times are active include other surgeons of the same type. The net result, therefore, is that by arranging in groups the total number of surgeons and anaesthetists available, the necessary operations can be performed until the stress is over.

Distribution of Patients.

When the convoys are not large and not arriving in rapid succession, the work of distribution is done by the orderly medical officer on duty; at other times it is usual to select a surgeon of wide experience for the work, since the duty of the "spotting officer" then becomes a task of great responsibility. He must be able, for instance, to gauge rapidly the general condition of a patient and the probable degree of seriousness of his wound. In addition to bearing in mind continually how long it is likely to be before an ambulance train arrives to clear the hospital, he

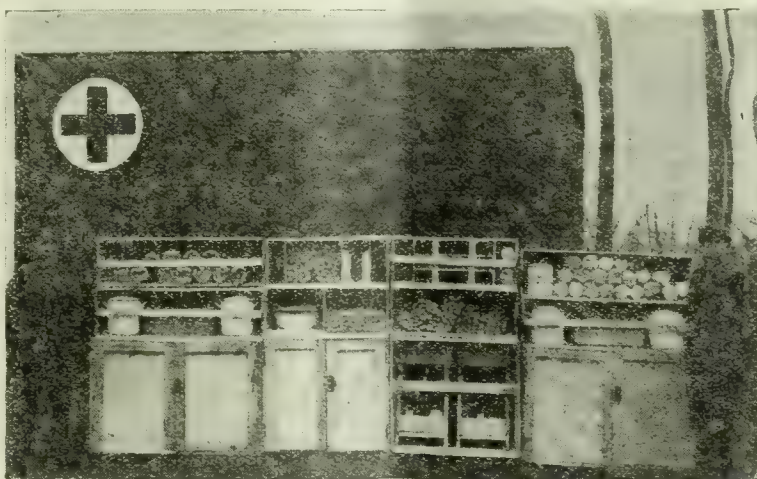


FIG. 19.—Trailer with one half of its equipment unloaded. The cupboard most to the spectator's left is for dressings, the next for instruments, the next contains two anaesthetic tables, and the cupboard most to the right has three compartments for splints—long splints, thigh, short splints, arm, and leg splints respectively. The shelves above the cupboards show the method of packing dressings, etc.

must keep a constant eye on the operation list. Should the latter be comparatively short or the stream of patients be falling off, his task becomes relatively easy, since he can mark for the preparation room any cases which seem at all serious. In the contrary case, he must decide whether the individual and general interests would best be consulted by sending the case down to the base forthwith, should an ambulance train be waiting or expected shortly to arrive, or by keeping him, even though it is not likely to be possible to perform the operation for many hours.

Consulting Surgeons.

The clinical work of the casualty clearing stations in each army is under the supervision of an officer who in peace times is a well-known consulting surgeon, and corresponding supervision is exercised in respect of medical conditions by a physician of analogous experience.

Before being evacuated from a casualty clearing station a note is added to the field medical card of every patient as to the treatment he has received, and if an operation has been performed, or he has been detained as an ordinary hospital patient, clinical notes concerning his case for the information of the medical officers at the base are sent on in an envelope attached to a button of his bed jacket.

Many casualty clearing stations also do a certain amount of work in attending to local sick—that is to say, to cases amongst labour parties and other troops in their neighbourhood which are not in charge of a medical officer or within the area of the work of a field ambulance. It is also the

rule for a casualty clearing station to detail a medical officer to afford medical attention to members of the civil population if a request to this effect is made by the local civil authority.

THE THEATRE TRAILER.

Though a casualty clearing station is a mobile unit, the transfer of so large an institution from one site to another takes a considerable time. In an advance it may be desirable to push an operating section forward at once. To meet this need the "theatre trailer" has been devised. It consists of a large pitch-pine framework, which can be clamped on to a trailer drawn by one of the lorries of the casualty clearing station. The lorry is loaded with stretchers, blankets, cooking and feeding requisites for a hundred serious surgical cases for two days, and carries also a hospital marquee and operating tent. The original idea for the trailer, as suggested by Colonel Cutlibert Wallace in September, 1916, was to fit it with shelves and pigeon-holes, as on a ship. After further study, however, it was seen that it would be better to make the cupboards and other fittings movable, providing for the careful packing of their contents so that they would not suffer on the road. Each cupboard runs on four wheels, and is fitted to hold and carry without

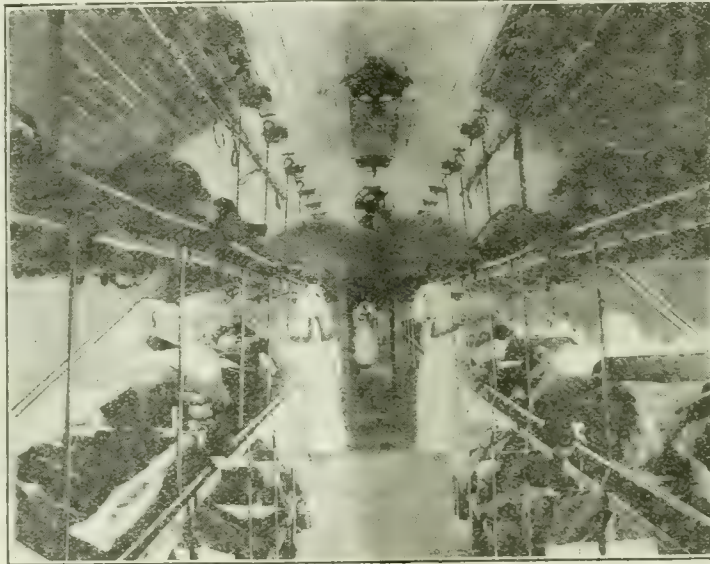


FIG. 20.—Interior of a hospital train: the majority of lying cases are evacuated by ambulance train.

damage dressings, instruments, bowls, and enamel ware, as well as the Bowlby outfit and the marmites in use in almost every casualty clearing station theatre. There are two cupboards for sterilized dressings, overalls and towels, sufficient for one day's operating, with two surgeons and four tables, dealing with 150 major operations. In addition, six complete sterilizing drums are carried, and in all sufficient dressings for 500 operations. Lotions, made up in quart bottles, are packed in a specially designed case fitted in one of the shelves. Boiled water and saline are taken in sterilized petrol tins. The instruments are packed in webbing straps stitched together and attached to the shelves. Three anaesthetic tables and folding stools are packed into two cases, which, when unpacked, can be used as surgeons' washing-up benches. The bottom shelf of each anaesthetic table contains nine compartments, each of which holds a two-pound bottle of chloroform or ether. Two other shelves contain the anaesthetic apparatus, masks, gauze, etc. Other cupboards contain primus stoves and their fuel, cleaning materials, a rack for splints, and a stand for the lotion copper cauldrons. The shelves fit one above the other, and can be built up in any order that may be desired to form dressers or small cupboards. The contents of one side lifted out of the trailer are shown in the illustration (Fig. 19). With the trailer and trolley are four R.A.M.C. orderlies, and there are two Army Service Drivers. These six men can pack the loaded furniture into the trailer in ten minutes. The main advantages of this trailer, the details of which have been worked out by Captain E. M. Cowell, R.A.M.C.,¹ and Lieutenant-Colonel G. H. Goddard, R.A.M.C., are that it ensures the careful transport of the delicate equipment of an operating theatre and provides operating room furniture ready for immediate use in all circumstances.

¹ A full account of the Wallace-Cowell trailer, with details of construction and stores, will be found in the *Journal of the Royal Army Medical Corps* for June, 1917.

AMBULANCE TRAINS AND HOSPITAL BARGES.

A patient may be sent down through the evacuating zone to the base either by ambulance train, by hospital barge, or by motor convoy; in the great majority of cases the first is the method employed.

AMBULANCE TRAINS.

Several types have been used since the war began. In the early days the predominant type was made up mainly of goods vans fitted with racks to support stretchers, and supplemented by straw-strewn vans for the more lightly wounded. These trains were effective so far as actual transport was concerned, and were easy to load and unload, since the doors were wide; but the carriages could not be lighted easily or kept warm, they afforded no conveniences for administrative work, and it was very difficult for the medical officers to attend to their patients once the train had started. Moreover, unless the vans were drawn from passenger trains, and this was comparatively rare, they were mounted on four wheels only, had very ineffective springs, and practically no brakes. They were gradually displaced by trains built up of ordinary passenger coaches supplemented by a saloon or

restaurant car for administrative purposes. The compartments were so arranged that they could each contain four stretcher cases lying at right angles to the line of travel. Most of the coaches thus used had six wheels, and were much better sprung and braked than goods vans. They were also much better lighted, and, as a rule, each vehicle had a firebox attached exteriorly, and thus had independent heating. On the other hand, loading and unloading was not easy, since the doors were narrow, and only rarely was it possible to arrange for intercommunication between all the carriages, so that some of

them could be visited only by walking along the foot-board or by stopping the train.

A few trains of this type are still in use, but the majority belong to a third type, which is built up partly of corridor car "coaches" for patients able to sit up, partly of specially constructed "ward" carriages (Fig. 20), intercommunicating cars with tiers of berths down each side and a passage way between them. These berths are open at the ends, and have both wire and ordinary mattresses and blankets and sheets, and the patients are habitually put to bed in them, unless for some reason, such as the existence of an injury to the spinal column, it is desired to avoid moving a patient off his stretcher. In such cases the stretcher is laid on the top of the bed. These tiers of beds are arranged parallel to the line of travel, and as there are six sets of tiers on either side and each consists of three berths, the normal accommodation of a travelling ward is thirty-six patients, while if occasion requires, it can be increased to forty by laying stretchers in the passage way between the tiers.

The usual plan is to place the carriages in the following order, working from the engine backwards: A carriage used as an isolation ward; a coach with its compartments arranged as sleeping quarters for the medical and nursing staff; a kitchen coach; four or five ward carriages; an administrative carriage, providing an office, a room for the performance of operations (Fig. 21), and a dispensary; four or five coaches for sitting-up patients; a carriage for

general cooking purposes; a coach to serve as sleeping quarters for the subordinate personnel; a van for stores; and a guard's van. About 400 patients is an average load for such a train.

The "ward" carriages have wide external as well as internal doors, so that they are easy to load and unload, and the train is electrically lighted and steam heated from end to end. The wide doors of communication between the carriages afford a vista of half a dozen carriages in succession, and the actual passage way extends from one end of the train to the other. All the ward carriages, moreover, are mounted on well-sprung eight-wheeled chassis, and a Westinghouse compressed air automatic brake operates from end to end of the train. The net result is that they are easy to work and run smoothly even over the much-used permanent ways of Northern France.

All the advantages of these trains are attained likewise in a fourth type, which is the latest to come into use. In it the accommodation for patients consists entirely of ward carriages, wherein as much provision for sitting-up patients as may be required is made by turning up the middle berths of the tiers, thus leaving the upper berth for a lying-down case, while the lower one forms a sofa for three or four sitting-up patients. In the third type of train the sitting accommodation in the coaches often proves to be in excess of the requirements, so that the fourth type represents economy in engine power and rolling-stock, since, whatever the proportion of lying-down cases to sitting-up cases, the whole of the accommodation can be utilized.

Ambulance trains so long as they are loaded are managed very much as if they were ordinary hospitals, but there is not usually very much dressing to do unless in a considerable proportion of the cases irrigation treatment is being applied. There are always, however, patients who require attention, and for the first hour or so, at any rate, after the train has been loaded the whole of the staff is kept busy. Once they have settled down the majority of patients sleep peacefully to the end of their journey, even those who are travelling in sitting-up coaches. They have left the battlefield behind them; they have had their wounds dressed, and all tension is at an end. This restfulness of an ambulance train, despite many physical reasons to the contrary, was noted long before the prevailing type of train came into use, and is one of the more curious psychological features of the war.

For an ambulance train of the second type the allowance of medical officers is usually three, but for the third and fourth types only two are generally required; in each case three or four sisters are carried in addition to nursing and general-duty orderlies, cooks, etc. Unless a journey is unusually long, the majority of the staff remains on duty during the time the train is loaded. As soon as the patients have been unloaded the whole train has to be cleaned, bed-linen changed, dirty linen dispatched to the wash, and fresh supplies of stores obtained, so that rest for an ambulance train staff does not come until the up-country journey has commenced.

The movements of the trains as a whole are regulated by a medical officer of the staff of the D.M.S. Lines of Communication. If a full load is not waiting at any single rail-head, several are visited in succession. Once loaded, the train travels at a rate of about twelve miles an hour to its destination at the base, which may be anything from

fifty to a hundred miles away. Information as to the hour of its probable arrival is telegraphed to an officer at its destination, who meets the train with a sufficient number of stretcher-bearers and motor ambulance cars to distribute the patients promptly among the various hospitals at this base.

HOSPITAL BARGES.

Evacuation by hospital barges is necessarily restricted to parts of the front traversed by navigable canals, and also by the fact that comparatively few casualty clearing stations lie sufficiently near canals for patients to be embarked without an intermediate journey in an ambulance car. This means of evacuation is slow, but is of use in dealing with patients for whom it is desired to secure absolute freedom from shaking. Barges, however, are not used solely for evacuating purposes; in certain parts of the line they can be taken close up to main dressing stations and advanced operating stations, and can then be used either to provide additional accommodation or practically as if they were travelling casualty clearing stations, chest cases and abdominal cases being placed straight on board after operation and taken down to a port, where they are evacuated to a home base by being loaded on a hospital ship.

The barges used are those familiar on Flemish canals (Fig. 22). When one end of the interior has been partitioned off into cabins for the staff, and the other into a kitchen, scullery, and quarters for the subordinate personnel, there remains ample room in the middle for thirty ordinary hospital beds arranged fifteen on each side with a passage between them. There is a space amidships into which patients are lowered from the deck above by means of a hand lift. This space can be used for the performance of operations if necessary. Except that its ceiling is low (about 10 ft.) and its diameter comparatively narrow (about 16 ft.), a barge ward looks very much like a hospital ward (Fig. 23).

All the barges are provided with a dynamo and gas engine; they can be lighted either by electricity or by removing one or more sections of the deck which forms



FIG. 21.—The operating theatre of an ambulance train.

the ceiling of the ward. They are drawn by a tug in charge of men accustomed to canal work. They are divided into flotillas of four, but more often than not they travel singly or in couples. Every barge carries two trained women nurses in addition to nursing orderlies, general orderlies, and cooks. Each barge also carries a medical officer, unless two barges or more are travelling together, and then one is sufficient for all of them. The average duration of a barge journey is from twenty-four to forty-eight hours. They travel only by daylight, and at the rate of about three miles an hour.

STATIONARY HOSPITALS.

At places along the railways traversing the evacuating zone there are medical units known as stationary hospitals. These in theory are 200-bed hospitals of comparatively simple equipment as compared with that of a general hospital. Their bedsteads, for instance, are folding iron "barrack bedsteads," and they are not supposed to have clinical laboratories or x-ray annexes. In France, however, nearly all stationary hospitals are capable of accommodating several times their regulation number of patients, and many in point of equipment and extent of accommodation do not differ from the large general hospitals in the

distributing zone, unless they are used to fulfil some special aim.

Such of these units as are in the evacuating zone do their work in direct association with main dressing stations, and since the dispatch of a patient to them does not necessarily entail his formal evacuation, they are almost to be regarded as annexes thereto and therefore as front-line units. The rest are used for the reception and treatment of cases of sickness and injury among troops on the lines of communication, and for cases which the medical officers in charge of ambulance trains may think it desirable to off-load at the earliest possible moment. Strictly speaking, a stationary hospital is not entitled to more than seven medical officers, but it is allotted a larger number if it accommodates more than its regulation number of patients, and is doing work which for its due performance requires an augmentation of the staff.



FIG. 22.—Hospital barge being towed.

CONTROL.

It is from general head quarters that the Director-General of Medical Services usually controls the whole of the medical work of the front through the Directors of Medical Services of the different armies, as also that of the evacuating zone and the distributing zone through the Director of Medical Services Lines of Communication.

The operations thus controlled include not only the disposition and maintenance of hospitals and other medical units, together with all the arrangements for the evacuation of patients from the front to the bases and from the bases to the United Kingdom, but also certain other important branches of work. These are the distribution of medical reinforcements, the co-ordination of action throughout the whole British force in regard to sanitation and the prevention of epidemic disease, and the work of weeding out from the armies men who, though still useful soldiers, are not capable of doing front-line work, many of whom must eventually be sent home to be discharged from the army.

At the same place are also held the periodic meetings of a council formed by the Director-General of Medical Services to assist him in the settlement of questions from time to time arising. It consists of eight members and is so constituted that the temporary and permanent elements of the medical service of the army, general and bacteriological hygiene, medical and surgical work at the front, the same work at the bases, and administration throughout the whole area, are all represented in equal proportions.

There is a second council of the same general kind, which includes the whole of the civilian consultant specialists holding temporary commissions in the army, as

well as the principal permanent officers on the staff of the Director-General of Medical Services. But this meets less often owing to the difficulty of withdrawing so many officers from their ordinary work simultaneously.

THE DISTRIBUTING ZONE.

The hospitals to which the patients are sent on their arrival in the distributing zone are known as general and stationary hospitals. The former are in theory much larger and more comprehensively equipped than the latter. In practice, however, there is in France often no difference even in point of size, and invariably both afford the same facilities for the best forms of medical and surgical work. That is to say, their ward equipment is of the same kind as in large civil hospitals in times of peace, they have all large and elaborate operating theatres and annexes, and bacteriological laboratories and x-ray annexes.

ORGANIZATION OF GENERAL AND STATIONARY HOSPITALS.

In point of size every stationary hospital can now accommodate at least 500 patients instead of the regulation 200, and every general hospital at least 1,040 instead of 520. The larger figures represent the number of beds kept at all times ready for the reception of patients. In time of pressure the accommodation can be increased by some 50 per cent. The clinical work is divided into a medical and a surgical division, each in charge of a specialist assisted by ward medical officers. To the

surgical division there are also attached specialists in operative surgery who vary in number according to the accommodation of the hospital.

The nursing is done by trained women, those appointed to each ward working under the supervision of a ward sister, who is subject in her turn to the hospital matron. There are also a certain number of orderlies trained in nursing duties, who assist and on occasion replace the women nurses, and of general duty orderlies who do all the rough work of the hospital. The male

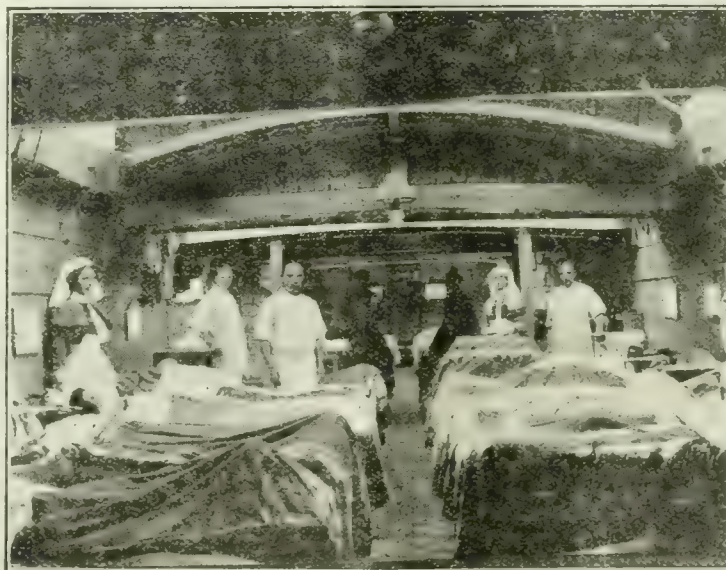


FIG. 23.—Interior of a barge full of wounded.

personnel is under the control of a non-commissioned officer commonly called a wardmaster, who is subject in his turn to the sergeant-major of the hospital. Supplies of every kind are obtained by the quartermaster, who is responsible for their due preparation. He holds honorary rank as an officer in the Royal Army Medical Corps, and to attain this position he must not only possess tact and good manners, but must pass examinations in general education and technical and military subjects spread over so many years that most quartermasters are men who have entered the corps at a very early age.

The laboratory and x-ray rooms are in the charge of specialists, privates or non-commissioned officers who have received training in these duties being appointed to assist them. The institution as a whole does its work under the control of an officer of the rank of lieutenant-colonel or colonel, who in the larger hospitals has a registrar to assist him in the keeping of medical records. In times of pressure this officer commonly takes charge of a certain number of beds, and often also acts as company officer or adjutant, his work including disciplinary control of the more military side of the work of the unit.

A few hospitals occupy large buildings, such as casinos or hotels, but most of them now lie in camps outside the towns, of which they nominally form part. They are formed sometimes of huts alone, sometimes of huts and marquees. The marquees have boarded floors, stoves, and electric lighting and double roofs. In fine weather the whole of one side of a marquee can be removed, the patients being thus kept practically in the open air; the marquees can also be placed end to end, a continuous ward capable of holding perhaps a hundred beds being thus formed. The hospitals at bases are rarely moved, so that not only are the camps they form irreproachable in the matter of sanitation, but they are almost invariably attractive likewise in other ways, as there is much rivalry among the staffs of different hospitals, and neat paths, shrubs, and flower beds spring into existence with great rapidity.

But, although base hospitals are well equipped and managed on identical principles, they are differentiated to some extent by the character of their work. At each base, for instance, one hospital deals solely with infectious diseases, while the rest, though prepared to take cases of all kinds, habitually specialize in the treatment of some particular class of injury or disease—for example, skin disorders, ophthalmic troubles, jaw injuries, nerve complaints, head cases, and fractures of the lower extremities. There are also some base hospitals which, owing to their distance from evacuation points, deal mainly with comparatively light cases.

At all base hospitals the time for which serious cases may be retained is not limited, but the general rule is to transfer to Great Britain any cases which are deemed fit for transport and are not likely to be fit for active service again in less than three weeks. Patients who complete their treatment in the base hospitals are sent on their discharge to convalescent dépôts, where they remain for a varying number of days, and thereafter, if considered fit once more for the front, are sent to the dépôts of the regiment or corps to which they belong. In the contrary case they are marked as base details and are kept under medical observation in barracks and employed on duties of various kinds.

BASE MEDICAL STORE DÉPÔTS.

Other medical establishments at the base are dépôts of base medical stores (Fig. 24), whence all the up-country dépôts, as well as the local hospitals and ambulance trains, draw their supplies, and the base hygiene laboratories, whose main work is to test the purity of the food supplies of the troops. There is also at one base a large bacteriological laboratory devoted solely to research work, and much work of the same kind also goes on at the laboratories attached to the different hospitals. Sometimes the work

is done as an independent effort, sometimes in co-operation with the officers in charge of the mobile laboratories in the collecting zone, and as a means of testing how far the results there obtained are supported by observations made on patients who have reached a later stage of their illness or injury.

LABORATORIES: MEDICAL HISTORY.

The general control of all the laboratories and of their work in the investigation of the problems of epidemic disease is the special charge of an Adviser in Pathology to the Director-General of Medical Services. In addition two officers appointed by the Director-General represent the Medical Research Committee of Great Britain; their duty is to advise upon the systematic recording of clinical notes, so that the requisite data may be available for general medical statistics and for pension claims, and also to secure that the various new types of disease and injury seen in this war are made the subject of specific study from a clinical and a pathological point of view by selected officers. As comparatively few cases remain in the hospitals in France throughout their whole course, the work involves securing continuance of study of many of the cases on their arrival at home. The aim in view is to secure that all the data necessary for the formation hereafter of sound opinions as to the medical lessons of this war shall be duly forthcoming.

As in the various army areas, the clinical work at each base is supervised by consulting specialists in various branches of medicine and surgery, and dissemination of newly acquired knowledge is secured partly by memorandums issued from time to time by the Director-General of Medical Services, partly by meetings of medical societies established not only at the bases but in the collecting zone, and partly by publication of results in the medical press.

The base hospitals are also used

as dépôts for medical reinforcements, officers newly arrived from home being appointed to them, both in order that they may gain some experience of general routine, and also to enable the authorities to ascertain their physical and other aptitudes for work of various orders. The younger men are sent eventually to field ambulances and thence to regiments.

OVERSEAS CONTINGENTS.

All the great British dominions beyond the seas—India, Australia, New Zealand, Canada, and South Africa—have medical units in the field, though they are all worked on the same system as units which are strictly speaking Royal Army Medical Corps units, and they are all under the control of the Director-General of Medical Services. An account of one of these—the Canadian Army Medical Corps—written by Surgeon-General Fotheringham of that corps, will be published in an early issue. There have been one or two hospitals officered entirely by volunteers supplied by the faculties of certain universities in the United States of America, and some units working under the aegis of the British Red Cross Society. These also have been under the general control of the Director-General of the British Medical Service.

GENERAL ADMINISTRATION.

In most of the military hospitals in France the administrative work is done by permanent officers of the Royal Army Medical Corps, and the bulk of the executive



FIG. 24.—A store for an ambulance train.

work by temporary officers, who contract to serve for the year, but in most cases renew their contracts as a matter of course. For the first eighteen months or more all these officers were volunteers, but since all men under 41 are now liable for military service, a considerable proportion of those now arriving are selected by civilian Medical War Committees, in response to the demands of the War Office. In making the selection the committees have regard not only to the fitness of the individual for foreign service, but also to the question of his indispensability or otherwise from the point of view of the civil population among which he has been practising.

Intermediate between these two orders come a certain number of officers who have received commissions for the duration of the war, and who are usually doing special work of some kind, and a large number of Territorial and Special Reserve officers. The former are civilian medical practitioners who long before the war joined the volunteer body known as the Territorial Army as medical officers, and by taking part in annual exercises and in other ways acquired a general knowledge of military routine. The Territorial army was mobilized with the Regular army on the outbreak of war, and these Territorial officers, belonging as they did to regiments and field ambulances, were at first to be found almost exclusively in the front line formations, but many of them now hold administrative positions and posts as divisional medical officers of hospitals. The Special Reserve officers are usually young men who before the war undertook to serve in the Royal Army Medical Corps if required, and meantime went through a course of three months' training, receiving a small retaining fee in respect of each year their names were kept on the roll.

The nursing staff is drawn from an equally large number of sources. Some belong to the Regular army, others to the hospitals which in peace nominally form part of the Territorial army, others are nurses who in peace work independently, and many come from the overseas commonwealths.

The great variety in the components of the R.A.M.C. is a source of strength, since it ensures the inclusion of men of varied talents and representative of special knowledge of all branches of medicine and surgery. The whole corps is administered in a spirit which secures unity of effort among men of different mental constitution and previous experience, yet without trammelling individuality by the imposition of other than necessary rules and regulations. It is to this that is mainly to be attributed the successful working of the Royal Army Medical Corps in France, but material assistance has also been derived from the sympathy extended towards all medical affairs for the benefit of the troops by the Commander-in-Chief.

SEA TRANSPORT.

The motor convoys at the front are army units, but the ambulance cars by which patients are taken from the base hospitals for shipment to England are maintained by the British Red Cross Society, and at some bases are driven by women. As not all the bases are at a port, a short journey in an ambulance train sometimes intervenes between a patient's departure from a base hospital and his embarkation.

The embarkation medical officer is informed day by day as to how many patients are waiting shipment, and the proportion of lying to walking cases, and as soon as a ship is ready notifies each hospital concerned how many patients of each kind he can accommodate. Arrived at the quay-side, the ambulances are unloaded under the supervision of the embarkation medical officer, and as each case reaches the deck it is assigned a position on board according to its nature. Swing cots are used for the severer cases, since they can be approached from both sides, and to the less severe are assigned berths arranged in tiers. On long voyages walking cases are also given berths, but on short ones they are allowed to sit or stroll about as they please as soon as each man has been clad in a life-jacket. The next step generally is the serving of a meal and the distribution of cigarettes.

Meantime the lying-down cases are being treated as if they were still in a hospital on land, for every hospital ship has a staff of surgeons and nurses and all the equipment necessary for hospital work. All hospital ships have

previously been passenger vessels, and the necessary room for wards is provided partly by re-equipping the dining and other saloons for their new use, partly by clearing the lower decks of cabins. Lifts are provided for moving patients, and the vessels are painted white, with a green band painted from stem to stern with a red cross painted in the middle. At night there is a long row of red and green lights along the taffrail on both sides.

HOME HOSPITALS.

Arrived at the port of destination the patients are received by a disembarkation medical officer and his staff, who have been warned by wireless telegraphy of the number of patients on board, and have caused to be brought up to the quay-side the requisite number of hospital trains; these trains are then loaded rapidly by stretcher-bearer parties and dispatched to different parts of Great Britain.

The more serious cases are usually sent to hospitals in the neighbourhood of London or the great provincial towns. Some of the larger institutions are military hospitals which existed before the war, but the great majority have been specially created. Some of these, however, previously had a nominal existence as Territorial hospitals, it being part of the system of the Territorial Force that at each local centre the larger civil hospitals should undertake to open if required a military hospital officered by medical men selected from their own staffs. The officers thus selected were given commissions *à la suite* in the medical department of the Territorial Force. Apart from large military hospitals of this and other kinds, including some maintained by the British and other Red Cross societies, a considerable proportion of all civil hospitals now have arrangements for the reception of military patients who are treated by the civilian staffs attached to these hospitals.

All the larger hospitals have special departments for patients whose successful treatment involves knowledge of one or other of the special branches of medicine and surgery. There are also very numerous convalescent homes, and the orthopaedic hospitals described by Dr. Colin Mackenzie (BRITISH MEDICAL JOURNAL, May 26th, 1917, p. 669 et seq.). Finally, there are numbers of camps to which are sent men who it is expected will recover their fitness for active service when they have undergone remedial exercises of various kinds and a general physical training.

The duty of seeing that an adequate number of hospitals for military patients are maintained in Great Britain, as also that of providing the reinforcements and stores required for the medical work of the armies in France, the Balkans, Mesopotamia, India, East Africa, and elsewhere, appertains to the Director-General of Army Medical Services in London, a post filled since November, 1914, by Surgeon-General Sir Alfred Keogh. He had held the same office some years previously, and returned to it in order to allow the actual occupant of the post, Surgeon-General Sir Arthur Sloggett, to take up work which it was realized would be of weekly increasing importance and for which his talents and experience seemed, and have abundantly since proved, specially to fit him—namely, the control of the medical affairs of the British armies in France. It is on the arrangements of these armies that this description of the work of the Royal Army Medical Corps is chiefly based.

So far as the British people is concerned the work of the Royal Army Medical Corps has given the greatest satisfaction, and it is believed that after the war, when details become known to those capable of assessing its more scientific aspects, it will be acknowledged that the corps has taken full advantage of opportunity offered for advancing precise knowledge of medicine and surgery as well as of means of handling vast numbers of sick and wounded men.

M. MAGINOT, the French Colonial Minister, has issued a decree making infantile paralysis (acute anterior poliomyelitis) a notifiable disease throughout the French colonies, and prescribing isolation of the sick person for a period of thirty days, disinfection of all excreta, linen, and other objects used by the patient, and of the patient's room, and exclusion from school of brothers and sisters of the patient for a period of twenty-eight days.

British Medical Journal.

SATURDAY, AUGUST 25TH, 1917.

THE STAFF OF LIFE.

THE encouraging character of the statement made by the Prime Minister with regard to the food supply of the country during the coming autumn and winter must not lead to forgetfulness of his proviso. He said that "with reasonable economy" there is no chance that the population of these islands will be starved out. That such a statement should be universally, and rightly, regarded as encouraging is in itself proof that the situation has been and still is grave. When, early in the year, he uttered a warning, which to their eternal credit the housekeepers of the country took seriously to heart, our stocks of cereals were the lowest on record. Since then the situation has materially improved. A year ago the stocks of wheat in the country were 6,480,000 quarters, now they are 8,500,000 quarters, and the stocks of oats and barley are also higher than this time last year. The harvest in Great Britain promises well, and, as the acreage has been increased, the total produced will, with favourable weather for ripening and in-gathering, be larger than in 1915. The increased area under wheat, oats, barley, and potatoes, is about one million acres over 1916, and about three-quarters of a million over 1915. Owing to closer milling, and to the success of the economy campaign, there has been a saving equivalent to an addition of 70,000 quarters of wheat to the food supply of the country. So much for the credit side of the account. On the debit side the controlling fact is that the harvests of the world this year are not good. The harvests of France will be considerably below the average, because practically the whole of the men in the vigour of life have been withdrawn from agriculture, and this is the third harvest that has had to be raised and gathered without them. Therefore France must be a larger buyer in the markets of the world than ever before. The same statements are true of Italy. Economy in food, especially in cereals in this country, will have the effect not only of diminishing the demands on shipping urgently needed for other purposes, but will diminish the drain upon the reservoir of food which France, as well as Italy and ourselves, have got to draw upon in Canada, in the United States, and in the Argentine.

There will be great need for rigid economy in meat. Of the meat consumed in the five years before the war rather less than three-sevenths was imported. The American food controller anticipates a world meat famine owing to the great decrease in the number of meat-producing animals, and advises greater use of fish; but though it may be true that, as Mr. Hoover argues, every fish eaten helps to save meat, the economy will not be very great, for the quantity, including that imported (about one-seventh), was small, and its energy yield relatively low. The shortage of sugar is notorious, and is important, since on the average 13 per cent. of the energy yield of the nation's diet was obtained from it before the war. The reserve, the Prime Minister said, is now larger than in the early spring, but it is still low.

It is clear, therefore, that though the general position is better than it was, it still calls for careful

handling by the Government and judicious management in the household. The Government has profited by the mistakes of Germany to avoid legislative or administrative action which might tend to produce panic, and the housekeepers have shown what they can do when they try; they are asked to go on trying. Medical men, who will no doubt often be asked to advise, will be glad to have their attention directed to a pamphlet on *The National Food Supply in Peace and War*, by Mr. T. B. Wood, Professor of Agriculture at Cambridge, and a member of the Food (War) Committee of the Royal Society.¹ It is founded largely on the work of that committee, to which we have on several occasions called attention, but it is put together in a consecutive manner which makes it easy to grasp the problem and to apprehend the solution proposed. We counsel our readers to obtain a copy and keep it by them for reference, for we cannot here do more than indicate its general line of argument.

With the produce of all the world before him from which to choose, man has selected certain articles of food for his mainstay; but some are solid and others liquid, and if the value to him of the various articles is to be compared at a moment when circumstances compel him to produce and consume those yielding the highest energy value most economically, some common basis of comparison must be taken. It cannot be got by adding together the weights of milk and meat consumed, for instance. By common consent of all who have given serious attention to the subject, the basis must be an estimate of the energy yield of the various types of food; this is most conveniently expressed in terms of the calorie, a unit applicable to all energy-yielding substances whether converted in a steam engine, an internal combustion engine, or by the animal body. There are people who seem to take a pride in refusing to understand the object of taking this basis, arguing that the digestibility of the food is ignored. It is not ignored, but it is a different question which man has settled for himself through countless generations. Nobody proposes to feed a man on petrol, or a motor car on bread-and-butter.

Taking the total food consumption before the war and calculating the energy value of the food consumed by an "average man" before the war, it is found that it yielded in round numbers 4,000 calories as compared with the generally accepted standard of 3,400, an excess of 15 per cent. This is to be accounted for partly by loss in distribution, partly by waste in the household, and "possibly," Professor Wood says, "to a small extent by actual over-eating by some persons." Of waste in the household the largest item was fat from our fat meat, a form of waste which is one of the banes of the sanitary engineer. The waste of bread and other cereal products was extremely small, and is now probably so small as to be negligible. Of the total work-producing power contributed by the various kinds of food, the percentage yielded by cereals before the war was 34, by meat 18, by dairy produce (including margarine) 15, by sugar 13, by potatoes 10, and by fish, fruit, vegetables, and other minor articles 10. Of the 34 per cent. yielded by cereals 26 was consumed as wheaten bread, and the total from wheat flour was 30 per cent. These figures, taken as they stand, are enough to prove the outstanding importance of cereals, of bread in particular, but they are averages, and individual consumption varies enormously according to income, work, and convenience.

¹ Cambridge University Press, Cambridge, London and Edinburgh. To be obtained through any bookseller, price 6d.

Professor Wood estimates that the consumption of bread varies from 14 lb. a week by the agricultural labourer to 2 lb. by an unoccupied man of sedentary habits. Bread is the staple diet of the nation, especially of the classes engaged in manual work. Before the war all other cereals supplied less than one-eighth as much work-producing power as bread and flour, and of the total cereals consumed for human food only about one-fifth was home grown. One penny expended on bread provided nearly 900 calories before the war, now it provides about 400. Two-thirds of the calories required by an agricultural labourer were, and probably still are, supplied by bread. Potatoes probably came next, and were, and at the present moment probably are again, one of the cheapest of foods. Before the war a penny expended on potatoes provided 700 calories, on sugar 800, on milk 270, and on meat 150. Fresh vegetables and fruit are valuable rather for the vitamins they contain and their savour than for the energy they yield. Attempting broadly, very broadly, to summarize Professor Wood's advice to-day, it may be said to come to this—that we should regard the purpose of meat as we formerly regarded that of vegetables and fruit, and use it for its savour to make dishes palatable and stimulating to the appetite.

Before the war the average annual amount of corn available in the United Kingdom was 17 million tons, of which about 6½ million were home grown. About 5 million tons were used for human food, about half a million for seed, about 2 million for industries, chiefly brewing, and over 9 million tons for feeding animals; even of wheat, of which 4½ million tons were used for human food, animals consumed 2½ million tons, but this included the tail and damaged corn of the home crop and the "offals" of all the home and foreign wheat milled. Professor Wood maintains that quantities of grain so large as to make the situation secure might be diverted from animals to man. A certain number of horses are necessary for productive work, and the allowance for them is 3 million tons of concentrated foods, chiefly oats. To keep the supply of milk to the normal at least one million tons of concentrated food, chiefly oilcake and wheat offals, must be allotted to milch cows. The cow is an economical animal food producer, her consumption working out at 12 lb. of dry fodder for 1 lb. of dry human food. In any event, it would be essential to keep up the number of milking cows, but it is satisfactory to be assured that the cow is an economical converter, turning a diet consisting chiefly of grass, hay, and roots, which are not suitable for human food, into the milk indispensable for children. The pig is a good converter also, but he is fattened largely on meal made from grain which is now required for human food. This animal must be fed therefore in summer on grass and green foods, and in winter on roots, and must be killed for market early, omitting the finishing on grain in fattening for the market. The sheep is a fairly economical converter when the wool is taken into account, and there can be little to be said against mountain mutton economically, and very much to be said for it otherwise. Poultry are not extravagant producers, and may be economical if fed chiefly on scraps from house and garden, miller's "offal," and damaged corn. But there is nothing to be said for beef as normally produced in this country. A steer by the time he is prime and fat has consumed about 64 lb. of dry fodder and produces 1 lb. of dry human food. The fattening of steers for the market is, from every point of view, an extravagant process; if it were stopped after about three months, there would

be very little loss of weight and a great saving of fodder, especially of concentrated fodder.

Consideration as a whole of the data analysed by Professor Wood shows that the policy to be adopted must be based on certain general principles, and that of these the most important is to secure the maximum amount of food for human consumption; this entails prohibition of the use of potatoes and, with certain exceptions—samples not fit for human consumption, and supplies for certain classes of animals and industries—of cereals, for any other purpose than human food.

THE BRITISH MEDICAL SERVICES IN FRANCE.

We complete this week the publication of an article, the third of a series, giving a fuller and more complete account of the work being done by the Army Medical Service on the Western front, and the way in which the service has been organized there, than has hitherto been published. In the first of the articles (June 2nd) Surgeon-General Sir Anthony Bowlby and Colonel Cuthbert Wallace, two of the consulting surgeons with the British armies in France, described the developments which have taken place in British surgery at the front, the difficulties encountered in administration, the problems presented to surgeons and bacteriologists, and the manner in which they were tackled and more or less completely surmounted by administrative action, clinical discrimination, and laboratory inquiries. A striking illustration of the valuable results that may be obtained by a combined attack was afforded by gas gangrene. The clinical work of the surgeons, described by Colonel Wallace and Captains Frankau, Drummond, and Neligan, combined with the bacteriological and histological inquiries recorded by Captains McNea and Shaw Dunn, showed that the rapidity of the spread of gas gangrene into living voluntary muscle could be accounted for by the peculiar anatomical structure of muscular tissue, the sheaths enclosing the long individual fibres being so easily detachable as to form potential spaces into which toxic material could readily pass, causing necrosis of the fibres. The early selective invasion of single muscles suggested conservative treatment by the resection of such infected muscles in an early stage, a line of treatment fully justified by the results. In our issue of June 16th Surgeon-General Sir George Makins, who, like Sir Anthony Bowlby, was one of the first consulting surgeons appointed to the armies in France in 1914, described the development of British surgery in the hospitals on the lines of communication in France, the term "lines of communication" including in this instance the base hospitals on or near the French coast of the Channel. To this paper was appended the results of an important study by Captain Herbert Henry on anaerobes found in wounds and their mode of action in the tissues: the body of the paper itself contained an interesting and instructive account of what might be called combined clinical inquiry into the treatment of fractures, especially of the lower limb.

The third article of the series to which we are now referring is that on the Royal Army Medical Corps and its work, concluded this week. In it a consecutive account is given of the medical organization, from the battalion through the field ambulances, casualty clearing stations, ambulance train and barges, the hospitals at the bases in France, and the hospital ships that transport the wounded by sea, to the home hospitals. It is chiefly concerned with the organiza-

tion in France; incidentally it gives a fuller account than has yet been published of the work of battalion medical officers in the trenches, affording some notion of its onerous and dangerous nature, and of the ingenuity expended in preparing regimental aid posts in dug-outs, and in handling the wounded through the trenches.

The whole story is one of which the British medical profession may well be proud. It shows that rapidity of adaptation to new conditions which is the best evidence of robust mental activity. It reflects immense credit on the regular army medical service, a corps organized to administer the medical affairs of the small regular British army which existed at the outbreak of this war. The medical corps was as highly trained as every other branch of the "old contemptibles" described as the finest military force that ever took the field. After the magnificent resistance of that small army which ended with the offensive return at the Marne, the British nation, from England to Australia, understood the task before it, and the British medical service rose to the occasion by an appeal to the British medical profession which had an immediate and magnificent voluntary response. The military conditions were new, the surgical problems were new, and the medical officers were new. With our national habit of self-depreciation we may perhaps be disposed to overlook the splendid character of the response. The credit for the success achieved belongs in the first place to the regular army medical service itself, which under the guiding hand at home of Sir Alfred Keogh, and in France of Sir Arthur Sloggett and his lieutenants, Surgeon-General Macpherson, Sir T. Woodhouse, and Colonel Burchaell, not only showed great administrative ability along the old lines, but an adaptability to the new conditions, and a readiness to make use of the assistance the civil medical profession could give, which has perhaps never yet received adequate acknowledgement. We of the civilian section of the profession have equal reason to be proud of the extent and nature of the response made. The civilian profession at once gave of its best—clinical surgeons and physicians and laboratory workers. The results are to be seen by any one who has eyes to see, and there can be no doubt in any impartial mind of the astonishing efficiency of the British army medical service in France.

The criticisms of which a good deal has been heard recently, both in and out of Parliament, are not directed against any deficiency in the service: rather they assume a redundancy and assert that as good results could now be obtained by a smaller medical staff. This matter will no doubt be the chief object of the investigation to be undertaken by the medical committee which has been appointed to make an inquiry in France and in this country, and to advise whether the medical establishments of the British armies can be reduced without diminishing efficiency. If the committee, which will, we believe, very shortly go to France to begin its inquiry, comes to the conclusion that any such redundancy exists, it may be able to indicate some alterations to meet what is now a primary need—the adjustment of military demands to the conditions produced by the depletion of doctors on the civil side.

ARMY RECRUITING AND CLASSIFICATION.

It was officially announced during the week that Sir A. C. Geddes, who received the K.C.B. a few days ago shortly after relinquishing his rank as Brigadier-General, had been appointed Minister of National Service in succession to Mr. Neville Chamberlain. The expectation is that the responsibility for army recruiting and for the classification

of recruits will—subject to one proviso—be transferred from the War Office to the National Service Department, and that the medical tribunals which deal with appeals will be constituted of civilian doctors, it being understood that those who have received temporary commissions since the war began will remain eligible, on condition that (to use Lord Derby's figure of speech) they give up khaki for black coats—that is, they will be eligible as civilian doctors. The proviso touches the special boards of appeal on questions of health in cases in which there is any conflict of opinion. The question whether these boards should be continued and, if so, with what powers, or whether they should be replaced by some similar bodies, does not seem yet to be settled. The probability is that the present boards will be continued with perhaps enlarged powers, but whether these appeal boards should be related to the National Service Department does not seem to be yet determined, and an effort, it is stated, is being made to place them under the jurisdiction of the Local Government Board, though, so far as we can learn, no valid reason has been given for the suggested attribution. The general impression is that under the new arrangement the National Service Department will abolish the elaborate classification of recruits into numerous categories, and that there will be a reversion to the original plan under which medical boards were required to classify recruits only into three categories—namely, those fit for general service abroad, those fit for service at home, and those unfit for any service in connexion with the army. In the first there will be placed those men who are sound in health, that is, fit to be in the fighting forces, after training; and in the second, those who, owing to some physical defect or organic weakness, are not fit to join a fighting unit but are capable of ancillary service for the army. With these may be included some men such as cobblers and others skilled in trades necessary for the equipment of the armies in the field. Our Parliamentary Correspondent gives this information with all reserve, for the National Service Department has had little time for considering the problems turned over to it. It is believed that the intention of this authority is to aim at simplicity in its arrangements, even though this may prevent the taking up of some capable men who would, under the scheme now brought to an end, have been brought in. The net result seems to be that in order to avoid friction there will be some sacrifice of potential recruits. Whether this is to be regarded as a satisfactory result in the interests of the nation is a matter upon which we prefer not to express an opinion, but there is no doubt that it will simplify the task of the medical boards.

IMPROVED PUBLIC-HOUSES.

At a meeting of the True Temperance Association on July 25th, 1916, a committee was appointed to draft a scheme for the improvement of public-houses in the interests of real temperance, and this Committee, which consisted of the Earl of Plymouth (chairman), Lord Lamington, Sir William Bennett, Mr. Gordon Selfridge, and Mr. Ernest Williams, has now issued a very interesting report. The Committee proceeded on the principle that temperance, apart from State action against disorderly drunkenness, is an individual matter, that it is not for the State to prescribe what a man shall eat or drink, or how he shall amuse himself; but that individuals and organizations can help by example and precept to raise the standard of temperance, and conditions can be created otherwise than by restriction, which will encourage temperance. One very obvious suggestion is the improvement of the public-house so that it shall be in truth a place where men and women may eat and drink in reasonable comfort, instead of, as is so often the case, a mere conduit for the delivery of alcoholic beverages. Before the war a certain amount had been done in this direction, notably by an association which controls a number of licensed houses

mostly in the south of England, and by certain affiliated county trusts. The policy of this association has been to acquire fully licensed houses, and to put in managers whose emoluments do not vary with the amount of alcoholic drink sold; the superiority of these houses in point of comfort to the average public-house or temperance hotel is indisputable. Since the war the State itself, acting through the Central Control Board (Liquor Traffic), has conducted experiments on these lines, notably in Carlisle, which have been reported from time to time in our columns. In practice it has been found that experiments similar to those of the association mentioned have not always proved financially successful. Indeed, in some districts what has happened has been analogous with the old economic principle known as Gresham's law—namely, that bad money drives good money out of circulation—the competition of the “bad” public-houses ruining the “good” ones. One reason is that, while the public will consent to drink beer wedged tightly together in a bar, they will not consent to consume tea in the same way, and, as Dr. R. Murray Leslie has pointed out, one of the absurdities of our present licensing laws is that it is not the accommodation of a public-house which is licensed but the amount of floor space. In practice, although the commercial profit on the sale of a cup of tea is larger than on the sale of a glass of beer, the final profit earned by a public-house that does no trade in tea may be much greater than that of one which lays itself out to meet the wishes of customers who are either abstainers or who at the moment want something non-alcoholic. The Committee is alive to these difficulties, and proposes, *inter alia*, that “improved public-houses” should have a substantial rebate upon the licence duty and should not be subjected to contribution to the fund which has been established for compensating the owners of houses closed under the existing reduction scheme. One of the practical difficulties of the proposals is the impossibility of framing a satisfactory definition of what constitutes improvement, a difficulty which is not removed by the rather vague suggestion that it “only means the exercise of a little more imagination and the taking of a little more trouble by the authority.” Upon this the Board of the Licensed Victuallers' Central Protection Society (which, if pessimistic, is by no means unfavourable to the general scheme) not inaptly remarks that it is “precisely in that quality (imagination) that the authorities with whom the licensed trade at present come in contact are conspicuously deficient.” The Committee has submitted its scheme to various representatives of interests involved, and it has met with general approval. We have no space to comment upon the specific measures advocated, but the general idea is sound, and it is to be hoped that the subject will in due course be brought before Parliament.

ANAPHYLACTIC AND PSEUDO-ANAPHYLACTIC SKIN REACTIONS.

In the course of a detailed discussion of the mechanism and clinical significance of anaphylactic and pseudo-anaphylactic skin reactions Kolmer¹ points out that Edward Jenner in 1798 first described this phenomenon as the result of applying variolous matter to the skin of a woman who had had cow-pox thirty-one years previously, and that he stated that “the disposition to sudden cuticular inflammation” following the application of small-pox or cow-pox matter “may be effected by the small-pox or cow-pox,” and that its appearance justified the conclusion that the person had had one of these diseases, and now was not susceptible to either. This was forgotten until Arthur in 1903 rediscovered the local anaphylactic reaction, though previously Koch had noticed, without appreciating its significance, the local reaction following the injection of tuberculin into tuberculous guinea-pigs. There are three

forms of skin reactions: (1) The true or specific anaphylactic reaction due to the interaction in the skin of the specific protein antigen and specific antibody; (2) the pseudo or non-specific protein reaction due to the interaction in the skin of general protein substances, such as those in ascitic fluid, agar, and broth, and the non-specific proteolytic ferments contained in the blood serum, leucocytes, and fixed cells of the tissues; (3) traumatic, due to mechanical injury, to the irritant properties of preservatives, such as carbolic acid or tricesol, contained in the injected material, or to preformed bacterial poisons (as in the case of diphtheria toxin used in the Schick test). Of the various methods of obtaining the skin reaction the intradermic is the most delicate means of eliciting a local anaphylactic response, but is also the most likely to induce the non-specific and traumatic reactions. A local skin reaction may be an expression of an anaphylactic state to a certain protein, but as yet there are not sufficient data to prove that the mechanism of the local or skin reaction is identical with that of the general and fatal reaction following intravenous injection. After discussing the rival humoral and cellular theories of the mechanism of hypersensitiveness Kolmer concludes in favour of the latter, namely, that a diffusible protein poison forms mainly on or in the cells. Certain drugs increase the non-specific skin reaction: thus normal persons under the influence of iodides may give a positive result to the intradermic injection of luetin; this it effects by facilitating the activity of non-specific proteolysins and the production of protein poison, through the removal of antiferment. While a specific anaphylactic skin reaction is a delicate index of hypersensitiveness to a certain foreign protein, and its severity is an index of the degree of hypersensitiveness, the main clinical significance of the non-specific protein skin reaction is the likelihood of mistaking it for a true anaphylactic reaction.

THE SURGERY OF THE ORGANS OF LOCOMOTION.

The first number of the new Italian journal¹ devoted to this subject appropriately begins with a dedication to the late Professor Alexander Codivilla, of the Rizzoli Institute of Bologna, and the first article is by his distinguished successor, Professor V. Putti, who edits the journal. In this paper, which deals with surgical mobilization of ankylosis of the knee (arthroplasty), Professor Putti discusses the indications for operation and the methods of intervention, and favours detachment of the tibial tubercle and elongation of the tendon of the quadriceps rather than division of the patella or its ligament. He considers that a portion of the fascia lata of the thigh, excised through a prolongation of the incision over the joint, forms the best covering for the bone ends, and that it is best, when possible, to cover both bone surfaces with fascia. He thinks it has been proved that “human fascia interposed between the articular bone surfaces, lives, and goes on to a cartilaginous metamorphosis, which tends to renew the normal conditions of articular morphology.” The after-treatment by active and passive movements and simultaneous application of heat by means of electric thermophoresis is, he says, of the greatest importance. Professor Putti gives full details of six cases; three were examples of ordinary pyogenic origin and three the result of gonococcal arthritis. In one of the first three the operation was a failure owing to suppuration. This failure he attributes to a too early intervention. In the remaining five cases there was movement of 50 degrees to 90 degrees range eight to thirty-six months after operation. These results must be considered very good. The article is very well and freely illustrated and is worth perusal. Dr. Serra's article on free transplantation of bone in the

¹ J. A. Kolmer, *Johns Hopkins Hosp. Bull.*, Baltimore, 1917, xxviii, pp. 163-173.

¹ *La Chirurgia degli Organi di Movimento*. Direttore: Dott. V. Putti, Professore straordinario di Ortopedia nella R. Università di Bologna; Direttore dell' Istituto Ortopedico Rizzoli. Bologna: L. Cappelli, Editore. Vol. i, Fasc. i, p. 153.

human subject is also of considerable interest, as it affords conclusive evidence of union of the graft with the host, without gross absorption of the former. Other articles are by G. Vanghetti on plastic amputation stumps, and by F. Delitala on the normal and pathological anatomy of the foot with particular reference to traumatic lesions. We cordially welcome this "war baby" among medical journals, and wish our Italian brethren all success in the speciality in which they have already achieved much.

DICHLORAMINE-T FOR NOSE AND WOUNDS.

IN a paper published in the JOURNAL of June 30th last (p. 865) Drs. Dakin and Dunham described experiments with oily solutions of dichloramine-T (toluene-para-sulphodichloramine), and recommended its use in particular for the disinfection of the nasopharynx in carriers. Dichloramine-T though very sparingly soluble in paraffin oil, is quite readily dissolved in eucalyptol, and the resulting solution can then be diluted with paraffin. In this way a bland oily solution suitable for application to the throat, and containing 2 per cent. of dichloramine can be obtained. They directed that the nose should first be cleansed with salt solution or with 0.25 per cent. aqueous chloramine-T solution, either by spraying several times, using the handkerchief between applications, or by irrigation. The oily solution is not in itself as efficient in removing inspissated secretion as watery solutions. They advise, also, the use of chloramine-T solution as thoroughly as possible as a gargle. When the augmentation of nasal secretion produced by the solution of salt or chloramine-T has subsided, the oily solution of dichloramine-T is applied with an oil atomizer, an endeavour being made to reach all parts with an abundant supply of the oil. Introduced in this way the oil cannot be expected to continue active for more than two hours, so that for intensive treatment it should be renewed at the end of that time. In any case it is considered important to repeat spraying with the oil often enough to ensure at least four oil treatments daily at about equal intervals of time. Messrs. Boots, Nottingham, have sent us a specimen of an outfit for carrying out this treatment. It consists of three bottles, one containing dichloramine-T (forty-four grains), another chlorinated eucalyptol (one fluid ounce), and the third, chlorinated paraffin (four fluid ounces). The dichloramine-T is dissolved in the chlorinated eucalyptol without heating and the resulting solution poured into the chlorinated paraffin and well mixed. The outfit also includes a "cloudizer," which gives a fine spray; ten to twenty vigorous presses of the bulb should be used for each nostril. The price of the outfit is 7s. 6d. In a note to their paper Dakin and Dunham stated that Professor Sweet and Dr. Lee, of Philadelphia, had undertaken to test the use of a similar oily mixture containing 5 per cent. of dichloramine-T as a surgical dressing for infected wounds, and we publish this week a note from Professor Sweet, who is serving as a captain of the Medical Reserve Corps, United States Army, in a British hospital in France, upon the results of the treatment of wounds there with the oily solution, for the preparation of which he gives directions. As will be seen, this preliminary report is very favourable to the method, on the ground that it saves the pain of wound dressing, and economizes both dressing materials and the time of the surgeon, while the progress of the wounds is most satisfactory.

THE BACTERIOLOGY AND TREATMENT OF PYORRHOEA ALVEOLARIS.

PROFESSOR W. KOLLE has published¹ recently the results of observations on pyorrhoea alveolaris. In all the ninety cases examined he found a spirochaete differing in several respects from the spirochaetes often found in the healthy

mouth. It measured 10 to 12 μ , had four to seven convolutions and definitely pointed ends, and could be found in great quantities and practically in a pure culture by introducing a platinum needle into the deep pockets between the alveolar margin and the gum after the pus in these pockets had been squeezed out and wiped away. Professor Kolle believes that this spirochaete, which stained deeply with gentian violet but only faintly with Giemsa, plays the principal part in pyorrhoea, and he sees confirmation of this opinion in the strikingly beneficial effect of neo-salvarsan on the disease. A single intravenous injection of 0.1 gram was sufficient to effect marked improvement, and in many cases two injections, each of 0.3 gram, cured the disease within ten days. Some of these cases had been refractory to various forms of local treatment. As many as three to five injections were required in severe chronic cases. This spirochaete, to which Professor Kolle has given the name *Spirochaeta pyorrhoeica*, was found in decreasing numbers as the injections were repeated and the inflammation subsided; and it was also noted that recovery was hastened by the local application of neo-salvarsan.

SPIROCHAETES IN TYPHUS FEVER.

IT is announced in a Renter's message from Tokio that Professor Kenzo Futaki recently demonstrated at the St. Luke's International Hospital the presence of a spirochaete in the kidneys of seven fatal cases of typhus fever. He also stated that he had succeeded in infecting a number of monkeys and guinea-pigs with the spirochaete taken from typhus fever patients and had found it again in these animals. About six months ago (February 17th, 1917, p. 230) we noted that Professor Futaki and his assistants had discovered a new spirochaete which they believed to be the cause of rat-bite fever in Japan, and that these observations had been confirmed by other Japanese observers. Professor Futaki's claim to have found a specific spirochaete in typhus fever is interesting, but confirmation must be awaited, for organisms believed to be spirochaetes have been found in the blood and organs of man and inoculated animals on several occasions during the last ten years. It has to be remembered that bodies resembling spirochaetes can be seen by dark-ground illumination in normal blood. It is not stated that Professor Futaki has been able to cultivate the spirochaete he has found in typhus fever, and it may be assumed that he has used blood from patients for the inoculation of animals. This, of course, is a very different matter, for the blood would doubtless contain the infective agents whatever its nature. In this connexion it may be remembered that last November Hort showed before the Royal Microscopical Society photographs of a filterable virus, the injection of which produces the same clinical picture in monkeys as the fresh unfiltered typhus blood from human patients. His observations have not yet been published in full, but will, we believe, appear before long.

AS OTHERS SEE US.

OUR readers are familiar with the views of pessimists who regard the medical profession as helpless in its dealings with the Government and lay organizations. Those, however, who have closest relations with public men and Government departments know how far this view is from being generally held in such quarters. There is, indeed, a tendency among persons disposed to criticize the profession to overestimate the degree of unity it enjoys, and a strong belief that it is not only willing, but well able, to look after its own interests. Never a week passes but the diligent reader of certain periodical publications could find evidence of these views. As an example, we may take an article published in a recent issue of *Municipal Engineering and the Sanitary Record*. After commenting on the scheme for a Ministry of Health drafted by the Association, our contemporary goes on to say: "The recommendations,

¹ Med. Klin., January 21st, 1917.

whilst possessing a certain amount of originality, show, we think it will be generally concluded, that the British Medical Association has been too much concerned in promoting their own interests and in overlooking the fact that the ratepayer will not readily surrender his inalienable right to exercise reasonable control over the expenditure of the rates. They also show that the medical profession—close corporation as it may be—is not only a very powerful body but one of the strongest 'trade unions' in the country. As a consequence of their unity of purpose and of organization they are enabled to wield, not only at the Local Government Board and in Parliament, but in the country, a power which no other professional body of men can approach." Every organization must expect to be accused of self-seeking, but it is safe to say that in the clash of interests only bodies which are well organized and assertive are likely to receive adequate attention. We have not observed that anything in these days is gained by a policy of self-effacement, and experience has shown that, in spite of the power attributed to it in the paragraph we have quoted, the medical profession has often had to put up with very shabby treatment from the powers that be. The extract may show members who are inclined to talk of the political helplessness of the Association that their view is not shared by many of those outsiders who are supposed to see most of the game.

"MUSTARD GAS."

THE newspapers have recently contained a number of references to what is believed to be a new kind of poisonous gas used by the Germans. It seems to possess properties similar to those of the lacrymatory gas already well known, but of an aggravated kind; owing to its irritating qualities and its smell it has been given the name of "mustard gas." It is sent over in gas shells and is colourless. When diluted it produces smarting of the eyes, irritation of the nostrils, and so much dryness of the pharynx as to cause pain on swallowing and nausea. It is said to have a distinct smell and taste of mustard. When more concentrated its effect is very marked; it produces acute conjunctivitis with considerable swelling of the eyelids, inflammation of the nostrils, injection of the pharynx, vomiting, diarrhoea, and respiratory trouble suggesting bronchitis. In some cases the skin is actually blistered, and we have heard of one severe case in which the gas caused blistering on the abdomen, scrotum, and thighs, although the man was fully clothed. He was in a dug-out, and there may have been some unusual concentration of the gas on that account.

WORKMEN'S COMPENSATION: WAR ADDITION.

THE Workmen's Compensation (War Addition) Bill has been passed, and will come into operation as from September 1st next. The Act will apply for the duration of the war and for six months thereafter. Under it any person liable to pay compensation will be required to contribute an additional sum equal to one-fourth of the amount of his present liability. This is a serious matter, and employers should satisfy themselves that they are properly covered with their respective insurance companies. We understand that, so far as domestic servants (indoor and outdoor) are concerned, insurance companies propose to charge no additional premium, but as regards other employees, it is proposed to charge an additional premium of 10 per cent. This payment will accrue as from September 1st, but, as a matter of convenience, it will not be payable until the next premium falls due. So far as those who are insured through the Medical Insurance Agency are concerned, they will be notified that no additional premium will be charged for indoor or outdoor domestic servants, while any policy-holders liable for employees other than domestic servants will be required to fill up a form which will be sent to them notifying that they are prepared to pay the additional premium of 10 per cent. when the policy is renewable, and by the completion

of this form they will be automatically covered against the additional liability. Persons not already insured can obtain full information on application to the Agent and Secretary, Medical Insurance Agency, care of British Medical Association, 429, Strand, W.C.

We are asked to state that no election of direct representatives on the General Medical Council will be held in the present year, the provisions of the Parliamentary and Local Elections Act, 1917, having been extended by an Order in Council to the election of members of the General Medical Council by registered practitioners resident in the United Kingdom. The effect is to extend the term of office of the existing direct representatives until December 31st, 1918.

By the death on August 4th without issue of his second son the baronetcy conferred on Sir George Burrows in 1874 becomes extinct. Sir George Burrows, who was physician-in-ordinary to Queen Victoria, was a cousin of Sir Charles Hastings, founder of the British Medical Association, and married the daughter of John Abernethy. He was the first to hold the office of assistant physician to St. Bartholomew's Hospital, to which he afterwards became physician. He was president of the British Medical Association in 1862, when it held its first annual meeting in London.

Medical Notes in Parliament.

Medical Examination of Recruits.—In the House of Commons, on the motion for the adjournment, a large number of questions were raised, among which were some regarding the medical examination of recruits. One member read out a circular letter issued by the D.D.M.S. of the Scottish Command in the following terms:

There are very distinct indications that many medical officers, and more especially those who are serving in hospitals, do not realize the great essential duty of the military medical service to co-operate in maintaining the fighting efficiency of the armies in the field. The efficiency of the whole medical work in hospitals, from the military point of view and from the point of view of national safety at the present crisis, can well be judged by the numbers of men who are returned after treatment to the fighting lines, or to the training from which they came, within the shortest period of time.

While it is natural, and perhaps inevitable, that medical men should desire to have charge, and to treat from a scientific point of view difficult and "interesting" cases, and while from the ethical and political standpoint the utmost skill and care must be claimed for these cases, nevertheless it must be borne in mind intelligently by all that from this field of labour rifles are not most speedily returned to support or to be trained to support their comrades overseas.

It is by the earliest possible return of such cases that the medical service can gain the confidence and approval of the commanders in the field or at home, and can best further the interests of the army and of the nation at war.

On this point Mr. Macpherson, in his reply, said that it was clear that one of the first duties of medical officers in the army was to get an officer or soldier completely cured as quickly as possible in order that he might once again take his place in the fighting forces of the Crown. There was a dearth, not only of officers, but of men, and the service of those who had had experience were required as soon as possible. He was quite certain that no circular had been issued by the Director-General or anybody else designed to send men back into the ranks before they were completely cured.

Unregistered Dentists.—Mr. Raffan asked whether the Prime Minister had received a memorial, signed by nearly 200 members of Parliament, asking whether the Departmental Committee on unregistered practising of dentistry should be reconstructed so as to include representatives of unregistered practitioners and also a larger representation of members of Parliament. Mr. Bonar Law said the answer to the first part of the question was in the affirmative. As regards the second part it was hoped that it might be possible to take action in the direction suggested, but no definite promise could be made at the present time.

Parliament adjourned on August 21st until October 16th,

THE WAR.

RETURNED CANADIAN SOLDIERS.

A COMMITTEE, under the chairmanship of Sir Herbert Ames, M.P., was appointed by the Canadian Parliament some months ago to inquire into problems connected with the returned soldier. A number of sittings have been held in various places in the Dominion, and a great deal of evidence has been taken. The Committee has made the following recommendations:

(a) That both Federal and Provincial authorities take up without delay effective measures to prevent the spread of tuberculosis.

(b) That those soldiers who are hopelessly insane should be cared for at the expense of the Federal Government in provincial institutions under the same conditions as fellow citizens similarly afflicted.

(c) That returned soldiers who are suffering from venereal diseases should be quarantined at the port of arrival in Canada until cured.

(d) That orthopaedic institutions be provided at centres throughout Canada in addition to the one located at Toronto.

(e) That a sufficient number of returned men be induced to learn and follow the occupation of manufacturers of artificial limbs and that their services be utilized to supply limbs to soldiers free of cost and renewals and repairs at the cost of the State during the lifetime of the soldiers.

(f) That returned men who have been undergoing convalescent treatment and have partially completed courses of vocational training be allowed to continue such courses for a period of two months after their discharge as medically fit if, in the opinion of the vocational training officer of the district, it is in the interest of the State and of themselves that they should do so.

It is suggested also that the Dominion and Provincial authorities should co-operate in efforts to secure employment for returned soldiers, the responsibility for finding employment for such men to rest with the Dominion Government, with such co-operation as the provinces are willing or able to give. In the case of civil servants, it is advised that the time spent with the Canadian Expeditionary Force should be regarded as absence with leave, and their grade and standing in the public service determined accordingly. The Committee is divided in its view as to the control of the agencies which deal with the home-coming men. The majority, however, including the chairman, are in favour of relegating this matter to a special department of the Government; others consider the matter should be placed in the hands of the Militia Department.

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on August 16th contains a long list of awards for conspicuous gallantry and devotion to duty in the field. The following awards have been granted to medical officers:

Bar to Distinguished Service Order.

Captain Eric Dalrymple Gairdner, D.S.O., M.B., R.A.M.C.

He went forward under very heavy fire to attend to a wounded non-commissioned officer, and was himself shot down. He has consistently displayed high courage and devotion to duty, and his example has been an inspiration to all ranks. (D.S.O. gazetted June 3rd, 1916.)

Distinguished Service Order.

Lieut.-Colonel (Temporary Colonel) Donald Johnstone McGavin, New Zealand Medical Corps.

While acting as A.D.M.S. to his division the successful evacuation of the wounded during our heavy offensive was due to the thoroughness of his preparations and his personal attention to the smallest details. He went into the advanced area at great personal risk to encourage the stretcher-bearers and superintend the removal of casualties, setting a splendid example to all ranks.

Temporary Captain (acting Lieut.-Colonel) Charles Derwent Pye-Smith, M.C., R.A.M.C.

When in charge of an advanced dressing station his sergeant-major and the whole of his staff were killed. He reorganized the work with the assistance of a lance-corporal, and, in consequence of his energy and presence of mind, the work was not delayed. He led his bearers continually into the front line, rescuing wounded under heavy shell fire, and working with great heroism for sixty hours, setting a splendid example to all.

Bar to Military Cross.

Captain Samuel Russell Foster, M.C., M.B., R.A.M.C.

He showed the greatest skill and fearlessness in leading his stretcher-bearers through a severe enemy barrage to evacuate wounded from our front line. His work has always been marked by utter disregard of danger, and his fine example has communicated itself to his men. (M.C. gazetted November 18th, 1915.)

Captain Frank Grahame Lescher, M.C., R.A.M.C. (S.R.).

He showed the greatest skill and fearlessness by leading his bearer parties and establishing forward collecting posts, under heavy hostile shell fire. He worked ceaselessly for three days, by his personal example and devotion inspiring his men with courage under very difficult conditions. (M.C. gazetted October 20th, 1916.)

Temporary Captain David Hamilton Hadden, M.C., M.B., R.A.M.C.

Under extremely adverse weather conditions he worked without rest for three nights and two days attending wounded. Throughout he showed the utmost indifference to heavy shell and machine gun fire. (M.C. gazetted January 1st, 1917.)

Military Cross.

Captain William Aitken, New Zealand Medical Corps.

He repeatedly took his bearers through heavy hostile barrage, clearing the aid posts and searching shell-holes for wounded. His gallantry and coolness under fire was of the highest order and a splendid example to his men.

Captain John Cook, R.A.M.C.

He went out under heavy shell fire, attending to the wounded, and carrying them to cover, and setting a fine example of fearlessness and devotion.

Captain Alexander Cosgrave Court, M.B., R.A.M.C. (S.R.).

For conspicuous gallantry and devotion to duty in establishing an advanced aid post and personally attending to all the wounded under heavy fire. Though wounded in the hand, he carried on, saving many lives and showing great courage and initiative on this as on all other occasions.

Captain James Garfield Crawford, New Zealand Medical Corps.

He repeatedly took his bearers through heavy barrage, bringing back many wounded who were lying exposed to the enemy's fire. His coolness and fearlessness under heavy fire was a striking example to his men, and his energy was the direct cause of many lives being saved.

Captain Harry Edmund Creswell, R.A.M.C. (S.R.).

When casualties were very heavy he worked single-handed for thirty-six hours without rest. Throughout he showed complete disregard for his own personal safety.

Captain William Fotheringham, M.B., R.A.M.C. (S.R.).

Finding no suitable position for an aid post in the captured lines, he established one in an open trench, where he attended to the wounded for four days and nights under constant shell and gas shell attack. His courage and devotion set a fine example to all those working under him.

Captain Charles Marsh Gozney, R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded under heavy shell fire. By his courage and total disregard of personal danger he set a brilliant example to all around him and greatly encouraged the wounded.

Captain Archibald McCausland, C.A.M.C.

At great personal risk he crawled through a small opening into a dug-out which had been blown in by hostile shell fire, dressed the men there, and afterwards attended to all the wounded in the locality under continuous heavy shell fire. His courageous action saved the lives of several wounded men.

Captain Laurence Abel Mackenzie, M.B., R.A.M.C.

Whilst at work in a dressing station a shell came through two roofs, killing and wounding five out of his party of six. Though severely shaken himself, he organized the dressing station and carried on with the work under very heavy shell fire for two days, showing a magnificent example of grit, courage, and devotion to duty under exceptionally trying circumstances.

Captain Gordon Archibald Macpherson, C.A.M.C.

For conspicuous gallantry and devotion to duty in collecting and tending the wounded under heavy shell fire. His promptness and devotion in collecting stretcher cases in dug-outs when it was impossible to evacuate them at once undoubtedly saved many lives.

Captain Arthur Dysant Nelson, New Zealand Medical Corps.

He remained for three days continuously on duty under very heavy shell fire, attending to the wounded of his own and many other units. Owing to his advanced position and untiring energy many lives were saved.

Captain John Fox Russell, R.A.M.C.

He showed the greatest courage and skill in collecting wounded men of all regiments, and in dressing them, under continuous shell and rifle fire.

Captain Andrew Harvey Cameron Smith, C.A.M.C.

Following his battalion closely in its attack he displayed the greatest courage and skill in establishing aid posts at the nearest possible points, regardless of his own personal safety. Though his posts were frequently under heavy shell fire the completeness of his medical arrangements, and the quickness with which aid was available, proved invaluable to the wounded. His work at all times has been marked by the same devotion and gallantry.

Captain Henry Joste Smith, M.B., R.A.M.C.

He followed his battalion in the attack, and attended to the wounded all day and night under very heavy fire of every description. It was due to his courage and splendid devotion that so many of the wounded were brought in.

Captain Ernest Talbot, M.B., R.A.M.C. (S.R.).

For conspicuous gallantry and devotion to duty as battalion medical officer. Having established his aid post in a shell hole which was under direct hostile observation, he carried out his work under very heavy fire, showing wonderful organization in his evacuation of the wounded.

Captain Robert Taylor, R.A.M.C. (S.R.).

For conspicuous gallantry and devotion to duty in establishing bearer posts and an advanced dressing station under heavy shell fire. It was due to his excellent arrangements that all the wounded were attended to and evacuated with the utmost regularity and dispatch.

Temporary Captain Charles Bannigan, M.B., R.A.M.C.

A dug-out having been blown in at some distance from his aid post, he ran to the spot at great personal risk under heavy shell fire and attended to the wounded, saving one man's life. His conduct on all occasions has been marked by the greatest courage and devotion.

Temporary Captain David Sands Brough, M.B., R.A.M.C.

He worked unceasingly when in charge of two bearer subdivisions. Under very heavy fire he again and again led his bearers to the wounded, setting a fine example to all.

Temporary Captain Eric William Craig, R.A.M.C.

During the night he repeatedly led the bearers beyond our front line under heavy fire. By his example and courage he was the means of rescuing many wounded.

Temporary Captain Alexander Dick, M.B., R.A.M.C.

When in medical charge of the regiment during an attack he was forced to establish his aid post in an open trench, where he carried out his duties for two days and one night under heavy shell fire and in terrible weather. He never left his post except to attend to wounded who could not be brought in, and it was owing to his energy and heroism that the wounded were safely removed from the battlefield.

Temporary Captain Ernest Eugène Herga, R.A.M.C.

When in command of an advanced bearer post he displayed the greatest gallantry and skill in bringing the wounded through heavy hostile barrage, twice crossing the open under machine-gun fire to rescue wounded men. By his skilful organization and great personal courage under fire the evacuation of the wounded was efficiently carried out.

Temporary Captain George Robertson Lipp, M.B., R.A.M.C.

He organized a party of bearers and went out under heavy shell fire and repaired the road, which had become impossible for ambulances. Later, when his post was heavily shelled, he remained and attended all wounded in the vicinity, thus setting a splendid example to all.

Temporary Captain James McDonnell, R.A.M.C.

When the village was being shelled, a number of men were buried and badly wounded. He superintended a party and worked for three-quarters of an hour, and succeeded in rescuing them. This task was carried out under continuous shelling.

Temporary Captain Hugh Ross Macintyre, M.D., R.A.M.C.

When in command of a bearer party he led his men repeatedly through heavy hostile barrage until all the wounded had been carried into safety. He was fearless in the place of danger, and by his coolness and courage he showed a splendid example to his men.

Temporary Captain Thomas Holmes Ravenhill, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in collecting and evacuating wounded under heavy shell fire, notably during a gas attack, when his coolness and judgement saved very many casualties.

Temporary Captain David Henry Russell, M.D., F.R.C.S., R.A.M.C.

When in charge of a bearer division he showed the greatest energy and complete disregard for personal safety in his untiring and successful efforts to locate the wounded and to attend to them. His devotion saved many lives, and on many occasions he has displayed the same gallantry under fire.

Temporary Captain Laurence Lancaster Satow, R.A.M.C.

He established a dressing station within effective range of the enemy's position, where he attended to the wounded throughout the day and the following night under fire the whole time. It was entirely owing to his disregard of danger and his devotion to duty that many of the wounded were collected and evacuated.

Lieutenant Arthur Gerald Phillips Wills, R.A.M.C.(S.R.), attached Cheshire Regiment.

He remained at his aid post under heavy shell fire for eighteen hours without rest, by his gallantry and fine example encouraging his bearers to work continuously, until the last case was safely evacuated.

Temporary Lieutenant Ernest Francis Rimington Alford, R.A.M.C.

He has on all occasions shown the greatest courage and disregard for danger when attending wounded under fire, and in many cases in the open.

Temporary Lieutenant Robert Beattie Martin, R.A.M.C.

He showed the greatest gallantry in attending to the wounded under very heavy fire at a moment when the enemy had turned machine guns on to them. He displayed the utmost fearlessness and skill in getting most of them away into a place of safety.

Assistant Surgeon John Wilson Woodsell, I.S.M.D.

He displayed great courage and determination in tending the wounded under very heavy fire. His devotion to duty saved many lives.

The Distinguished Conduct Medal is bestowed upon seven non-commissioned officers and one private of the R.A.M.C., one private of the New Zealand Army Medical Corps. A bar to the Military Medal is granted to three non-commissioned officers and two privates of the R.A.M.C., one non-commissioned officer each of the Australian Army Medical Corps and the New Zealand Army Medical Corps. The Military Medal is awarded to two members of the Queen Alexandra's Imperial Military Nursing Service (Reserve), and one of the Territorial Force Nursing Service; to nine non-commissioned officers and eighteen privates of the R.A.M.C., thirteen non-commissioned officers and nineteen privates of the Australian Army Medical Corps, five non-commissioned officers and eight privates of the New Zealand Army Medical Corps, and one private of the Canadian Army Medical Corps. Two non-commissioned officers of the R.A.M.C. also receive the Meritorious Service Medal.

MENTIONED IN DISPATCHES.**MESOPOTAMIA.**

A supplement to the *London Gazette* issued on August 15th contains a list of officers and others whose services have been brought to notice by Lieut.-General Sir Stanley Maude, Commander-in-Chief Mesopotamian Expeditionary Force, as deserving of special mention. The list includes the following medical officers:

Royal Navy.

Surgeons: R. G. Elwell, F. G. E. Hill, M.B.; J. C. Kelly, M.D.; J. P. Shorten.

Staff and Head Quarters.

Surgeon-General F. H. Treherne, C.M.G., F.R.C.S.Edin., A.M.S.

Army Medical Service and Royal Army Medical Corps.

Colonel W. H. Starr.

Temporary Colonel W. H. Willcox, C.B., C.M.G., M.D., F.R.C.P.

Brevet Colonels: M. H. G. Fell, J. M. Sloan, D.S.O., M.B.

Lieut.-Colonel (acting Colonel) H. M. Morton, M.B.

Lieut.-Colonels: J. H. R. Bond, A. R. O'Flaherty, L. Wood, W. A. Woodside.

Temporary Lieut.-Colonel T. P. Legg, M.B., F.R.C.S.

Major (acting Lieut.-Colonel) A. W. Gibson.

Majors: A. H. Burgess, M.B., F.R.C.S.; D. S. Skelton, D.S.O.; N. D. Walker, M.B.

Brevet Major T. J. Mitchell, M.B.

Captains (acting Lieut.-Colonels): E. T. Burke, M.B. (S.R.); W. J. Tobin.

Captains: L. D. Bailey, W. Bisset, M.B.; T. K. Boney (S.R.); F. C. Cowtan, L. Dunbar, M.B.; A. H. Gosse, M.D.; T. J. Hallinan, M.B.; J. S. McCombe, M.B.; W. McNaughtan, M.B.; W. K. Morrison, M.B.; D. C. Pim (S.R.); E. P. A. Smith, M.B.; G. N. Smyth (S.R.); A. Watson, D.S.O., M.D.

Temporary Captains: W. M. Badenoch, M.B.; F. R. Barwell, H. Cordner, M.B.; R. D. Davy, M.B.; R. C. T. Evans, M.B.; C. M. Geddie, M.B.; A. L. George, J. Hewat, M.B.; J. Macqueen, M.B.; E. W. S. Martin, M.B. (killed); G. Robinson, G. W. Spencer, M.B.; G. W. Stanley, N. Tattersall, M.D.; D. McD. Wilson, M.B.

Lieutenants (temporary Captains): A. F. I. Patterson, R. R. Thompson.

Temporary Lieutenants: L. W. Evans, D. H. Hutchinson, M.D.; J. Neligan, M.B. (deceased).

Temporary Quartermasters and Honorary Lieutenants: C. Hunt, J. S. Moore, G. B. Walker, M.C.

Indian Medical Service.

Lieut.-Colonels (temporary Colonels): G. B. Irvine, C.B.; W. H. Ogilvie, M.B.; C. N. C. Wimberley, M.B.

Lieut.-Colonels: F. W. Gee, M.B.; E. V. Hugo, M.D., F.R.C.S.; T. B. Kelly, F.R.C.S.E.; R. H. Maddox, M.B.; F. O. N. Mell, M.B.; H. G. Melville, M.D., F.R.C.S.E.; B. Nauth, E. L. Perry, F. H. Watling, M.B.

Brevet Lieut.-Colonel (temporary Colonel) G. Browse, M.D. Brevet Lieut.-Colonels: S. Anderson, M.B., C. M. Goodbody, D.S.O., F.R.C.S.I.

Majors (temporary Lieut.-Colonels): J. D. Graham, M.B.; W. H. Hamilton, D.S.O., F.R.C.S.

Majors (acting Lieut.-Colonels): L. J. M. Deas, M.B., F.R.C.S.E.; A. B. Fry, M.D.; W. D. A. Keys, M.D.; J. C. H. Leicester, M.D., F.R.C.S.

Majors: M. N. Chaudhuri, M.B.; F. P. Connor, F.R.C.S.; S. R. Christophers, C.I.E., M.B.; H. Falk, M.B.; S. R. Godkin, F.R.C.S.I.; W. F. Harvey, M.B.; A. W. M. Harvey, M.B.; R. A. Lloyd, M.D.; H. M. H. Melhuish, D. Munro, M.B., F.R.C.S.E.; T. G. F. Paterson, M.B.; A. H. Proctor, M.D.; T. S. B. Williams, M.B.

Captain (acting Lieut.-Colonel) H. R. B. Gibson, M.B.

Captains: C. H. N. Baker, H. H. Brown, H. Chand, C. A. Godson, P. F. Gow, D.S.O., M.B.; C. G. Howlett, M.B.; G. G. James, M.B.; G. R. Lynn, M.B.; L. H. L. MacKenzie, M.B.; S. H. Middleton-West, M.B.; P. S. Mills, M.B.; A. H. Napier, M.B.; J. J. H. Nelson, M.D., F.R.C.S.E.; J. A. S. Phillips, C. H. Reinhold, F.R.C.S.E.; N. S. Sodhi.

Lieutenant B. H. Singh.

Temporary Lieutenants: S. D. Billimoria, A. J. D'Souza, R. C. Malhotra, M.B.

Indian Subordinate Medical Service.

Senior Assistant Surgeon and Honorary Captain H. G. C. Mills.

Senior Assistant Surgeons and Honorary Lieutenants: E. J. Archer, H. V. Dewey.

1st Class Assistant Surgeons: A. E. Clarke, H. J. J. Garrod.

2nd Class Assistant Surgeons: E. A. Cotton, G. W. Doyle, P. J. McGrath, S. C. Raphael.

3rd Class Assistant Surgeons: J. M. M. Brown, J. S. Gloria, A. E. Mathews.

4th Class Assistant Surgeons: A. N. De Monte, J. G. Goodman, R. D. Mason, J. P. McGuire, S. W. A. Moul, W. H. Thyne, A. R. Underwood.

The list also contains the names of 6 members of the Queen Alexandra's Imperial Military Nursing Service, 16 of the Queen Alexandra's Imperial Military Nursing Service Reserve, 5 of the Queen Alexandra's Military Nursing Service, India, 9 of the Territorial Force Nursing Service, 13 of the British Red Cross Society, including Lieut.-Colonel J. Gould, M.B., and 21 sub-assistant surgeons of the Indian Subordinate Medical Service.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON PROBATIONER A. M. HORSEY, R.N.V.R.

Surgeon Probationer Arthur Mather Horsey, R.N.V.R., was killed in action on August 9th, aged 23. He was the only son of Mr. G. Mather Horsey, of Midford, Hertfordshire. He was born in 1893 and educated at Rugby and at Cambridge, where he graduated B.A. in 1916, and had passed his first M.B. He had served as a dresser in the 1st Eastern General Hospital at Cambridge for a year, and joined the navy in November, 1916.

ARMY.

Killed in Action.

CAPTAIN H. ACKROYD, M.C., R.A.M.C.

Captain Harold Ackroyd, M.C., R.A.M.C., who has been killed in action, was born at Southport in 1877. He was educated at the University of Cambridge and Guy's Hospital, and graduated B.C.Camb. in 1903, M.A., M.B. in 1904, and M.D. in 1910. He subsequently held the posts of house-physician at the General Hospital, Birmingham, and of house-surgeon at the David Lewis Northern Hospital, Liverpool, was at one time a research scholar of the British Medical Association, and worked for several years in the research laboratories, Cambridge. He received a commission as temporary lieutenant R.A.M.C. on February 15th, 1916, was attached to the Royal Berkshire Regiment, and was promoted to captain on completion of a year's service. In the autumn of 1916 he was awarded the Military Cross for conspicuous gallantry and devotion to duty. He was slightly wounded on July 31st, but remained on duty. He was killed on August 11th. He leaves a widow and three children.

CAPTAIN F. R. ARMITAGE, D.S.O., R.A.M.C.

Captain Frank Rhodes Armitage, D.S.O., R.A.M.C., was killed in action on July 30th, while attending the wounded, aged 34. He was the eldest son of Dr. Auriol Armitage, and was educated at Wolverhampton Grammar School, at Oundle School, where he went with a scholarship, and at Pembroke College, Cambridge, where he gained a classical scholarship in 1902, took his B.A. with honours in the Science Tripos in 1905, and graduated M.B. in 1909, after taking the M.R.C.S. and L.R.C.P.Lond. in 1908. He was also at the London Hospital, and after acting on the resident staff there, joined his father in practice at Wolverhampton. On August 7th, 1914, he took a commission as lieutenant and medical officer in the 3rd North Midland Brigade, R.F.A., went to France early in 1915, and was promoted to captain on completion of a year's service. He received the D.S.O. on July 18th, 1917, and returned to France the next day. He was attached to the Royal Field Artillery when killed.

CAPTAIN J. C. HARRIS, R.A.M.C.

Captain Joseph Cecil Harris, R.A.M.C., attached to the 3rd North Midland Field Ambulance, was killed recently at a casualty clearing station. He received his education at the Dental Hospital and the University of Birmingham, and took the diplomas of L.D.S.R.C.S.Eng. in 1906, and M.R.C.S. and L.R.C.P.Lond. in 1910. He was a member of the British Medical and of the British Dental Associations. He was in practice as a surgeon dentist in Wolverhampton prior to the war. He took a temporary commission as lieutenant in the R.A.M.C. on April 1st, 1915, and was promoted to captain on completion of a year's service.

CAPTAIN B. M. HUNTER, R.A.M.C.

Captain Bentley Moore Hunter, R.A.M.C., was reported as killed in action, in the casualty list published on August 15th. He was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1909. Taking a temporary commission as lieutenant in the R.A.M.C., he was promoted to captain after a year's service, and was attached to the Cambridgeshire Regiment when killed.

LIEUTENANT A. B. ROSS, R.A.M.C.

Lieutenant Andrew Beaconsfield Ross, R.A.M.C., was killed in action on August 6th. He was the eldest son of Mr. James Ross, late of Balblair, Edderton, and of Pollo,

Delny, Ross-shire, and was educated at Edinburgh University, where he gained the Vans Dunlop Scholarship in Surgery and Physiology, and graduated M.A. in 1898, M.B. and Ch.B. in 1902, and M.D. in 1906. After acting as house-physician of the Royal Infirmary, Edinburgh, and of the Hospital for Sick Children, Great Ormond Street, and house-surgeon of Glasgow Maternity Hospital, he went into practice at Ashton-under-Lyme. He took a temporary commission in the R.A.M.C. in August, 1916.

Died of Wounds.

CAPTAIN R. L. HENDERSON, A.A.M.C.

Captain Ronald Lennox Henderson, Australian Army Medical Corps, was reported as having died of wounds, in the casualty list published on August 16th. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1903, and after serving as house-surgeon and house-physician at the Cumberland Infirmary, Carlisle, went out to Australia, where he was in practice at Crow's Nest, Queensland, till he joined the Australian Imperial Forces.

CAPTAIN C. W. TREHERNE, R.A.M.C.

Captain Claude William Treherne, R.A.M.C., died of wounds on August 12th, aged 29. He was the son of Surgeon-General Sir Francis Treherne, K.C.M.G., and was educated at St. Thomas's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912. After acting as senior obstetric house-physician at St. Thomas's, and as house-surgeon of the West London Hospital, he served as one of the medical officers of the British Red Cross Society in the Balkan war of 1912-13. He took a commission as lieutenant in the Special Reserve of the R.A.M.C. on August 21st, 1914, and was promoted to captain after a year's service.

CAPTAIN H. D. WILLIS, M.B., R.A.M.C.

Captain Hugh Duberley Willis, M.B., R.A.M.C., died on August 12th of wounds received in action. He was the fourth son of Captain H. G. Willis, late R.H.A., of Glenfall, Gloucestershire. He received his medical education at the University of Manchester, took the diploma of L.M.S.S.A. in 1912, and graduated M.B., Ch.B., Victoria University, Manchester, in 1913. He took a commission as temporary lieutenant in the R.A.M.C. on August 10th, 1915, and was promoted to captain after a year's service.

Wounded.

Major J. S. Y. Rogers, D.S.O., R.A.M.C. (T.F.).

Major S. B. Smith, D.S.O., R.A.M.C.

Captain H. Alcock, R.A.M.C. (S.R.), attached Royal Warwickshire Regiment.

Captain J. P. Charles, R.A.M.C. (temporary).

Captain G. A. Cole, R.A.M.C. (temporary).

Captain O. J. Davy, M.C., R.A.M.C. (temporary).

Captain G. F. Graham, I.M.S.

Captain W. H. Hart, R.A.M.C. (temporary).

Captain A. J. Kearney, R.A.M.C. (temporary).

Captain D. J. MacDougall, R.A.M.C. (temporary).

Captain R. P. S. Mason, R.A.M.C. (S.R.).

Captain C. H. L. Rixon, R.A.M.C. (temporary).

Captain W. S. Wallace, R.A.M.C. (T.F.).

Lieutenant G. F. Fisser, R.A.M.C. (temporary).

Missing.

Captain C. W. Bond, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Arnold, Charles Vernon, Flight Lieutenant R.N., only son of Captain Arnold, R.A.M.C., War Hospital, Dartford, at Chingford, on August 16th, aged 23.

Beatty, A. H. W., Second Lieutenant Manchester Regiment, eldest son of Dr. J. Bensley Beatty, of Harrow, killed July 31st, aged 29. He was born in 1887, joined the army early in the war, and had served at Festubert and at Loos.

Burnett, L. C., Lieutenant R.N., second son of Surgeon-General Burnett of Richmond, Surrey, killed in action on August 10th while attached to the Royal Garrison Artillery.

Claremont, Frederick Victor Leszinski, Second Lieutenant Royal Garrison Artillery, son of the late Dr. Claremont, of Southsea, killed August 14th.

Evans, Rev. Geoffrey Magand, M.C., Chaplain to the Forces, son of the late Dr. Samuel Evans, killed August 12th, aged 35. He was educated at Marlborough, and had been attached to the Marlborough Mission, and before he joined the army was curate at St. Mary's, Tottenham. He had served in the Militia, in the South African war, and subsequently in the Welsh Regiment.

Shand, John James Fraser, Second Lieutenant Royal Garrison Artillery, only son of Fleet Surgeon Shand, R.N., killed August 6th, aged 19.

Solly, A. S., Captain Royal Field Artillery, eldest son of Major Ernest Solly, M.B., R.A.M.C., an ex-mayor of Harrogate, aged 23. He had been wounded about a year ago.

MEDICAL STUDENT.

Tulloch, John, Private, Royal Scots, reported missing on September 15th, 1916, now presumed killed on that date, aged 21. He was the eldest son of the Rev. W. H. Tulloch, United Free Manse, Fortingall, and before joining the army was a medical student at Edinburgh University.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

England and Wales.

THE HEALTH OF LONDON.

(Concluded from p. 197.)

School Children.

As in 1915, the special efforts of the older men and the women already employed as school doctors made it possible to engraft successfully into the school medical service new temporary officers, and to carry out with considerable success the work of medical inspection. During the year 256,847 children in the age groups were brought before the school doctors in elementary schools, and 88,415 were found to need treatment for one or more defects. The improvement in the general condition of the older children, which was a marked feature in the previous year, was maintained. The results of inspection are analysed in detail by Dr. C. J. Thomas, and compared with those of the three previous years. It is gratifying to find that the steady improvement in clothing and footwear and in cleanliness show no falling off, and the same is true of the nutrition of the children. The hardships of war have not been allowed to affect the general condition of the children, or to interfere with the growth of that care for their welfare which has distinguished recent years. In the words of the report, "a community that can thus protect its children while putting forth the most prodigious martial efforts the world has ever seen, must be sound to the core." The heavy work of school nurses has borne fruit in a continued improvement as regards cleanliness; the number of children brought to the cleansing station has steadily increased.

Under the heading of "medical treatment" we learn that the work previously undertaken has been continued, and furthermore that two new dental centres have been set up. The number of children receiving treatment under the Council's arrangements was 111,456, an increase of more than 8,000 over 1915. In addition, 181,000 re-inspections were made of children who at primary inspection had been found to be ailing. Closer co-operation has been effected between the maternity centre authorities and the school medical service.

Not far short of a million examinations were made for vermin with positive results in 25 per cent. There was a large increase in scabies among school children during the year, of which the cause was supposed to be infection from soldiers returning on leave from the front.

Although much dental defect was found, the steady improvement in the children's teeth recorded in recent reports was well maintained in 1916. A conspicuous feature of the results of medical inspection was the marked decline in the number of children referred for treatment for tonsils and adenoids; this decline still continues, and the figures for the present year are the lowest yet recorded. As usual, a large number of children failed to reach the normal acuity of vision—this was especially marked in girls. The figures for visual defect showed some increase over those of the previous year, perhaps due to loss of some of the facilities for hospital treatment of errors of refraction.

Two open-air schools at Shooters Hill and at Birley House continued their activities. Dr. Kerr, after a careful study of the record cards of the children, has compared the results with those relating to children in playground classes and in the ordinary schools. He finds that the open-air school children show a stationary weight for the first three months, and after that a comparatively rapid and steady increase.

Under the head of "infectious diseases" Dr. Hamer discusses at some length the epidemiological relationships and geographical distribution of diphtheria and scarlet fever. For the first time on record notifications of diphtheria actually exceeded those of scarlet fever for the whole year, and from September onwards this excess was marked. The reason for this unique situation was the exceptionally low incidence of scarlet fever. With regard to the suggested influence of excessively wet weather in this direction, Dr. Hamer refers to Sir John Moore's note in the JOURNAL of February 10th (p. 207) on the possible indirect effects of gunfire upon the rainfall of 1915 and 1916: "It would be indeed," says Dr. Hamer, "a strange result of the European war if it should be proved that dust due to explosion of shells was in part responsible for the notable falling off in the admission of cases of scarlet fever to Metropolitan Asylums Board hospitals."

The report is much shorter than we have been accustomed to in recent years, but there is much of interest in the 42 folio pages, and it is easy to find one's way about it although there is no index.

LECTURES ON VENEREAL DISEASES IN BRIGHTON.

The committee of the Brighton Town Council responsible for the venereal diseases campaign recently arranged for a short series of lectures to men, and another to women, on various points connected with venereal diseases. Invitation tickets were issued to medical men and women, to clergymen and to social workers of all descriptions, the object of the courses being to instruct those who later on would be likely to be addressing audiences of cadets, of soldiers, or of young men and women. The first lecture to both men and women was delivered by Miss March, B.Sc., who took as her subject the responsibility of parenthood, and handled a difficult subject with great tact and judgement. The other lectures to women were on venereal disease by Miss Douie, M.B., on the report of the Royal Commission by Miss Wakefield, and on social prevention by Miss Douglas. The lectures to men were on venereal disease by Mr. E. B. Turner, F.R.C.S., and on social prevention by Mr. E. R. T. Clarkson, F.R.C.S. Mr. Turner's address was delivered in his well-known vigorous style, and was exceedingly telling, though some of the medical members present considered that he rather exaggerated the dangers of the average case of syphilis or gonorrhoea. The audiences, though rather smaller than was desirable, undoubtedly greatly appreciated the many important and telling points which were put before them. It is to be hoped that the council will see its way to continue this excellent work, and arrange for further lectures to be given later. The venereal department at the Royal Sussex County Hospital has now been opened for the treatment of patients.

Ireland.

SALARIES AND THE COST OF LIVING.

At a recent meeting of the Clogher guardians Dr. G. A. Pringle, who has resumed his duties after a lengthy period of service in the Royal Army Medical Corps, wrote acknowledging receipt of £32 12s. 6d., including £10 to help to pay his substitute. Whilst thanking the Board for its kindness and generosity to him during his leave, he went on to point out that the salaries paid to the dispensary medical officers in Clogher Union were quite inadequate for the present cost of living. The guardians, he thought, would admit that the cost of all necessities of life was at least double what it was some years ago. This had been generally recognized by all public bodies, and the injustice to employees was met by increase of salary or payment of an annual bonus during the continuance of the war. He was sure the guardians would not be less just and generous than other public bodies, and that the medical officers could confidently leave the matter in the Board's hands. On the suggestion of the Chairman the Board decided to leave over the consideration of Dr. Pringle's letter for a larger meeting.

VACCINATION.

The Enniscorthy Board of Guardians and District Council forwarded for the adoption of the Rathdown

guardians a resolution reiterating the demand for the extension of the conscience clause of the Vaccination Acts to Ireland. They had decided to abstain from further attending the meetings of both bodies so long as the Local Government Board persisted in the enforcement of the Acts as they stood. The Chairman said an Irishman had as good a right to exercise his conscience as an Englishman, and that was his only objection to vaccination. On a show of hands the resolution was approved.

Canada.

THE CANADIAN MEDICAL ASSOCIATION MEETING.

THE forty-eighth annual meeting of the Canadian Medical Association was held at Montreal on June 13th, 14th, and 15th, in the beautiful medical building of McGill University; more than three hundred members attended, many of whom had travelled long distances to be present. The Association owing to the war had not met for two years.

Presidential Address.

In his presidential address, delivered after the annual dinner, Dr. A. D. Blackader, acting dean of the medical faculty of McGill University, reminded his hearers that it was just fifty years ago since the Canadian Medical Association was formed, at a meeting arranged by the Quebec Medical Society, and held in the Laval University on October 9th, 1867, when 148 delegates from Louisville in the east to Windsor in the west were present. Much had been accomplished since then, but in some directions the aims of the founders of the Association had not yet been realized. To cite one example: Failure had attended all efforts to establish a uniform system of recording vital statistics throughout the Dominion. Dr. Blackader then went on to discuss the more important problems that in the near future would face the profession. An attitude of "cloistered retirement" was no longer possible. Rapid changes were taking place in the practice of medicine, and it behoved the profession to stick to its high ideals. National insurance against sickness or accident was a question that should be studied by the profession, so that, when the time for legislative action came, it would be in a position to co-operate with the Government. Leaders were needed who would be willing to undertake the disinterested study of social and economic questions, and committees should be appointed to report upon such matters; it was only by broad and impartial deliberation, in co-ordination with other medical associations in Canada, that the Canadian Medical Association could take its proper place as a recognized authority on all matters pertaining to its special sphere.

Medicine.

The address in medicine was given by Dr. Theodore C. Janeway, of Baltimore, on slight variations from normal structure and function, and their clinical significance. He said that in spite of the introduction of the finer methods of investigation which had given an added complexity to the work of the physician—the shifting of the modern point of view from therapeutics to prognosis, and the substitution of the ideals of the new physiology—the ultimate duty of the physician was to sift from the medley of facts laid bare by innumerable methods of examination those upon which to base a correct judgement. Utility must be combined with loyalty to the best interests of the patient or the organization for which the examination was made. To exceed the possibilities of useful application was to conduct research. Dr. Janeway touched also upon some special problems of interpretation in the examination of patients, and closed an address that was distinguished by its note of high idealism with the stirring words: "You of the Canadian profession have borne the burden and heat of the day with a nobility to which no words of mine can pay a fitting tribute. Accept my inarticulate homage. May we not fail to meet the test, and, shoulder to shoulder with you, ensure that victory of justice and mercy which alone can bring an enduring peace."

Surgery.

The address in surgery was delivered by Dr. Francis J. Shepherd, of Montreal, formerly dean of the Faculty of

Medicine of McGill University. Under the appropriate title "Past and Present" Dr. Shepherd reviewed the progress of surgery during the past fifty years, speaking particularly of the wonderful advances made during the war in the treatment of wounds, and in sanitation and preventive medicine. With a fitting reference to those who have given their lives in the great struggle, and the work of caring for the wounded that will remain to be carried on for years to come, Dr. Shepherd went on to other matters, such as the relation between the surgeon and the physician, the undue haste of the young physician to rush into print, medical and surgical quackery, and the credulity of "Ephraim wedded to his idols."

In a paper on the transplantation of bone Drs. Gallie and Robertson, of Toronto, advocated the use of autogenous bone grafting and autogenous bone in the form of plates and screws instead of metal. The results of six cases of bone grafting in old lesions in returned soldiers were given by Lieut.-Colonel C. B. Keenan, C.A.M.C. Two interesting papers were read on nerve suture for war injuries—one by Captain Parry, C.A.M.C., the other by Major S. Alwyn Smith, C.A.M.C., who has had great experience at the Granville Canadian Special Hospital. A most interesting address on the treatment of muscle and joint contractures by physical methods was given by Professor R. Tait McKenzie.

Blindness in the Newborn.

In the Section of Gynaecology and Obstetrics, after a discussion of blindness in the newborn, a committee was appointed to prepare a resolution urging upon the General Executive Committee of the association the importance of bringing the subject before the proper Federal and Provincial authorities with a view to the enactment of legislation.

Public Health.

A suggestion made by the Chairman of the Section of Public Health that the Public Health Association of Canada should be invited to associate itself with the Section was approved. A resolution was passed strongly urging upon the Dominion Government the great need for a Federal Department of Public Health; and in this resolution was incorporated, at the request of the Montreal Society of Physical Education, a request that a Department of Hygiene and Physical Education should be established under the Federal Government.

Dr. J. D. Pagé, Chief Medical Adviser of the Port of Quebec, in discussing the methods of examination of immigrants, said that it was impossible with the present staff to examine thoroughly each immigrant. The decrease in the numbers of immigrants consequent upon the war had made it possible for the medical officers to devote more time to each individual, and at present, when immigration was at a standstill, time was being devoted to the study of new methods of examination. The fault lay not with the individual officer, but with the Government for its failure to provide proper facilities. The inadequacy of these facilities was shown in July and August, 1914, when a psychologist was engaged to co-operate with the medical examiners. During these months nearly 2 per 1,000 of the immigrants examined were found to be mentally defective, a proportion far in excess of the feeble-minded rejections in any one year since 1903.

After a discussion on the teaching of hygiene a resolution was passed in favour of the inclusion of hygiene in the curriculum of all schools.

UNIVERSITY HOSPITAL UNITS.

Sir James Fowler's proposal that military hospital units should be formed which would be named after the university or medical school from which the personnel was drawn, and that these units should be given a permanent place in the medical services of the empire, is of particular interest to Canadians, in that Canada was the first to realize the inherent advantages of units composed of men with common ideals and traditions, acquainted with each other, and bound together by a love for their Alma Mater. Soon after the commencement of the war the universities of McGill, Toronto, Queen's, Laval, Dalhousie, St. Francis Xavier, and the Western University, and the Universities of Alberta and Manitoba, offered to the military authorities hospital units fully equipped, and composed for the

most part of members of each university, for service overseas in whatever field they could be of most use. The offers of the last two universities mentioned were not accepted, but units have been mobilized, equipped, and sent across the seas by each of the other universities, and an account of their formation was published in this JOURNAL at the time of their departure from Canada. In addition, in most cases funds have been established for their maintenance.

The suggestion that permanence should be given to such units, and that they should take the name of the university from which they came instead of a number, is one which, if put into effect, would be received with the greatest enthusiasm in Canada.

Correspondence.

A NEW SCHOOL FOR THE STUDY OF HEART DISEASE.

SIR,—The plea put forward by Dr. Poynton in your issue of August 11th for the establishment of a school whose aim would be "to benefit the patient, and to attempt in every way to prevent heart disease, and to guide and protect sufferers," has much to commend it, and it is not in my view seriously disturbed by the statement of facts by Sir James Mackenzie in your columns of August 18th. It appears to me that there is not such a wide difference in the views of Sir James Mackenzie and Dr. Poynton on this subject as appears at first sight. If there are shortcomings in the present new school based on Sir James Mackenzie's work, these are probably largely due to the fact that his disciples in many instances show little evidence in their writings of the wide general experience and the width of outlook that is characteristic of Sir James Mackenzie's work, and in the absence of these qualities there is a real risk that the information to be gained by increasing attention to graphic methods will arrest rather than advance our knowledge of the etiology of cardiovascular disorders. There is good reason for believing that most of the vital problems in cardiac pathology and medicine will not be solved by attention directed exclusively to graphic methods of studying the heart's action, in combination with older and better known methods of studying the circulation. Their solution demands a much wider outlook, and a more intimate study of metabolic errors, and of bacteriological processes generally; Dr. Poynton's plea is, I take it, a timely recommendation in this direction.

An interesting and valuable practical contribution to cardiac medicine appeared in your columns in 1916 from the pen of seven workers in the new school. This set forth in useful detail the beneficial effects of physical exercises in the treatment of certain cardiac disorders in soldiers, and was the subject of a leading article in your columns of that date. In that paper it is stated that the exercises adopted were "a selection from the code of army exercises." The writers did not appear to be aware that all the exercises prescribed had long been practised by those familiar with the Swedish methods of treatment by physical exercises. I was much impressed by their value, when I made a practical study of the subject nearly twenty years ago, and a useful summary of them was written at my request and appeared in the *Encyclopaedia Medica* in 1902. Unfortunately such methods have not so far appealed widely to the profession in this country, and if we may judge by the equipment of our British hospitals, the leaders in medicine in this country are largely content to rely on pills and potions of whose action little is known except their very limited value. There is great scope for the present school educating the profession on this important subject; their work in this direction would have great value both in a prophylactic and curative direction.

May I add, in conclusion, that I do not know why Dr. Poynton selected "heart disease" as the realm of medicine in which a new school is specially required. There is, in my view, much greater need at the present time for a new school for the study of intestinal disorders. There is good reason for believing that the work of this school would, *inter alia*, contribute largely to the solution of some problems in cardio-vascular medicine that are at

present studied too exclusively by graphic and other methods.—I am, etc.,

Edinburgh, Aug. 18th.

CHALMERS WATSON.

SIR,—I assure Sir James Mackenzie that I am acquainted with the work of the Mount Vernon Hospital, and I should feel myself but a poor thing if I did not take this opportunity to express my indebtedness to the results of the assiduous investigations carried out in that institution. I do not doubt that Sir James Mackenzie has followed out his cases from youth upwards, and believe if we aroused the giants of a hundred years ago they would tell us of the same devotion. I do not doubt, too, that the Mount Vernon Hospital, in common with the more ancient hospital for diseases of the heart, and every well managed hospital in London and the provinces, has done its best for its patients. That, however, is not my point. The modern trend of the study of disease shows clearly that the hospital is but one fixed point in any such scheme—a centre with radiating lines leading to other centres—such, for example, as the medical organizations connected with the health of the London County Council schools, child welfare centres, infant clinics, sanatoriums, children's aid societies, and so on.

At the most a hospital for heart affections can be but a local centre with specialized duties—duties, let me add, of immense importance, such as accurate investigation, skilled care and treatment, and advisory—and its spirit should be tolerant of the opinions of others and mindful of its own special advantages. It does not, however, need a special hospital to look after the prevention of morbus cordis and the care of sufferers. Personally I doubt whether any special hospital is well adapted for such purposes. What, in my opinion, we need, is an institution concerned with the organization of a broad investigation of the subject, and not itself a hospital. This centre would be in touch with suitable convalescent homes, for children in particular, and in touch with children's general and special hospitals, who could refer these cases to this centre for arranging the details connected with home care and convalescence. There should be a department concerned with the world's literature on the question, departments for statistics and for investigating such wide and difficult problems as the influence of housing on the incidence of rheumatism, the influence of climate, of school strain on chorea, etc. Again, should we wish to discover the relative value of enucleation of the tonsils in the rheumatic, instead of one investigator attempting this in one hospital it should be possible to collect the records from all important hospitals, and so accelerate vastly our funds of knowledge. Similarly, the influence of early nephritis upon the heart and blood vessels could be dealt with on a large scale. The value of long convalescence could be estimated, etc. I will not use your valuable space further, for it is clear to every doctor, I believe, that if we wish to be in the van of progress the time has passed when hospitals can be looked upon as more than one element in the study of disease. In fact, I hold that, so far as London is concerned, what is euphemistically termed the *esprit de corps* of hospitals has been and is one of our greatest obstacles to progress.

Naturally the evolution of a scheme on these lines requires much care and power of organization, but it should be a means of bringing the entire medical profession in closer touch with one another, and should bring the technical hospitals nearer to the intelligent but necessarily amateur public. There are many problems, and no one has put this more forcibly than Sir James Mackenzie, that the doctor in general practice could throw light upon had he these centres for broad research to aid him. I am convinced that general hospitals cannot unaided work out these problems; the staff has its duties for which it has been appointed, and its duties to colleagues and students to carry out. A general hospital devoted to special research spells ruin to its power as a general school, for it may take years to advance medicine one little step which can be explained in fifteen minutes. In the meantime we must educate students, however imperfectly, in a general knowledge of medicine. Doubtless, if they could be educated at special hospitals they would benefit if they first learnt the fable of the belly and its members and then were taken from place to place in aeroplanes.—I am, etc.,

London, W., Aug. 18th.

F. JOHN POYNTON.

THE AIMS OF BRITISH MEDICAL POLICY.

SIR,—It is generally as well to know, or even to have a vague idea of, the goal one is aiming at. I fail to find any well defined ideal in all the discussion about medical reform. May I, therefore, outline as briefly as I can what appears to be a condition we could strive for in the certain assurance that it would benefit mankind and do us no injury?

In the first place, look at the present condition of things. A multiplicity of public authorities dabbling in medical matters, and no one head. A body of professional men striving to earn enough to live on, and therefore each competing against the other for lay popularity, and using all the arts he knows to attain that end, while he preaches the nobility and disinterestedness of "Medicine." The great lights earn much, and have time to do their work thoroughly; the small ones earn a living, and to do so have to work at such a pressure that they cannot give every case the time it ought to have, to say nothing of record-keeping. The result is that many men are unable to take care of their own health, and wear out or die prematurely, leaving dependants destitute or nearly so, to say nothing of the loss in health to the general public.

Look again, and see the environment of the patient—a cottage or room, perhaps crowded; the father laid by with pneumonia; the income of the family now reduced to 10s. a week (insurance money); the nursing to be done by the wife, who has to be up day and night in consequence. The man refuses to go into hospital because of a superstition he has that it is a home of experiments, and he will not come out alive. Is that a picture to be proud of? Yet it is a true picture. What could be worse? Is it not a State's duty to see to its improvement, and give—nay, insist that the gift be taken—the people a better chance of recovery?

Now for the other side, a quite possible condition under the State. There would be State hospitals, with dispensaries attached, in every district (small hamlets being linked together). These would have a sufficiency of doctors attached, and their services would be free to those who needed them. The conditions of the service would be such as to attract a sufficient number of suitable men, this being a most important item if any success is to be obtained. They would have a salary free from professional expenses, and a pension after a certain age, or in case of death a pension for their dependants. Instruments of all kinds would be provided, as also medicines, which would be dispensed on the premises.

Acute cases would all be treated in hospital, the patients being compelled to go there if necessary. Records would be kept, and useful medical histories would therefore be obtained for the greater part of the population, from which most valuable information could be obtained for the advancement of knowledge. The work would tend to become much better than is now possible in a vast number of cases, for the simple reason that men would have more time and better conditions to work under. This would be all to the benefit of the patient and the State. There would be only one qualifying examination, that of the State. Specialism could be more easily encouraged and practised.

The great thing that would have to go would be the patient's choice of doctor, but I doubt whether it is so valued as it is supposed to be.

I have tried to be brief and to put much into a letter. If I am somewhat ambiguous or indefinite, I ask for the reader's indulgence. I have tried to picture a scheme that I feel convinced is possible, and would be to the country's good—a condition of things that I believe must come sooner or later in some form.—I am, etc.,

Mumbles, August 18th.

F. DE COVERLY VEALE.

SIR,—Now that a Ministry of Health is to be instituted, it is clearly the duty of the medical profession, which is responsible for the health of the people, to formulate proposals, as the best interests of the public are also the best interests of the profession, for a nation's health is a nation's wealth. The welfare of the nation demands that the doctor shall be competent, and the General Medical Council registers the qualifications, thereby certifying competence, for which a charge of £5 5s. is made, but nothing more is done. Would it not be wiser if now a leaf was taken out of the book of the sister profession,

Law, and an annual registration fee instituted protecting the public as well as the profession against illegal practice, as quackery undermines the health and destroys the physique of the nation, for surely Parliament would recognize that the preservation of the lives and the health of the people should be at least of equal importance with the guardianship of their property?—I am, etc.,

Harrogate, August 18th.

CHARLES GIBSON.

A STATE MEDICAL SERVICE.

SIR,—The larger part of the rank and file of the profession are only interested in the subject of a State medical service as it affects the treatment of patients under the Insurance Act, and in the arguments and recommendations that are made in regard to the establishment of a Ministry of Health the fact appears to be overlooked that a State medical service already exists, consisting of medical officers of health, school medical officers, tuberculosis medical officers, maternity and child welfare medical officers, factory and workshops medical officers, and Poor Law medical officers. This service as it exists throughout the country is notoriously badly organized, the units of administration being irregular, the responsible local governing bodies incompetent, the position of the officials largely inoperative, and personally difficult and unfair, the whole showing a lamentable want of co-ordination, economy, and effectiveness of result. The central management of this service also is highly unsatisfactory, being vested in two or three indefinitely constituted "boards," the chief one of which has shown itself unable to put into force the powers with which it is legally endowed, has failed to obtain other powers that it should require, and has shown itself effete and spoiled by unhappy modes of procedure and precedents established on grounds of expediency and self-preservation against criticism. In contradistinction to an unwavering maintenance of principles and unquestionable propriety.

Here there is ample material for the establishment of a Ministry of Health that requires no postponement on account of the war, but whose urgency in some respects is greater because of the war, and immediate opportunity should be taken to get on with it, as it will take some time to get it into thorough working order, and after the war the time of Parliament is likely to be much occupied for years to come. In any case, the scope of such a ministry must increase with time, and its bounds must be left elastic for that reason; and if it really were essential to postpone the settlement of the medical insurance business that would be possible, though it is hard to appreciate the idea that there is anything to oppose a businesslike consideration and settlement of the matter at the present time, or that this will prove easier at some future time.

Lord Rhondda has recently made public the cause of his failure to introduce a bill for the establishment of a Ministry of Health. It was owing to the want of accord amongst certain prominent officials, backed by their several departments, which rendered it impossible for the bill to be carried in Parliament without serious dissension and opposition. One is unable to form an opinion either upon the virtues of his measure, or upon the validity of the grounds of the opposition of the objectors, in absence of knowledge of the substance of the bill and of the objections, neither of which have been published. It is certain, however, that any such bill will have to embrace both powers and persons, so far as the latter cannot be superannuated.

The business will have to be run in departments, and several heads of these departments are likely to be required. As to who shall be at the head of the Health Ministry, the jealousies of the existing men in office might be overcome by an appointment from without. The free publication of the lines of argument taken up by one and another would be likely to find due correction in public opinion. At present the public is in the dark as to the exact inner meaning of Lord Rhondda's failure, and requires to be enlightened.

Lord Rhondda appears to have relinquished the task of forming a Central Health Ministry on the promise of Mr. Lloyd George that he will exert his unique influence to bring such a ministry into being. The subject is of more pressing national need than that of education. It is a matter of life and death, and of numbers and strength of the population, and the hope must be that the Premier is

taking the matter in hand, and that the right parties are already engaged in drafting the comprehensive measure that will successfully meet the requirements of the position.—I am, etc.,

August 13th.

M.O.H.

SIR,—In your issue of August 11th a letter written on this subject is asterisked: "Our correspondent has not advanced his argument that a whole-time salaried State medical service would be a benefit to the nation." Possibly a statement of my own case will give some furtherance to the idea.

I practise in normal times in a country district and hold the following appointments:

1. Poor Law medical officer; paid by Guardians, Local Government Board.
2. Public vaccinator; paid by Guardians, Local Government Board.
3. Police surgeon; paid by County Council.
4. Panel; paid by County Council.
5. Medical referee, Workmen's Compensation Act; paid by the Home Office.
6. Examiner of recruits (now extinct); paid by the War Office.

To these may be added several semi-public appointments, such as medical referee to insurance companies.

All these different and scattered forces combine to increase the work of the practitioner, by want of cohesion and the multiplication of reports, accounts, and so on. With all this it is found necessary for school medical officers to inspect the scholars in those schools within my area, thus creating an additional authority to confuse and confound the multitude.

Then a parish medical officer (in England and Wales) has practically nothing to say in regard to sanitary matters (unless, indeed, he is fortunate enough to work in harmony with the M.O.H., and I may say that this has been my privilege), and whatever he may know, discover, or advise is voluntarily imparted and therefore concessional, excepting, of course, the bare notification of infectious disease.

All these contending influences and bewildering authorities hamper and irritate and are not conducive to efficient and related work, whereas if grouped under one central department, it is easy to see that a firmer grip could be maintained on the public health. Instead of the little allowances from this one and that one, let a head authority pay a substantial salary and get thorough and interested work done. Thus I suggest that the district medical officer perform duties as under:

1. Attend the poor.
2. Attend the panel.
3. Attend the police and concomitant calls.
4. Public vaccinator.
5. Sanitary adviser.
6. Certifying factory surgeon.
7. School medical officer.

The question of private practice, insurance appointments, etc., could be independently dealt with. The private practitioners would have ample scope.—I am, etc.,

Jos. WM. GILL, M.D., D.P.H.,

August 12th.

Captain, R.A.M.C.

A RESERVE FOR WINTER.

SIR,—May I suggest to the Central Medical War Committee that there is another duty they might very ably take over now that the recruiting of medical men is almost finished?

Their former work has been done so thoroughly that an adequate medical service can only be kept going in my district by the continuous good health of every medical man that is left. Holidays are almost an impossibility, and after three years' continuously heavy work the chances of one or other of us falling sick are greatly increased. The senior members of the profession are each a year older, as indeed, we all are.

I consider that some reserve of doctors should be arranged for who can assist when called on by the Local Medical War Committee. Some men are doing an astonishing amount of work, but we cannot do impossibilities, nor can we help one another as formerly. Unless some provision is made for the coming winter, it must occur that the medical service will, in places, utterly break down.—I am, etc.,

Ashford, Kent, Aug. 11th.

FRANK COKE, F.R.C.S.

PROMOTION IN THE R.A.M.C. SPECIAL RESERVE.

SIR,—With reference to the article *re* promotion, etc., of officers of the auxiliary medical services, in the JOURNAL of July 28th, may I call the attention of the Naval and Military Committee of the Association and of Mr. Churchill's Committee to the very extraordinary position of the majors R.A.M.C. Special Reserve, who may not be promoted to the rank of lieutenant-colonel and higher? Why? If anything, they are better qualified for the higher rank than their colleagues in the Territorials. It will be noted that this rule does not apply to the combatant officers of the Special Reserve, who have not in most cases any professional qualifications, and yet are promoted to the higher ranks. In 1915 all majors of the R.A.M.C. of three years' service and upwards were promoted lieutenant-colonels.

In justice to the Special Reserve officers, all who have done three years as field officers, and who are under the age of, say, 50, should be promoted to lieutenant-colonels.

As a body they have done extremely good work in this great war, and if the committee prevail on the War Office to rectify this very obvious omission I feel sure the service will regard it as a great compliment.—I am, etc.,

August 1st.

AN OBSERVER.

PAY OF OFFICERS R.A.M.C. (RESERVE).

SIR,—The following figures show the exact receipts of a Special Reserve officer (captain) during three years of active service. They sufficiently dispose of the statements which have been made in Parliament that either his war bonus or his allowances bring him to the same level of pay as a temporary officer. The war bonus is added in, but has not been paid, nor can it be until the end of the war. I am naturally aware that a committee is considering these matters; perhaps it will be interested in these figures.

Pay and Allowances of Special Reserve Officer (Seven Years' Service).

	1914-15.	1915-16.	1916-17.
	£ s. d.	£ s. d.	£ s. d.
Regimental pay...	277 4 6	283 13 0	282 17 6
Charge pay...	8 7 6	25 7 6	—
Field allowance...	31 1 6	—	4 7 6
Servant's allowance...	13 2 0	18 6 0	18 5 0
Light and fuel allowance...	3 2 4	20 16 9	18 6 10
Outfit allowance...	50 0 0	—	—
Ration allowance...	19 3 3	31 2 4	20 1 5
Lodging allowance...	20 4 0	54 18 0	51 0 0
Travelling allowance...	1 8 0	0 10 6	0 17 6
Billeting allowance...	7 1 0	—	—
Gratuity or war bonus...	95 2 0	48 1 0	48 1 0
Detention allowance...	—	—	7 10 0
Totals...	526 16 1	482 15 1	451 6 9

Pay of Temporary Officer (Three Years' Service).

Regimental pay...	429 12 0	439 4 0	438 0 0
Charge pay...	8 7 6	25 7 6	—
Outfit allowance...	30 0 0	—	—
Ration allowance...	19 3 3	31 2 4	20 1 5
Travelling allowance...	1 8 0	0 10 6	0 17 6
War bonus...	60 0 0	60 0 0	60 0 0
Detention allowance...	—	—	7 10 0
Totals...	548 10 9	556 4 4	526 8 11

Difference (in Favour of Temporary Officer).

Pay and allowances...	21 14 8	73 9 3	75 2 2
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So in three years my patriotism has cost me £170 in cash, not to mention losses incidental to starting at a moment's notice. I know of no compensating advantages.—I am, etc.,

August 10th.

CAPTAIN R.A.M.C.(S.R.).

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—May I be allowed to repeat my question of July 21st—namely, Will medical students who gave up their studies at the call of their country be granted any facilities, when they come back, for shortening the time normally required to complete their studies and examinations? This is an urgent matter, and ought to be answered without delay.

At most universities special efforts were made by the staff to urge medical students to join the colours. Whether this was wise, in view of the great need for doctors, is

open to serious question. But few of us at that time looked forward to three or four years of war. Most of the students, to their honour, required no urging. Those few, however, who sat tight and were blind and deaf to their country's call are now enjoying the benefits conferred upon them by the patriotism of others. Are the university authorities going to sit tight and be blind and deaf to the claims of those brave men who risked all?

It will be a fearful struggle for these men, after two, three, or four years in the field, to sit down to their books again, and they will need all the encouragement that can be given to them. The knowledge that three or four years must elapse before they can qualify, whilst those others are reaping the reward, will not exactly encourage them.—I am, etc.,

Birmingham, Aug. 6th.

J. A. AINSWORTH.

THE TREATMENT OF SCABIES AND PEDICULOSIS.

SIR,—In the cure of disease the use of agents combining simplicity with effectiveness and rapidity deserves the closest attention of practitioners, but the medical mind sometimes overlooks the less complicated methods in favour of others that are roundabout or unnecessarily laborious.

The treatment of scabies by chlorine gas, as ably stated in the *JOURNAL* of July 28th by Captains G. H. Clark and H. S. Raper (p. 113), is one that they have shown to be useful so long as the patients themselves are prevented from being "gassed," but it none the less exposes them to the risk of serious danger, to say nothing of the trouble and fuss involved.

It is evident that unguents are better avoided in getting rid of both classes of insects, though ultimately effectual in time, which, however, is always unnecessarily long.

Against pediculi liquor hydrargyri perchloridi quickly kills the living parasites, and spirit washes off the nits, both in very brief time. Against the itch insect painting the body once a day with liquor calcis sulphuratus is equally certain and rapid. Both of these methods I have used often during the last forty years, and until May last I knew of nothing better or more simple, the time required being from one to three days as a rule.

My object in writing this is to draw attention to the paper by Captain J. A. Gunn, R.A.M.C.(F.), of Oxford, in the *JOURNAL* of May 5th, in which he recommends vests and pants of butter muslin (costing only a few pence each) wrung out of the following: Naphthalin 1½ oz., sulphur powder 1½ oz., benzol or petrol 1 gallon. The garments dry quickly, and, being worn next the skin, are fatal to lice and itch insects by the ingredients residing in the texture.

I could give illustrative cases to the point, but the paper of May 5th gives all the necessary details, and if readers be not convinced of the utility and facility of the treatment advised, nothing that I can add will avail. What is required only is the receptive and appreciative mind.—I am, etc.,

RUSHTON PARKER,

Professor of Surgery in the University of Liverpool,
Lieut.-Colonel R.A.M.C.(F.), Mersey Defences.

Liverpool, July 29th.

THE LATE DR. HACKMAN OF PORTSMOUTH.

SIR,—Will you allow me space enough to say that I am endeavouring to wind up the Hackman Memorial Fund, and shall be glad therefore if any member who wishes to subscribe will do so at the earliest opportunity? The amount so far raised is something over £620. A full statement will be issued to subscribers in due course.—I am, etc.,

Brandon House, Mile End, Landport,
Portsmouth, August 21st.

JAMES GREEN.

Obituary.

LIEUT.-COLONEL A. F. S. CLARKE, M.D.,

R.A.M.C.(RET.)

LIEUT.-COLONEL ALFRED FREDERICK STAFFORD CLARKE, R.A.M.C.(ret.), died at Bexhill on August 11th, after a year's illness, aged 78. He was educated at Manchester Royal Infirmary, and graduated M.D.St. Andrews in 1860, also taking the M.R.C.S. and L.S.A. in the same year. He entered the Army Medical Department as staff assistant-surgeon on April 1st, 1861, became surgeon in March, 1873, surgeon-major on April 1st, 1873, and retired with the honorary rank of brigade-surgeon on September 1st, 1882.

DEPUTY SURGEON-GENERAL DON writes: Lieut.-Colonel A. F. S. Clarke was widely known to the service seniors and contemporaries of his day; but to the great majority of medical officers now serving he can only be little more than a name. Yet he was an officer of mark in his time, as one always striving for the honour and reputation of his department, having a high sense of duty, and skilful in his professional work. To those who, like myself, had the privilege of his personal friendship, he was endeared by his engaging cheery manners, patent sincerity, and amiability of character.

He entered the service in 1861, and was appointed first to the Black Watch and afterwards to the Royal Artillery, in which he served for years; for some time he was in medical charge of the famous Royal Horse "A" Battery, or the "Chestnut Troop." The last five years of his full-pay service was in the "sanitary" while I was in the "medical" branch at head quarters in the War Office.

In 1882 he accepted the retired list in order to take up the important medical charge of the Royal Military and Staff Colleges, a position he occupied with conspicuous success for twenty-two years, until final retirement under the age limit of 65. He thus became known to thousands of officers and cadets passing through Sandhurst and Camberley, many of whom had good cause for gratitude for his skill and attention during sickness; it is stated as remarkable that in the many years of his charge no one lost his life from sickness. His sanitary training also enabled him to cope so successfully with an epidemic of diphtheria at Sandhurst as to elicit the thanks and praise of H.R.H. the Duke of Cambridge.

I may here record what is now little known, or half forgotten, that in 1881 Clarke and I, with the full concurrence of the Director-General, Sir William Muir, together inaugurated the first annual dinner of the medical department; it was a venture towards unification, at first received with some coldness by old regimental medical officers who had corps dinners of their own, and with banter and ridicule from some military authorities who then affected to regard the "doctors" as a sort of "camp followers," unfitted for such collective effort; but the dinner was a success, and developed into the annual gathering of a consolidated Royal Army Medical Corps.

After final retirement, Colonel Clarke took an active interest as a trustee on the Committee of Management of the Army Medical Officers' Widows and Orphans Fund, a friendly society, now over a century old, which has attained a very strong financial position, and offers to its (voluntary) members, at reasonable actuarial rates of subscription, substantial bonuses and annuities to their widows.

He was entirely laid aside, from heart affection, about a year ago, and his death was due to this cause. He leaves a widow and only son, Brigadier-General I. L. I. Clarke, East Yorkshire Regiment, who has recently done distinguished service at the front in France.

DR. T. DYSON WALKER, who was an honoured member of the medical profession of St. John, New Brunswick, Canada, where he had been in practice since 1892, died at the Massachusetts General Hospital, Boston, on July 22nd. He was born at St. John in 1857, the eldest son of Colonel Thomas Walker, M.D. He was a descendant of Elizabeth Yates, a sister of the famous Pendrell brothers, who were instrumental in saving the life of His Majesty King Charles after the battle of Worcester, and for this Colonel Walker drew a pension from the Treasury. Dr. Walker was a graduate in arts of the University of New Brunswick and in medicine of the University of Edinburgh (1891).

LIEUT.-COLONEL JAMES DAVIDSON, Bombay Medical Service (retired), died at Turriff, in the first week of August, aged 77. He was a native of New Deer, and was educated at Aberdeen University, where he graduated M.A. in 1861 and M.B. and C.M. in 1864. He entered the I.M.S. as assistant surgeon on September 30th, 1867, became surgeon on July 1st, 1873, surgeon-major on September 30th, 1879, and brigade-surgeon-lieut.-colonel on April 2nd, 1892. He retired on December 3rd, 1892. He served in the Abyssinian war in 1867-68, in the general hospital at Zoula (medal), and in Southern Afghanistan in 1880, in medical charge of the base hospital at Pir Chowky (medal).

The Services.

GRATUITIES OF OFFICERS, R.A.M.C. TERRITORIAL.

A CORRESPONDENT tells us that he has been informed that the yearly gratuities earned by the officers of the R.A.M.C., Territorial, are "washed out" in the event of an officer's death in action or on service.

* Our correspondent's information appears to be incorrect. The matter is governed by Army Order No. 406 of 1915, which deals with the issue of gratuities to Territorial Force officers. It provides that the gratuity is issuable to the estates of officers who die while serving. Attention may be specially directed to paragraph 5 of the Order.

EXCHANGES.

OCCUPANT R.A.M.C., ophthalmic centre, France, wishes to exchange with officer holding similar appointment in United Kingdom.—Address, No. 2709, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

R.A.M.C. Exchange wanted. M.O. to a reserve park (horse transport) in France desires exchange with M.O. of a home service unit. Write for particulars to M.O., No. 2 Res. Park A.S.C., B.E.F.

Medical News.

THE Wellcome Historical Medical Museum will be closed for cleaning from September 1st to the 30th inclusive.

A NEW periodical entitled *Laboratorio* has recently appeared in Spain. It is devoted to the biological sciences and experimental medicine. It is published by G. Domenech-Reig y Cia, Pelayo, 24, Barcelona.

MR. GEORGE W. BRACKENRIDGE of San Antonio, Texas, has given £10,000 to enable Columbia University to open its doors to women students of medicine this autumn. The existing buildings will be extended to provide additional laboratory facilities for work in chemistry, pharmacology, pathology, and bacteriology.

Two or three years ago we reviewed Dr. J. P. McGowan's report upon his *Investigation into "Louping-ill" or "Trembling"* (BRITISH MEDICAL JOURNAL, August 7th, 1915, p. 221) which is somewhat prevalent amongst sheep in Scotland and the north of England. The names "louping" or "leaping-ill" and "trembles" were given by stock-owners because some of the affected animals show nervous excitement by leaping off the ground, and others exhibit muscular tremors. Sir Stewart Stockman, of the Board of Agriculture and Fisheries, has contributed to the *Journal of Comparative Pathology and Therapeutics* an account of special investigations carried out by him into the etiology and epizootology of this disease with special reference to the "tick theory," which has been the subject of much discussion, but has never received general acceptance. The infective agents of tick-borne diseases are protozoan parasites. The result of Sir Stewart Stockman's close investigation of the fluids and tissues of sheep affected with louping-ill has been to furnish strong evidence against the idea of a protozoan organism carried by ticks being the cause of this malady.

THE Howard Association was formed fifty years ago to promote efficient methods for the prevention and treatment of crime and juvenile delinquency. In the annual report for 1916, now published under the title of *Crime and its Treatment*, the committee notes that the two outstanding features of the year were a decrease of nearly half the number of adult offenders, and an increase of one-third in the number of juvenile offenders. Before the war the prison population of England numbered 16,727; at the present time it is somewhere about 9,000. On the other hand, whereas before the war there were some 37,000 delinquent children a year, there are now 50,000. All the reformatories and industrial schools are reported to be full. The association's office has become a clearing-house for information on this matter, and a report, entitled *The Child and the War*, was prepared by the secretary, and published for the benefit of judicial and educational authorities. Two facts were revealed by this survey—a shortage of adult leaders of children's organizations, and an overlapping of effort. Steps were accordingly taken to strengthen and co-ordinate the work of children's societies in each area. With regard to the decrease in the prison population, which has occurred in Scotland and Ireland as well as in England and Wales, three main causes are given—enlistment of many habitual petty offenders; the restrictive orders of the Liquor Control Board and of

justices and military authorities; and the great demand for labour, rendering employment easy and well paid, and resulting in ability to pay fines. The association considers that the dull, mechanical routine of the reformatory industrial schools ignores the individual, and does not tend to produce the type of citizen which life to-day demands.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Antiology, Westrand London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecya, Westrand London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

It appears to be necessary again to remind correspondents that no notice can be taken of contributions not verified by the writer's name.

QUERIES.

X. Y. Z. asks for advice as to the nature and treatment of the following condition in a child aged 3½ years: A marked linear blush, about half an inch wide, over the left cheek, extending along the line of Stenson's duct, from the ear to the mouth, appears whenever the child masticates its food. There is no paralysis of the face nor anything to point to a cause for this condition, which has evidently been present since child was an infant. It would seem as if the parotid secretes into the tissues instead of into a duct.

W. M. B. asks for advice in the treatment of epilepsy in a boy, aged 9, who had had several major convulsions; potassium bromide 30 grains a day was given, and the major attacks stopped, but minor attacks supervened—as many as twelve to fifteen in twenty-four hours, and have not been affected by continuance of the bromide. Should bromides be continued? Some authorities recommend perseverance with them; others, not to give bromide at all. Our correspondent also asks for references to recent literature.

LETTERS, NOTES, ETC.

THE ALLEGED PERILS OF URIC ACID.

DR. D. DUNCAN (London, S.W.) writes: "Atophan" (the composition of which is stated to be 2 phenylchinolin 4 carbonic acid) eliminates uric acid as shown a few hours after the first dose. The symptoms at once diminish, and soon disappear, as does the excess of uric acid on continuing the treatment. This week, he adds, the first consignment of a British substitute has reached me. I tested the preliminary sample and found it innocuous and effectual. The makers will doubtless introduce it to the profession in the usual manner.

ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES.

DR. A. G. NEWELL (Harringay, N.) asks any medical man who has votes in the election for cases for admission in this institution, or can influence any votes, to consider the case of Miss Veera Cherry at the election in September. It is a most deserving case, and any further particulars he will gladly give.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

Remarks

ON

THE TREATMENT OF THE WOUNDED
KNEE-JOINT,

MADE AT THE OPENING OF A DISCUSSION AT ROUEN,

BY COLONEL H. G. BARLING, C.B., A.M.S.

If any apology is needed for discussing wounds of the knee-joint it will be found in the number of such cases occurring during the war, and in the deaths, the amputations, the loss of function in the joints resulting therefrom, which have been and still are a matter of constant anxiety to us all.

If we had attained the acme of success, or if we were agreed on the lines of treatment to be adopted, the discussion to-day would be unnecessary. But neither of these conditions can be claimed; success such as we desire is still far from us, and whilst there is agreement as to treatment up to a certain point, then comes divergence.

I have no cut and dried programme of treatment to place before you, for although I have seen and treated a considerable number of infected knee-joints in military hospitals at home I recognize that the problem of treating such cases out here is a different one, and I have only had a brief experience in France.

I will in the first instance give figures showing the general results of treatment in the Rouen area during the months June to December, 1916. No one is better aware than I am of the objections which may be offered to the study of surgical conditions by statistical methods, nor am I forgetful of the fact that classification such as I have adopted is necessarily in some degree artificial. Recognizing these limitations I still believe that something may be learnt from the figures, and I should like here to express to the commanding officers and to the surgical specialists of the various hospitals my best thanks for the trouble they have taken in searching out the notes of cases over a prolonged period, practically from July 1st to December 31st, 1916, though in some instances a rather longer period is covered.

The figures from all hospitals are added together, so that we obtain the average results. Each hospital will be able to compare its results with the average, and will learn whether its amputation rate and its rate of mortality is as good as or worse than its neighbour's. From my own experience I know that it is a healthy discipline occasionally to get out the figures of one's work in some particular line; general impressions are not always reliable, figures may supply a useful corrective.

Before considering the statistics it is necessary to remember that from them are excluded—

(a) All cases in which owing to the healthy appearance of the wound and the quietude of the joint no operative measures were resorted to; and

(b) Those cases in which conservative measures were impossible and early amputation was imperative.

One other point should also be remembered—it is that circumstances entirely prevent any record now of the final condition of the patients comprised in my table.

The first thing that strikes one in the figures is the very high proportion of cases in which excision of the wound, removal of bone when necessary, removal of any retained foreign body, irrigation of the joint and closure by suture has been followed by a perfectly satisfactory healing without further interference. The proportion of these cases requiring further intervention is 25.5 per cent., and it is, I think, reasonable to believe that free use of the joint is likely to result in a large majority of those in whom the primary operation was successful. (See table, items 4 and 5.) In the next group, where complete closure was not possible or was deemed inadvisable, and in which the wound was packed, we have not such a good account. The results, though, are still very good, especially when we remember that this group pretty certainly includes the worst cases of injury to the bones entering the knee-joint. Here the proportion of cases in which further operative interference was required is 38.4 per cent. (See table, items 6 and 7.) Although again we have no definite figures to guide us, I am satisfied from my experience of such joints in the past that very useful joint

function may result in many cases; this is confirmed by reply cards returned by patients to the surgeons out here who have operated upon them.

I think we shall agree that excision of the wound, removal of bone when required, removal of foreign body, suture of the wound, if possible, and packing as an alternative in selected cases, is the programme to be followed.

In the reports which have been kindly sent to me on methods adopted I find some divergence on details—one surgeon washes out the joint with one antiseptic, one with another, but the majority seem to favour eusol. In a considerable number of instances materials such as formalin and glycerin or ether have been injected and retained in the joint cavity. A few surgeons pack the joint with urea and speak favourably of the results obtained. One operator makes a point that may be worthy of attention; for the purpose of washing out the joint he makes a separate incision at some distance from the wound of entry, thus securing that at all events he drives nothing septic into the joint.

I question whether it much matters what fluid is used to wash out the joint, the main advantage is the mechanical cleaning out of septic material, fibrin and blood clot, but this should be thoroughly done, and I question if it is thoroughly effected unless there is a free opening; the use of cannulae for this purpose seems to me insufficient. Any antiseptic now at our disposal capable of destroying the infection is capable also of damaging the endothelium of the joint and so of reducing the resistance of the tissues to infection. On one point I am sure we shall all agree—it is the immense importance of carrying out with the most scrupulous care and technique the primary operative interference.

I turn now to another vital question we have to consider in connexion with the wounded knee-joint. I have already shown what a considerable proportion of cases settle down after the primary operative measures. When this does not happen and the joint is swollen and painful, the temperature and pulse are rising, evidences that the infection has not been overcome by the early treatment, what are we to do? Are we to be content with aspiration of the joint and irrigation or injection with an antiseptic fluid? Personally, I would deprecate this line of treatment and would only resort to it if the fluid showed only a low corpuscular element, a moderate polymorph count, and a sparsity of infective organisms—conditions which will rarely be found. Mere aspiration is apt to be followed by a breaking of infection through the capsule of the joint and a spread into the surrounding tissues, a grave addition to the patient's troubles most difficult to overcome.

Regarding aspiration as rarely a wise measure, I mention three other courses open to us: (1) Free opening up of the joint; (2) excision of the joint; and (3) amputation. Of arthroectomy I say nothing, partly because I have seen little of cases treated by this method and partly because it does not commend itself to my judgement.

I. Free Opening of the Joint.

By free opening of the joint I mean a lateral incision on each side to the extreme limits of the great bursal pouch and well to its lateral margins. Some surgeons go further, and in order to empty the posterior portion of the joint divide the lateral ligaments right back to the posterior margins of the femoral condyles. If ankylosis results the division of the lateral ligaments does not matter, but if some mobility is retained there is left a certain want of stability in the limb which somewhat interferes with its usefulness. For this reason I would reserve division of the lateral ligaments until a later stage of ill-doing in the septic joint showed that it is really called for, and especially would I resort to it when drainage of the posterior part of the joint is required. With free opening of the joint I would associate treatment by Carrel's method. The introduction of, say, four of his tubes, with the instillation of Dakin's fluid on the usual plan, gives greater promise of successfully combating septic joints than any other measures I have seen used. It does not seem necessary or desirable to retain the tubes for an indefinite time inside the synovial sac; in a few days, if possible, they should be so arranged as to lie outside the joint cavity. This will not relieve us of the duty of constantly watching the patient for any fresh focus of infection, especially at the postero-lateral aspects of the joint. Whatever the method of treatment adopted

its success will in the end depend upon the constant watchfulness and personal care of the surgeon, which is, of course, a hard saying when there is great pressure on the hospital staff.

II. Excision of the Joint.

This operation has not been much in favour at the hospitals in Rouen; at some it has not been resorted to at all, but I have collected forty-two cases. Of these, eight were followed by amputation, and the deaths, either with or without amputation, were thirteen. I do not regard this as a fair picture of what may be obtained by excision. In some cases I am satisfied that excision was resorted to at too late a stage, in the hope of escaping from the disagreeable alternative of amputation—a hope which was frustrated later on, amputation then being performed in patients who were ill able to withstand a further severe traumatism. If we are to consider excision at all it must not be as an alternative to amputation; there is a case to excise and there is a case to amputate, and these must not be confused. One of the really difficult tasks which a surgeon has to undertake if he adopts excision is to select suitable cases.

Some of the results recently reported of early excision tempt one to adopt that line of treatment, but it will be well to remember before doing so what our own experience has taught us, that a large number of such early cases recover under conservative treatment, and with useful joint function in some instances. Another point which makes one hesitate is the lack of knowledge of the final utility of the excised limb. One method suggested in a recent paper involved a wide separation of the divided bones of about two inches and the bone ends being maintained apart until all sepsis had disappeared. From the experience of excision of the knee in civil practice failure of bony union is under these conditions likely to occur, and the union by fibrous tissue may be very unstable. Firm union after excision has always appeared to me to depend mainly on early and accurate approximation of the sectioned bones. If bony union fails, further operative measures, by freshening of bony surfaces or by bone grafting, may yet succeed, but even if they do they involve for the patient the anxiety of a further operation, a rather prolonged convalescence, and possibly further shortening of an already short limb. Conviction as to the value of excision of the knee will only arrive when we know the final results obtained. To sum up this question of excision, if we excise very early we may get immediate satisfactory results, but we do not know what the final results will be, and we shall be excising joints which in a considerable number of cases may recover under conservative treatment, some with useful movement. If we excise in a later period we encounter a considerable death-rate, a high amputation rate, and uncertainty as to the final utility of the limb in the remaining cases.

III. Amputation.

The third course available when the primary conservative operation fails is amputation. I have heard amputation deliberately advocated as the correct immediate treatment if there is good proof that the sepsis has not been controlled by the primary intervention, mainly on the ground that our chief business is the saving of the patient's life, and that early amputation would be attended by a very low rate of mortality.

No one would dispute that early amputation would have a low death-rate, but such a course is repugnant to the patient and to the surgeon, and many limbs would be sacrificed which are now saved. Even though the knee be ankylosed or the limb shortened considerably, there is no comparison between the disability of the man with an artificial leg and that of one who retains his own, rigid though it be. For the sake of the individual whose earning capacity and whose enjoyment of the amenities of life will be seriously diminished, as well as for the sake of the State, we must spare the limb when we dare. But the onus falls on us of deciding in each individual case that we have pursued conservatism as far as is reasonably safe. All the convictions as to the advantage of a damaged limb over an artificial one, all the sentiment which makes amputation so repugnant must be kept firmly in hand. It is a sad epitaph for any patient that his surgeon, out of too kind consideration, deferred amputation until it was

too late to save the patient's life. If we are perfectly frank with ourselves, few of us will be able to say that we have not erred in this direction. Reference to the figures will show that amputation followed in 13 cases after failure of excision or arthrectomy, and in 151 other cases not so treated; the total number of amputations was 164, or 19.4 per cent. The percentage of amputations has varied considerably at the different hospitals. The total mortality from all cases has been 72; the percentage is 8.5.

1. Total cases of injury to knee operated on	845
2. With bone injury	438
3. Without bone injury	407
4. Wound excised and closed	322
5. Cases under (4) requiring further operation	82=25.5%
6. Wound excised and packed	336
7. Cases under (6) requiring further operation	128=38.4%
8. Excision of knee	42
9. Arthrectomy, partial or complete	15
10. Excisions or arthrectomies amputated	13=22.8%
11. Deaths after excision or arthrectomy	13=22.8%
12. Amputation without excision	151
13. Deaths under class 12	49=32.4%
14. Total amputations	164=19.4%
15. Total mortality	72= 8.5%

NOTE.—One hospital with a large number of cases was unable to separate the cases under items 4 and 6.

EARLY TREATMENT OF GUNSHOT WOUNDS OF THE KNEE-JOINT.*

BY

TEMPORARY COLONEL H. M. W. GRAY, C.B., A.M.S.

THE splendid results which many of you are achieving make one wish that all knee cases requiring operation could be treated in casualty clearing stations, but during a push this is out of the question, so that a selection must be made of all cases likely to be able to travel to the base without serious risk.

Before going further, I desire to say that in no other class of cases is technique and judgement in early treatment reflected so much in the results obtained. The surgeon who exhibits the greatest care in technique, especially when removing foreign bodies and infected tissue, whether of the soft parts or of the bone, gets the best results. So good are these that, recently, several cases which, in the earlier part of the war, would have been submitted to primary amputation, on account of the extent of the damage to bone, have been sent down the line with every likelihood of having not only a useful limb, but a useful movable joint also. Conservative operations on gunshot wounds of the knee-joint, however, in order to be successful, demand such care that I think they should be handed unreservedly to the surgeon in the unit who has demonstrated special skill in their performance. I venture to lay special stress on this, because many really good surgeons fail to appreciate even what is essential in totally excising the soiled wound in such cases. To this cause I attribute most of the failures.

All wounds of the knee joint should be splinted by the field ambulance units. This is most important, because movement may aggravate infection already present, or introduce infection where none existed, and in both ways prevent successful conservative treatment.

Excision of Wound.

The ultimate object of treatment of these cases is to secure mobility of the joint. Our primary object in the casualty clearing station must, therefore, be to secure asepsis. The surest and quickest way of doing this is to excise completely, if possible *en masse*, all tissue which is definitely or probably infected. This having been done, the wound remaining can be treated on aseptic principles. This, of course, entails the exclusion of all instruments, gloves, towels, etc., which may have come in contact with infected parts. A large percentage of these wounds are sutured, and heal by first intention. A suitable plastic operation may have to be done. In most cases it is advisable to provide drainage "down to but not into" the joint cavity or bone fragments.

* Paper read at a meeting of medical officers of an army in the field.

Although, in many cases, the wounds cannot be closed, yet it is usually possible to suture the synovial membrane of the front of the joint, especially if the suprapatellar pouch is loosened from its upper and anterior connexions by finger or curved scissors, and pulled down. This point is of very great importance.

Fixation.

Fixation of the joint is essential to success in all but the simplest wounds. We have found that the best method of ensuring this is to put up the limb in a "Thomas splint outfit," just as in cases of fracture of the femur, with the exception that the extension strips are applied with the object merely of keeping the Thomas splint in position. No traction is necessary. If a back splint only is used, it must reach from the *tuber ischii* to the ankle. Shorter splints are worse than useless. The splint can be prevented from slipping by fixing each end to the skin with strips of sticking plaster. The upper strip should not encircle the limb.

Foreign Bodies.

Removal of a foreign body, lodged within or near the joint and not visible or palpable from the surface, should never be attempted without *x*-ray localization when that is available. Otherwise, probably more harm than good will be done by interference. If *x* rays are not available, these cases should be transferred without delay to a unit which is provided with an installation. Of course, if the foreign body can be seen or felt, or if synovitis is already very marked, the sooner operation is done the better.

Selection of Cases.

During severe fighting the selection of cases for operation at a casualty clearing station seems to me to depend chiefly on the size and position of the wounds, especially of entrance wounds; on the size and character of the missile, especially if lodgement has occurred, and on whether it is visible or palpable; on the size of the wound in the synovial membrane, and on whether it communicates freely with the surface wound, so that infection will occur easily; on the amount and character of comminution of bone; on the presence or absence of injury to large vessels; on whether intra-articular tension is present or absent; and, finally, on whether definite sepsis has developed or not.

Cases for Transfer to Base.

Hence, if the wound of entrance is small, especially if due to an undistorted rifle bullet, if there is no external evidence of a foreign body, if there is no comminution of bone or injury to large vessels, if there is not painful tension, and if there is no inflammation, the patient may be sent on to the base, after thorough disinfection of the skin, suitable dressing of the superficial wounds and fixation of the limb, the knee being slightly flexed, in a splint of proper length. There is no need to use the "Thomas outfit" except in serious cases, but those in which penetration of the synovial cavity is even merely suspected should be fixed in a splint.

It may be noted here that an "open" wound of the back of the joint is usually less serious than a similar one on the anterior aspect, possibly because, in the latter, sepsis is more likely to gain access during transport.

Cases for Retention at Casualty Clearing Stations.

If the superficial wound is large—even, for example, like that caused by a shrapnel ball, and especially if it communicates freely with the synovial cavity—if there is a visible or palpable foreign body which has opened the joint, if there is much comminution of bone, if there is a haematoma in the popliteal space or haemorrhage from a wound there, if there is undoubted inflammation, the case should be kept at the casualty clearing station.

On admission, the limb should be dressed, fixed in a suitable splint, and, if *x*-ray localization is required, the patient should be sent to the radiologist, who should take two skiagrams, one antero-posterior (toes pointing straight forward) and one lateral, on the same plate if possible. This method is probably the quickest and best in the circumstances. The patient is then sent to the pre-operation ward. The splint should not be removed till the patient has been anaesthetized. The strapping of the splint permits examination of the wound without moving the knee.

Operative Treatment.

I think it will be simplest, in dealing with operative treatment, to discuss the worst cases first.

Amputation.—If the injury has implicated the main vessels so that the foot is already cold and dead, amputation should be done—just above the knee if the wound is likely to remain fairly clean, and through the knee if sepsis is present and the condyles are undamaged. In the latter class of cases reamputation is frequently necessary, and when the condyles are left it can be done so as to provide the longest possible thigh stump. If, as sometimes happens, one or other popliteal nerve is shot away so extensively that it cannot be sutured later on, and if the bones are much soiled as well as comminuted, the probability is that primary amputation is the best course. If sepsis is well established in presence of much comminution, especially if there be gas gangrene, and the patient in low condition from haemorrhage or toxic absorption, amputation must be done.

Resection.—If, in less severe cases, the opposing ends of the long bones are so comminuted that smooth articular surfaces are not available, it is probably best to do primary resection in the way recommended by Colonel Fullerton.

Conservative Treatment of Fracture Cases.—If large fragments have resulted from the injury, if the patient has been got early and is in good condition, and if one is fairly sure of getting away infective material, the case should be given a chance.

Removal of Patella.—As a general rule, if the patella alone has been shattered, as happens fairly frequently, the fragments should be removed.

If possible, the synovial cavity should be closed, except for a small drainage opening, by suturing the lateral edges and aponeuroses, possibly after undercutting the synovial membrane on each side, or by loosening the suprapatellar pouch as already described. If this cannot be done, a "salt pack" should be used in the way described later. The same procedure should be carried out if concomitant injury to other bones is not extensive. It is wonderful how the infection tends to remain limited to the anterior part of the joint if the limb is thoroughly immobilized—plus a flat pad in the popliteal space.

In considering the question of amputation, these points are of great importance: the possibility of removing or neutralizing infective material successfully, the amount and kind of comminution, the concomitant injury to vessels or nerves, and the condition of the patient.

Conservative Treatment.

When conservative measures are decided upon, the following are the most important operative details:

1. Determination of the track which leads to the depth. The knee may have been bent when the patient was wounded, so that when the limb is straight the track is distorted. Excision of the track is best made when the knee is held in the same position as when injured.

2. Thorough disinfection of skin and track. The whole of the skin around the knee, and for at least six inches above and below, should be shaved and disinfected. For final disinfection I prefer picric acid (3 to 5 per cent.) in spirit. The external wound and track are disinfected (a) if not very large, by the actual cautery, or (b) by rubbing thoroughly every part with 10 per cent. iodine or picric acid in spirit. The strong solution has the effect of drying the tissues.

3. Careful and complete excision of external wound and track, including the edges of the wound in the synovial membrane, if possible in one piece. Incision, using a sharp scalpel, must be made quite clear of the deep as well as clear of the superficial wound. Pockets must not be cut into. Clipping infected tissue away piecemeal courts disaster. As the blades of the scissors are closed, infective material from their proximal parts is forced along to the distal. The least little bit of infected tissue left behind may prevent success.

4. Provision of ample access to foreign bodies or comminuted surfaces in the joint. Blind groping with the finger is to be avoided, because the foreign body or infective material is thus frequently pushed beyond easy reach, and further struggles in attempts at removal end in disaster. Incisions must be chosen, therefore, which give easiest access, and they must be free enough, even to the extent of dividing the ligamentum patellae and turning up a flap, etc.,

to enable one to see the foreign body, and obtain plenty of room for manipulation of instruments. If complete excision of the infected wound has been made under proper technique, one should be able to get first intention after suturing, however large the wounds may be.

5. Careful removal, under direct vision whenever feasible, of all foreign material, whether free in the joint or embedded in the articular surfaces. If the latter, the bone surrounding the foreign body must be carefully chiselled or gouged away, *en masse* if possible. The joint cavity is then flushed out with 5 per cent. saline, flavine solution, etc.

6. Closure of the wound in layers, using fine catgut for the synovial membrane. Drainage tubing should not project into the joint. Of course, if tubes are required for the introduction of fluid, as in the Carrel Dakin method, they should be carried to the deepest recesses of the joint, or inserted through a fresh incision. They should be removed as soon as possible.

7. If the wound in the synovial membrane cannot be closed, a small "salt pack," separate from any other which may be required for the rest of the wound, should be inserted firmly "down to but not into" the joint, and should be left until it is absolutely loose. A small tube may be placed in the centre of the pack, reaching to the synovial membrane, and it may be removed in a couple of days. If attempts are made to pull the pack away, adhesious shutting off the main cavity of the joint are likely to be broken down, and infection is then liable to occur.

8. Tendinous or ligamentous structures exposed during operation should be covered by skin and subcutaneous tissue, otherwise they are very apt to slough, and this postpones closure of the wound, and therefore prolongs convalescence.

9. If there is much effusion into or from the joint, of whatever nature, or if raw surfaces, whether of bone or soft tissue, are left in the joint, at the end of operation, a tube should always be inserted "down to but not into" the synovial cavity. Pressure of effusion—that is, tension—must be avoided at all costs, because it interferes with healthy circulation in and absorption by the synovial membrane, and these are essential to successful combating of any infection which may have been overlooked.

10. The injection of ether, formalin-glycerin, or hypertonic (5 per cent.) saline solution into closed joints, is of doubtful value. They are all irritants. Success is claimed for all three, although their actions are different. The common factor in their application is preliminary aspiration of the joint. This removal of tension is possibly the explanation of their apparently beneficial action. It is possible, however, that the injection of or washing out by a non-poisonous, non-irritating antiseptic like flavine, whose antiseptic action is enhanced by mixture of the substance with body fluids, may be of great value in many cases.

11. The paramount importance of obtaining x-ray skiagrams has already been indicated.

Haemarthrosis with Small External Wound.

I should like to discuss just one other type of injury, that which produces haemarthrosis in presence of small through-and-through wounds, and where only slight damage to soft tissues or bone is present. If the effusion cannot be aspirated, owing to the fact that firm clotting has occurred, I believe that best results will be obtained by deliberately opening the joint, by free incision on one or both sides, washing out the clot with sterile salt or flavine solution, and stitching up again without drainage. If the wounds are very small, one need do no more than sterilize them superficially. Such a blood clot, after a few days, forms excellent pabulum for the growth of organisms, and, even though it does not become infected, it is often the cause of much distress and disability in later stages, owing to formation of intra-articular adhesions. Officers at base hospitals in France appreciate the disastrous results of insidious infection in such cases. Hospitals in England have beds occupied unnecessarily long, even by non-infected cases, because, owing to the adhesions, they require skilled massage and so forth. Arthrotomy in this type must not be undertaken lightly. Technique must be perfect, else dreadful disaster is incurred.

Retention of Cases after Operation.

Operated cases should be retained for at least twenty-four to forty-eight hours. Firm compression under a very thick layer of cotton-wool and fixation in the "Thomas outfit" should be employed. I believe that a pad of wool in the popliteal space, tapering to each end, tends to prevent suppurative tracking from the back of the joint. If the joint looks quiet at the end of twenty-four to forty-eight hours, and the general condition is good, the case may be evacuated.

While the "ham" splint of the outfit is best for transport and for cases in which the wounds are in front of the joint, yet if there is a large wound on the posterior aspect, the thigh and leg should be suspended on separate slings of perforated zinc, well padded and covered with jaconet, so that access to the wound is provided without running risk of moving the joint.

Gentle passive movement, to a few degrees at first, should be begun as soon as one is certain that the parts are healing aseptically.

Sepsis.

If sepsis develops, all wounds should be opened up freely, possibly bilateral openings should be made, and the synovial cavity treated by intermittent flushing with Dakin's solution, or, which may prove to be better, with flavine solution. If improvement does not occur within twenty-four to forty-eight hours, a transverse or flap incision should be made, followed by resection, as Colonel Fullerton has advised, or, after free division of the lateral and cruciate ligaments, by packing and fixing the joint in flexion in Hepburn's aluminium splint. If the articular surfaces of the bones have been injured, the former method is preferable.

In conclusion, I would urge again the importance of rigid technique, and the necessity for thorough and complete operation. Half measures are worse than useless. "All or nothing" is a sound watchword. If the fulfilment of these principles is not possible, far rather fix their limbs properly, and send all patients on for treatment at the base.

RESULTS OF SIXTY CONSECUTIVE CASES OF WOUNDS OF THE KNEE-JOINT.

BY

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In the eighteen months from July 1st, 1915, to December 31st, 1916, I have received into my wards sixty cases of penetrating wounds of the knee-joint in an unoperated condition. The greater part of these were from the Verdun fighting in 1916. I exclude from analysis cases which had been opened and drained at a clearing hospital, and also a certain number which got well with no further treatment than immobilization, and in which actual penetration of the joint was not certain. Apart from these exceptions, I have included all penetrating wounds of the knee which I have treated since the opening of the hospital. They were, as a rule, received in from twenty-four to forty-eight hours of being wounded.

Classification.

The cases naturally fall into the following classes:

- A. No bony injury, and no projectile included.
- B. No bony injury, but projectile included.
- C. Bony injury, no projectile included.
- D. Bony injury, with inclusion of projectile.
- E. Bony injury of the lower limb of such gravity that involvement of the joint is only of secondary importance, no functional result being possible. Here the saving of life and, if possible, of the limb as well, is the only consideration.

As regards the probable final result, the presence or absence of a bony injury is the chief deciding factor. In classes A and B, given an aseptic result, which should be obtainable if the wound is a recent one, a good movable knee is nearly always to be hoped for. In classes C and D the result will vary from complete mobility to complete stiffness, according to the nature of the bony injury—again

always provided that treatment has resulted in the abortion of infection. Where there is serious bony injury, even partial mobility means an uninfected joint cavity.

Classes A and C differ, however, from B and D in that in the former operative interference should be avoided if possible, and if undertaken should in the first instance be limited to measures directed to cleaning the track; it is far better to leave the joint cavity alone if there is any reasonable probability of its being uninfected.

In classes B and D operation for the removal of the foreign body is necessary in the majority of cases. If, however, having traversed the joint, it is found to be extra-articular, and at the same time is small and not obviously the seat of infection, it is far better to be content with immobilization and dressings till all reaction has subsided. The projectile can then be removed aseptically at a later date.

Methods.

I have attached the greatest importance to immobilization—the most complete that it is possible to obtain. Any form of splint which rests upon the bed does not satisfy this requirement, as, however perfectly it may be fixed to the limb, any shocks or jars of the bed or its neighbourhood are communicated to the leg, while voluntary movements of the patient or necessary nursing attentions must cause at any rate some disturbance to the injured part.

In all cases of penetrating wounds of the knee-joint I have slung the whole limb from a rigid frame attached to

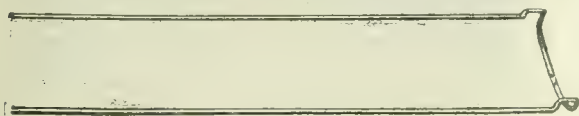


Fig. 1.—Blake fracture splint.

the bed. The apparatus I have employed is the form of bar splint used by Mr. Blake at the American Ambulance, Neuilly, Paris, which consists of two parallel bars of iron 9 mm. in diameter, free at the lower end, and connected at the upper end by a U piece set at an angle which fits the posterior aspect of the thigh at the level of the tuber ischii.



Fig. 2.—Footpiece as used for traction. For knee cases wood piece is screwed on.

The whole is bent out of one iron rod, and I have them made locally by a blacksmith at a cost of 3 francs. This splint is cheaper to make, easier to apply and to sling, and more comfortable in use than the Thomas knee splint. When using this splint for wounds of the knee I fit a sliding footpiece (Fig. 2) to which the foot is fastened by adhesive strapping at the time of operation. Above this I have three semicylindrical sections of thin aluminium sheeting, hinging on the inner bar and clipping on the outer one. The upper one supports the thigh, the lower one the calf and ankle, and the middle one, when unclipped, exposes the posterior aspect of the knee, and allows the most extensive dressings to be done without the slightest disturbance to the limb. The aluminium sections give a rigid support far superior to bands of flannel or canvas

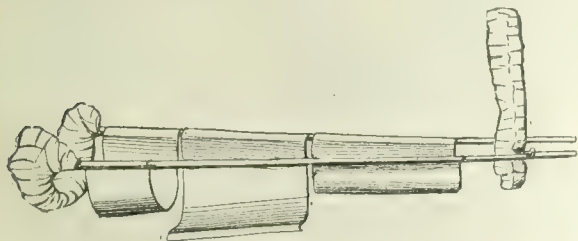


Fig. 3.—Splint arranged for wound of knee-joint.

they are easily cleaned and sterilized, and they form no obstacle to x-ray examinations in the splint. The whole splint is slung by two weights running over pulleys, the upper one of about 4 lb., the lower one of about 8 lb. Those in the illustration (Fig. 4) are 75 mm. shell cases, which, used empty for the former and filled with metal fragments for the latter, give the exact weight required. The upper weight keeps the U piece constantly on the tuber ischii, and allows the splint to follow every movement of the

patient's body, as when he goes on the bedpan. The lower is adjusted so that the foot of the splint will stay in any position in which it is put, and makes it an easy matter to raise or lower it for dressings. I have several times been astonished at the way in which a case which was doing badly on a fixed splint immediately started to improve when slung in this way.

In operating, the wound is regarded as consisting of two distinct portions—the extra-articular, where infection is

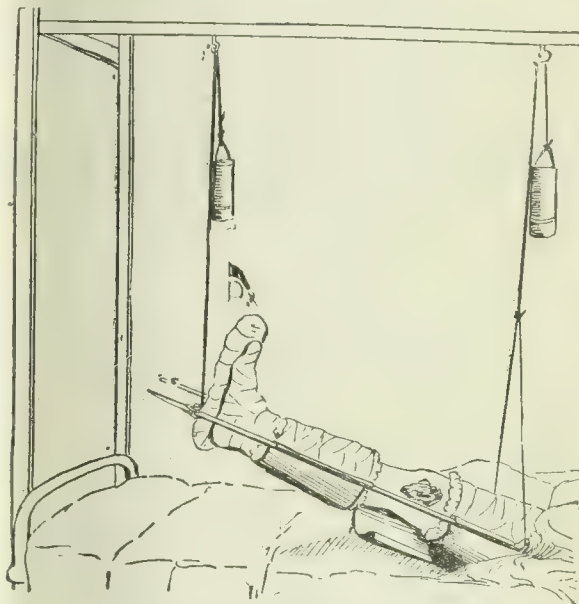


Fig. 4.—Splint in use; showing manner in which the splint is slung.

parried and repair instituted by the establishment of granulations; and the articular, where infection is combated by the action of the synovial membrane and its secretion, and where the establishment of granulations, though possibly beneficial in other ways, means impairment or loss of function in the joint as such. The extra-articular wound is accordingly cleaned and drained, the articulation is cleaned, closed, and allowed to fight its own battle. Drainage means throwing the two parts into one, with a likelihood of the same process being established in



Fig. 5.—Splint in use; showing ease with which wound may be dressed.

both. The synovial membrane has a surprising power of combating infection, especially, it appears, infection by gas-forming organisms. But to give it a fair chance it must be spared all avoidable injury:

1. Extensive incisions, retracting or holding the edges with clips to see into the joint.
2. Lengthy exposure.
3. Bleeding, and the consequent swabbing of the synovial surface.
4. Application of artery forceps.

These sources of damage are all reduced to a minimum if a tourniquet is applied in every case and x-ray localization is carefully done.

5. Leaving foreign bodies in contact with it—drainage tubes or accidentally included foreign matter.

6. The use of antiseptics.

In operations for the removal of foreign bodies included in the joint the procedure has been as follows:

1. The track is excised as far as the capsule with knife or scissors, only bruised or soiled tissues being cut away. The wound is then swabbed out with 5 per cent. iodine in spirit.

2. With a fresh set of instruments the joint is now opened, blood clot shelled out, and the projectile, together with bits of cloth and loose bone fragments, removed. If the projectile is far from the entry wound, it often saves injurious handling, after excising the track, to enter the joint through a fresh incision, which may later be sutured completely, being presumably clean.

3. The joint is irrigated with about two pints of 5 per cent. saline to wash out blood, cloth, and bacteria.

4. The wound in the synovial membrane is approximated with sutures. The track, if large, may be closed somewhat, the object being to leave it a funnel shape, with its apex at the wound in the synovial membrane and its widest part at the surface. It is loosely packed with gauze soaked in 5 per cent. saline.

5. 10 c.cm. ether is injected into the joint with a needle and syringe at some other part.

6. The limb is wrapped in cellulose tissue, an excellent absorbing medium, fixed in the sectional splint, and slung while the patient is still under the anaesthetic.

Afterwards, the outer cellulose dressings are changed daily and the plug moistened with saline. In four or five days it slips out easily, and may be replaced by a small wick. Fluid always fills the joint for the first few days, but does not often require aspirating.

I have always left the joint undrained as long as possible, as a drained joint nearly always means a stiff joint. Once it is certain that the resistance of the synovial membrane to infection has been overcome, I open the joint by an incision above the patella, and a lateral incision each side as far back as possible. Rubber tubes split longitudinally—not holed, for a holed tube is soon anchored down by granulation buttons and completely blocks drainage—are inserted from the upper opening to each lateral one, passing through the joint. Good drainage is now a prior consideration to avoidance of injury to the synovial membrane. A few drops of saline are run down these tubes each day, but beyond this nothing is done. The knee-joint is too complex a cavity to offer any hope that syringing or continuous irrigation will in any sense wash it through; the only effect of these measures is to set up eddies which wash infection into places which it perhaps has not yet reached, and to start tracking along muscle planes. It is safer to ensure that such flow as there is in an outward direction; this is done by free openings and really complete immobilization.

Resistance of the Knee-joint to Gas Infection.

Two cases were remarkable in that in each instance wounds of the thigh muscles and the knee-joint, occurring in the same leg and caused by the same projectile, gave rise in the muscular tissues to a virulent gas infection and in the joint only to a serous reaction. Another case arrived twenty-four hours after being wounded with several bits of bomb in the outer side of the right lower limb. Those in the leg and thigh showed a local gas infection. One piece had penetrated the external lateral ligament and was projecting into the joint, which was tightly distended with gas. The projectile was extracted by the entry wound. On the experience of former cases, the joint was not drained, but the gas and fluid were drawn off with a trocar and cannula. A tube and funnel were then joined to the cannula, the joint repeatedly washed out with saline, and ether injected. Recovery was without incident, and on evacuation to the interior the man was walking with an almost complete range of movements, which would certainly become perfect with massage.

Results.

Clean movable joints	...	...	33
Clean joints with limited mobility	...	...	5
Stiff limbs	...	...	17
Amputations	...	...	3
Deaths	...	...	2

Three of the 60 cases belong to Class E. Their discussion does not come under joint surgery, but I have included them so as to make the series a complete one of every fresh case treated in which the knee-joint was involved. Omitting these, there are one death and two

amputations in 57 cases. The death occurred on the eighth day from an acute dysentery. The knee-joint was not only clinically clean, but *post mortem* contained only serous fluid.

Of the amputations, in one there were multiple wounds of the left lower limb. On arrival there was a cellulitis extending from the ankle to the middle of the thigh. A large bit of shell had chipped the external condyle and head of the tibia, and there was pus in the joint. Four-hourly fomentations were applied to the whole limb for a week, rendering real immobilization impossible.

In the other case I blame myself for not having discovered at an earlier date that the joint was infected. There were small wounds all over the front of the right thigh which revealed nothing to the x rays. After fifteen days I operated and found a track containing mud and gravel leading into the suprapatellar pouch, and a mild infection of the joint. His low condition made amputation advisable six weeks later.

From the point of view of the classification given above the results are:

Class A (10 cases):

Clean movable joints	...	...	...	6
Limited mobility	...	...	...	1
Stiff limbs	...	...	...	2
Amputation	...	...	...	1

Class B (19 cases):

Clean movable joints	...	...	...	15
Limited mobility	...	...	...	2
Stiff limbs	...	...	...	2

Class C (7 cases):

Clean movable joints	...	...	...	3
Stiff limbs	...	...	...	4

Class D (21 cases):

Clean movable joints	...	...	...	9
Limited mobility	...	...	...	2
Stiff limbs	...	...	...	8
Amputation	...	...	...	1
Death	...	...	...	1

Class E (3 cases):

Stiff limb	...	...	...	1
Amputation	...	...	...	1
Death	...	...	...	1

Owing to consideration of space, the summary of cases accompanying this article has been omitted. The illustrations are the work of Orderly E. D. Wookey, to whom the author wishes to express his thanks.

REFERENCE.

¹ Colonel H. M. W. Gray: Treatment of Gunshot Wounds of the knee-joint, BRITISH MEDICAL JOURNAL, July 10th, 1915, p. 41.

THE TREATMENT OF GUNSHOT WOUNDS OF THE KNEE-JOINT.

WITH AN ANALYSIS OF SEVENTY CASES.

BY

CAPTAIN C. MAX PAGE, M.S., F.R.C.S., R.A.M.C.(S.R.).

THE outcome of wounds of the knee-joint during the present war has, on the whole, been a source of surprise and satisfaction.

The extent of the articulation makes any general infection of it the source of profound toxæmia, and its anatomical complexity renders surgical treatment, when necessary, difficult.

For these reasons civil experience has led to a profound distrust of the ability of this particular joint to deal with infective processes. This attitude was, it appears, based on an experience of the comparatively exceptional cases in which general infection had taken place in a practically closed joint. Intensive practice under war conditions, however, has shown that when rational measures are adopted at an early period, infection of the knee and other joints can in the presence of an open wound become limited and be dealt with by the natural defences in a remarkable way.

Nevertheless, for reasons not always avoidable, general infection of the joint does occur in a certain proportion of cases—in this series, 37.7 per cent.—and the results collected for one base over five months show that we have by no means arrived at a generally satisfactory method of

treatment, for of 845 cases the amputation incidence was 19.4 per cent. and the mortality 8.5 per cent.

While views essentially common have been established on the ideal primary procedure, which aims at the relative eradication of infection, it must be admitted that as to the treatment of established infection of the joint opinions are somewhat divergent. This is not surprising when the complexity of the factors governing treatment and the difficulties of establishing the relative merit of different procedures by crucial experiments is considered. Further, in the publications on the subject there has been a lack of detailed data which would assist in the formation of a judgement. I have therefore thought it worth while to define the factors which appear to me to influence success, to tabulate a series of cases treated consecutively on consistent lines, and to analyse the results obtained.

The cases were treated at a base hospital in France, consequently the experience is limited to a definite period and no valent opinion on the end functional results can generally be formed.

The series of 70 cases was consecutive; they were treated over a period of some seven months, and only cases submitted to operation have been included. Thus all cases with clean perforating wounds remaining clean which came under observation during the period are omitted. Cases in which amputation was carried out within twenty-four hours of admission on account of gas infection or gross injury to bone, main vessels or nerves, have also been excluded (9 cases). In a fair proportion of the cases the first operation had been carried out at a casualty clearing station. When this is the case it is noted in the general table.

The following statement gives a general outline of the cases and the results of treatment:

TABLE I.

Total number of cases	...	70
Cases of articular bone injury	...	59 = 88.8 %
Cases in which the missile lodged	...	51 = 72.8 %
Cases recovering without obvious infection of joint	...	45 = 64.2 %
Amputations	...	10 = 14.2 %
Deaths after amputation	...	4 = 5.7 %
Total deaths	...	5 = 7.1 %

CLASSIFICATION OF CASES.

For the purpose of considering the treatment and prognosis, these cases may be divided in the first instance into two main groups, namely: Group I, Wounds caused by a rifle bullet travelling at high velocity; and Group II, Wounds caused by shell fragments and distorted bullets. All joint injuries may be further subdivided from an anatomical standpoint into two classes, namely:

Class A. Those in which the injury is purely synovial.
Class B. Those in which articular bone injury is also present; it is convenient to classify three types of such injury, namely:

1. Gross comminution of an epiphysis or the patella.
2. Fissuring of an articular bone—local or extending from the diaphysis.
3. "Punch" fractures in the cancellous bone of the diaphysis.

Clinically, in the later stages the number of classifications is duplicated by considering as separate types those cases in which general arthritis does or does not develop. Further subdivisions in accordance with the degree or nature of the infection, the retention or not of the missile, seem at present unnecessary complications.

THEORETICAL BASIS OF TREATMENT.

In the stage under consideration here infection of the joint is the principal danger, and the orthopaedic results, important as they are, must be regarded as a secondary consideration.

Though cases occur (eight instances in this series) in which a small missile remains in or about a joint without inducing general arthritis, from general experience it will be granted that all wounds in which a missile of any size lodges are in some degree infected. Infection is also usually present in cases of perforation by shell fragments. It is of interest to note that in nineteen of twenty-five cases of general suppurative arthritis in this series the missile was retained; in four of the remaining cases the wound was caused by shell fragments. Only in typical rifle bullet wounds does experience justify the assumption that,

on the average, whatever the anatomical injury no serious infection of the wound track has been effected. In practice the conservative treatment by fixation and simple dressing of these latter cases (Group I) leads on the whole to good results. This is not to deny that if a radical operation had been performed the result might have been equally successful, but practical considerations make exclusion of the necessity for operation desirable.

In Group II suppression of the primary infection is sometimes effected by the natural mechanisms of defence, but more commonly local infection, and often general infection of the joint cavity ensue. In the cases of local infection the synovia behaves much like the peritoneum—for example, a track freely open into the joint may often be grossly infected and yet the outlying parts of the joint and the effusion are sterile, the joint cavity being filled with a clot ("lymph") containing cells having a defensive function (some interesting observations on the prognostic value of a differential examination of these exudates have been published by Captain Barlow¹); in such cases, if the reaction of the tissues around the wound has not been unduly prejudiced by the initial injury and the infection is not of unusual virulence, recovery may be completed without general suppurative arthritis, intra-articular adhesions being formed.

However, experience has shown that if, as a routine, expectant treatment be adopted in these cases, a general arthritis, calling perhaps for amputation, too frequently follows. We are therefore forced to attempt, at a period before extension of infection has taken place, to remove in as complete a way as possible the primary infective focus and any surrounding devitalized tissues. In practice this involves excision or erosion of the wound track and the removal of any missile which may have lodged; if the bone injury is such that subsequent ankylosis of the joint is assured, a primary excision is justified.

To judge by the results in this series an operation based on these lines can be performed with success up to two or even more days after the injury, but there can be little room for doubt that the failures would be reduced if such operations were thoroughly carried out within twenty-four hours following injury, and never later.

In view of the impossibility of deciding the degree of infection present by clinical examination at the stage under consideration, I think that all cases coming under Group II should be treated, as above suggested, by a primary radical operation.

As a further means of combating infection, repeated evacuation of the joint and its injection with various antiseptics has been widely advocated; aspiration is useful at certain stages for the purposes of bacteriological investigation or for the relief of exceptional intra-articular tension, but the removal of the defensive exudate as a routine and at regular intervals seems as unreasonable as to rub away the lymph and wash out the serous exudate in an early case of peritonitis—a procedure now generally recognized as harmful. The injection of any of the antiseptics in common use into the joint cavity seems to be an equally illogical procedure, calculated to do more harm than good to the natural defensive mechanism. In this series aspiration has only been used for exploratory purposes, and in no case has any form of antiseptic been injected into the uninjured part of the joint cavity.

Thorough fixation of the injured joint in the critical period during which infection may spread is, I think, of great importance. There is no evidence which justifies us in casting on one side a procedure aiming at the provision of complete rest for the injured part, in view of its success in kindred conditions.

Established Infection of the Joint.

In established infection of the joint, especially when due to the streptococcus, the results of treatment are often disappointing. When the complication of severe bone injury is present, immediate amputation is often the only course if life is to be saved. The majority of cases offer, however, ground for more conservative measures, and many different procedures have been advocated. Tube drainage of the joint on classical lines has not proved a success; the same may be said of methods of continuous drainage; of the Carrel treatment I have not sufficient experience to be able to form an opinion.

The exposure of the whole joint surface by means of a transverse section and fixation in full flexion still has its

advocates. Four cases in this series were so treated, with poor results. It appears that the gross disturbance of the natural relationships involved prejudices the defence in really severe cases; when the method is successful one cannot help thinking that the infection would have been equally well dealt with if less drastic measures had been adopted. Colonel Fullerton, A.M.S.,² has lately suggested formal excision of the joint at this stage. The results he quotes do not, however, afford conclusive evidence of the value of the method; in accordance with general surgical principles an operation involving such an extensive exposure of new surfaces in the presence of progressive infection seems unsound. In this series no cases were treated by the method, as it had given poor results in my hands in earlier experience. I have recently had the opportunity of seeing the end results of some cases so treated, and from an orthopaedic standpoint they left much to be desired. It should be remembered that a fair proportion of cases of severe general infection of the joint treated on conservative lines recover a useful range of movement, and anything like a routine employment of excision in the treatment of arthritis is to be deplored.

Recovery in these cases is essentially due to the activity of the natural mechanism of defence, and it is the business of the surgeon to assist these mechanisms and not to lay further burdens on them. Complete fixation is the first and essential step in this direction; in my experience this can best be effected by the use of plaster-of-Paris. In the early stages the application of heat to the joint area is a sound measure; it may abort suppuration and in some cases assists the defence. Operative measures should, I think, be limited to those imposed by the direct indications of the accumulation of fluid under tension. If a bacteriological examination of the joint exudate (not of the wound discharge) shows the presence of streptococci, early incision is indicated, as this infection spreads rapidly beyond the confines of the joint capsule into the cellular planes, leading to intense toxæmia. After lateral arthrotomy a watchful attitude is maintained, the commonly occurring popliteal abscess and any other residual formations being dealt with as they are diagnosed. Further to assist the defence in these conditions, artificial immunization may be employed. This procedure was carried out in some cases in this series. It is always a difficult matter to appraise the value of such methods, but my impression is that they have often been the factor determining the success of conservative measures; in no case have they been harmful in their action. Captain W. E. M. Armstrong, R.A.M.C., was responsible for this form of treatment, and I append a note he has given me on the subject of immunization in septic wounds in general.

Note on Immunization Procedures Applicable to Septic Wounds.

The difficulties connected with the immunization of wounded patients are: The number of different organisms present, the difficulty of working in harmony with the surgeon, and the often very exhausted state of the patient.

Practically I have tried to meet these difficulties in the following manner:

1. The organisms present in wounds are usually streptococcus, staphylococcus, and members of the coliform group. The coliforms may perhaps be regarded as comparatively harmless, while the staphylococcus usually tends to localize and so is amenable to surgical methods of extirpation. The streptococcus is, however, very different, and as regards radical extirpation may be almost as troublesome as the tubercle bacillus itself. My efforts have, therefore, been almost entirely directed against the streptococcus.

2. The difficulty of working in harmony with the surgeon is very great. His proceedings in the dressing of wounds and removing foreign and dead material result in the patient receiving a series of autoinoculations which, being unstandardized and ill-timed, play havoc with an immunity mechanism which is already in a very hyper-sensitive state. On the other hand, the surgeon can be most helpful by his devices for immobilizing the affected parts. That this is one of the best methods of immunizing a patient has been abundantly shown by the excellent results obtained by the use of plaster-of-Paris. In fact, careful immobilization is often all that is required, and

inoculation methods have only been used when the fixation method fails, or is too slow in its results to save the patient.

3. The third difficulty is, I believe, a very real one. Many of the patients are so exhausted as to be incapable of that vital response which is necessary for effective vaccine treatment. I have tried to grapple with this difficulty by using passive methods of immunization. Actual treatment has been carried out by means of vaccines and Spengler's immune-body solutions. I seldom make autogenous vaccines. There is usually no time to do this, and even if there were, I prefer in a dangerous case to use a vaccine whose potency I know to one whose power can only be determined by trial trips on a patient who is too ill to be experimented upon. I use St. Mary's Hospital streptococcus vaccine, and I follow fairly closely the teaching of Wright. I have never produced in any patient a negative phase clinically recognizable, and I never give a second dose until I am quite sure that the first has exhausted its utility.

I have often obtained rather striking results, both general and specific, with Spengler's solutions. They can if necessary be used concurrently with vaccines.

The results obtained have already been stated by Captain Page. As implied above, I have only treated cases in which enlightened surgical methods have either failed or threatened to fail. Since crucial experiments are well-nigh impossible, one cannot speak in terms of absolute certainty. Nevertheless, I have little doubt that a few lives have been saved and a few limbs preserved by making use of knowledge of immunity phenomena to tip the balance in the patient's favour.

PRACTICAL PROCEDURE ADOPTED.

Prophylactic.

By prophylactic treatment is meant treatment before general infection of the joint has taken place, and ideally within twenty-four hours of the infliction of the injury.

In the case of injuries coming under Group I (typical rifle bullet perforations), no operation is undertaken. The joint is fixed on a back splint, or in plaster in a position of slight flexion at the knee and with the foot lying comfortably. The wounds are not excised, and are covered by a simple dressing. The fifteen cases so treated during the period of these observations have not been included in the tabulated cases with the exception of two, the only instances of this group in which general infection of the joint ensued. When painful intra-articular tension is present, the joint is aspirated once and evacuated as completely as possible. In such cases the primary exudate contains much blood; secondary serous exudates are not removed.

All cases in Group II (injury by irregular missiles) which came under observation within two, or sometimes more, days of the injury are submitted to operation with a view to removal of the infected and damaged area. An x-ray examination in two planes is made whenever possible; it often reveals unsuspected bone injury, and is a sufficient guide to assist in the removal of any foreign body which has lodged.

In cases of Class A (simple synovial injury) of Group II the wound track is completely excised without the removal of much skin, and any retained foreign body is removed. No attempt is made to suture the synovial membrane, but the skin edges are opposed if this can be effected without causing undue tension; when it is not possible the wound is lightly packed with sterile gauze. Any effusion into the joint cavity is usually evacuated during the course of the operation, but no deliberate attempt is made to do this unless the effusion consists mainly of blood.

In cases of Class B (articular bone injury present) of Group II the operative procedure is essentially the same, though the removal of bone in the wound track may present technical difficulties.

1. When gross comminution of the epiphyses is present, and subsequent ankylosis is assured, primary excision of the joint may be the most effectual procedure. Such an operation should only be undertaken within the first two days of injury. Leriche³ presents a strong case for the adoption of this method within the first twenty-four hours. In this series no case was considered to have come under observation early enough to justify the procedure, though excision of the patella was carried out in three cases.

2. When fissuring of the bone is in evidence, any completely detached fragment is removed and all bruised cancellous bone in the wound track is curetted away till a bleeding surface is met with. The bone wound is then packed if it continues to ooze as described below.

3. In the case of "punch" wounds of the cancellous tissue, removal of the whole wound tract can be satisfactorily effected with the curette and gouge. The foreign body is usually retained in these cases, and is dislodged from the end of the wound track. If bleeding from the cancellous bone persists, as it commonly does, after the completion of the bone operation, the bone cavity is firmly packed with dry ribbon gauze, a single wick being brought out along the wound track, and the skin wound closed on either side without tension. Gauze packs of this kind and those applied to more superficial gashes are left untouched for four or five days and then removed. They are sometimes lightly renewed for another day or so, but more often a simple surface dressing is alone applied at this period.

Fixation.

In all cases the joint is kept at rest till healing is in progress and pyrexia has been absent for about a week; gentle active movement is then encouraged. If plaster fixation has been used sufficient play will have developed in ten or fourteen days to admit of this, the splint being kept on altogether for about three weeks. The Thomas's knee splint, though convenient for wound treatment when large wounds in the thigh are present, does not fix the joint satisfactorily, nor is it easy to put the knee up in a position of flexion in this apparatus. A simple back splint is often convenient, but in difficult cases it is not sufficiently controllable, nor does it admit access to the area at

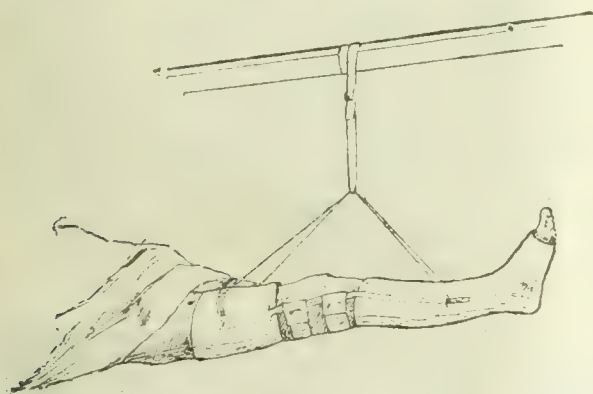


FIG. 1.—Interrupted plaster-of-Paris knee splint. The aluminium (or malleable iron) brackets which form the two lateral interruptions are joined together above by an arch passing in front of the thigh. The support of the back of the joint by fabric slings is also shown.

the back of the joint. An interrupted plaster-of-Paris splint (Fig. 1), in my experience, affords the only satisfactory method of controlling cases of excision, or those in which there is serious injury of the articular surfaces. The two sections are formed by plaster bandages. The upper section should extend to the level of the tuber ischii above, and the lower should include the foot in a comfortable position. The interruptions are formed by two laterally placed aluminium or malleable iron arches. In accordance with the position of the wounds a plaster back or sidepiece can be added. When such cannot be applied, as is common in cases of general infection of the joint, posterior support at the knee-joint level is given by two or three slings passing from arch to arch in the same fashion as in a Thomas's splint. Whatever form of fixation is used the limb can be rested on a pillow, though more freedom is given the patient if it is suspended, and this was usually done in this series.

General Suppurative Arthritis.

In the early stage of some cases the joint is hot and swollen without severe constitutional symptoms. In these circumstances, supposing the primary wound treatment to have been properly carried out, any sutures are removed, rigid fixation is maintained, and hot fomentations are regularly applied to the joint area. Not infrequently the condition will settle under this treatment without suppura-

tion. As soon, however, as a diagnosis of a more severe infection is made from the classical clinical signs or by bacteriological examination, arthrotomy is performed; in general, two vertical parallel lateral incisions are made into the most lateral parts of the subcutaneous pouch; posterior drainage is not attempted. If there is tension about the wound it is enlarged, or sometimes run into one of the lateral incisions. Any loose bone not already removed is taken away but no fresh section of bone is made, nor is excision of the primary wound or of the whole joint practised at this stage for reasons set forth above. At the completion of the operation the arthrotomy incisions are packed with sterile gauze down to, but not materially penetrating into, the joint cavity. These packs are left in for two to three days, or till such time as suppuration renders their removal easy; they are then lightly renewed till the infection is under control. Of secondary abscesses, one in the popliteal space tracking out from the popliteus bursa is most commonly seen. Any such secondary formation is allowed to develop definitely, and is then incised, evacuated, and packed with gauze for a few days. Carrel's method of wound treatment has been adopted in one or two cases only, and so no judgement can be formed, though it would appear that its value is based rather on the primary surgical technique employed than on the later.

Immunization is carried out in the most severe cases in accordance with the methods referred to above by Captain W. E. M. Armstrong.

Amputation may be called for at different stages on account of the rapid advance of the toxæmic symptoms. A circular supracondylar amputation is then aimed at, and is usually possible, unless there is serious extension of cellulitis into the thigh. All viable skin is conserved and the stump cavity is packed at the completion of the operation with plain gauze, which is left in place for four or five days.

ANALYSIS OF RESULTS IN SEVENTY CASES.

For the purposes of this series a successful result is considered to have been obtained when complete control of any infection present, as judged by the healthy condition of the wound and the entire absence of pyrexia, has been obtained. In only a minority of the cases was entire healing of the wound and complete recovery of function in the joint observed.

GROUP I.—Rifle Bullet Perforations.

As stated above, only two cases (34 and 49) of this kind are included in the series:

Case 34.—Comminution of the patella and fissuring of both tibia and femur. Patient developed signs of general streptococcal infection of the joint on the seventh day. The patella was excised. Recovery followed after three secondary incisions for residual abscesses.

Case 49.—Gross comminution of the internal condyle of the femur; entry at level of the joint line; explosive exit 3 in. higher up. Incision and removal of broken bone on fourth day; amputation on fifteenth for progressive toxæmia. Recovery.

GROUP II.—Shell Wounds.

Class A, *Synovial Injury only (11 Cases).*—All but one recovered without general infection of the joint. This case (No. 40) had a single gaping wound, 3 in. by 2 in., in the antero-external aspect of the joint. Death took place on the forty-fifth day from tetanus, four days after amputation had been carried out.

Class B, *Complicated by Bone Injury.*—The following table gives the general results of these cases, 160 in number, in relation to the three types of bone injury recognized.

TABLE II.

Type of Bone Injury.	No. of Cases.	Recovery without Infection.	Recovery after General Infection.	Recovery after Amputation.	Deaths.
1. Gross comminution of the diaphysis or patella	17	4	7	3	3
2. Fissuring of the articular bone	14	10	1	1	2
3. "Punch" wounds or grooves of surface	28	22	4	2	0

Nine cases of this nature were submitted to amputation on admission—that is, in general two to four days after injury, and are not included in the series.

The notable feature of these results is the unsatisfactory course of the cases in which there was gross comminution of the epiphysis. In no case of this type had a formal excision of the joint been carried out within a day or two of the injury, and as the results from the point of view of infection could hardly be worse, and as from an orthopaedic standpoint subsequent fixation of the joint was a necessary sequence whatever the treatment adopted, primary joint excision or erasion might be carried out with greater hopes of success.

The smaller number of cases of Type 2 gave better results though by no means ideal ones.

In case of injuries of Type 3 the recovery incidence was not unsatisfactory, and there are certain points in relation to the six failures which it is of interest to tabulate, as they emphasize the importance of the time factor in these cases.

TABLE III.

Case No.	Nature of Injury.	Days elapsing between Injury and Primary Radical Operation.
1	Foreign body lodged in internal condyle	Five.
34	Groove in external condyle of femur; foreign body retained	Three.
53	Tunnel in tibia; foreign body retained; left side. Other knee also infected	Four.
54	Entry wound in popliteal space; vessels and nerves exposed in wound. Foreign body retained at back of joint denting the bone	One.
38	Three foreign bodies in joint. Tibia and fibula grooved in front of their articulation	Three foreign body left inside; Five (completed).
51	Foreign body retained in external tuberosity of tibia	Four.

It will be seen that in only one of these failures was a primary operation carried out at an earlier period than three days after injury. In that case (No. 54) a radical operation was impossible, owing to the anatomical relations of the wound.

General Infection of the Joint (25 Cases).

The treatment of these was carried out on the lines laid down above except in four instances in which the joint cavity was exposed by a transverse incision and the knee fixed in a position of flexion. One case only recovered with conservation of the limb, two after amputation (in one case necessary after a secondary operation on the forty-third day to reduce the displacement), and one died.

TABLE IV.—General Outcome of Injuries of this Class.

Total number of cases of general arthritis	25
Missile retained	18
Synovial injury only	1
Bone injury:	
Type 1	13
Type 2	4
Type 3	6
Recovered after arthrotomy	13
Recovered after amputation	6
Died	6

The differential results in relation to the three classified types of bone injury are given in Table II, the outstanding fact being the frequency of general joint infection in the presence of gross comminution of the diaphyses or patella. The one case in which the primary injury was limited to the synovia was No. 40, and has already been described under Group II, A. There were three cases (2, 48 and 50), in which, after an operation had been performed at a casualty clearing station on the day of injury, the wound had been completely sewn up. Case 2 recovered; case 48 died, and case 50 recovered after amputation.

These results emphasize the importance of considering the early treatment of those cases in which severe comminution of bone is present. As stated above, it would seem that an excision of the joint undertaken within twenty-four hours of injury would be the method offering the greatest hope of success.

The results of the examples of primary excision of the wound and resuture in the presence of bone injury, without drainage of any kind, especially as the exact

nature of the primary operation is unknown, are too few to dogmatize upon; but I think some drain should be left in these cases for a few days, so that any infection left after the operation may have a better chance of remaining localized.

Amputations.

Amputation was carried out in ten cases, four of which subsequently died. It is generally a difficult matter, in dealing with these injuries, to determine the time at which conservative measures should be cast on one side and the member removed. In the presence of infection, in addition to gross bone injury or serious lesions of the soft parts, the problem is fairly simple. In other instances the degree and progression of toxæmia are usually the determinant factors. That satisfactory results are usually obtained when little or no bone injury is present is shown by the following table:

TABLE V.—Number of Cases of Each Kind of Primary Articular Injury Ultimately Needing Amputation.

Group II.	Nature of Injury.	Amputation.	Deaths after Amputation.
Class A	(No bony injury present)	1	1
Class B	Gross comminution of epiphyses	2	3
Class B 2	Fissure of diaphysis	1	0
Class B 3	"Punch" wounds and grooves of cancellous bone	2	0

The actual conditions for which amputation was performed in this series were:

Septicaemia	...	8
Secondary haemorrhage	...	1
Gangrene after ligature of the popliteal artery	...	1

The septicaemia or toxæmia was in all cases of streptococcal origin; the micro organism was only isolated from the blood in four instances. The cases so treated were Nos. 25 (5), 27 (5), 29 (10), 38 (53), 40 (40), 48 (24), 49 (15), 50 (16), 51 (29), and 56 (60); the figure in brackets after each case number gives the period in days after the injury at which amputation was carried out.

Death took place in cases 25, 29, 40, and 48, and was due to septicaemia in two instances, secondary haemorrhage in one, and tetanus in one.

Deaths.

The fatal cases were six in number—namely, cases 24 (22), 25 (6), 29 (18), 40 (45), 47 (7), and 48 (28); the figures in brackets give the number of days elapsing between the primary injury and death.

Severe bone injury (Type 1) was present in	3
Fissuring of the bone (Type 2)	2
A large exposure of the synovia, with bone injury	1

Four of these cases were submitted to amputation before death. Case 24 had previously had the other leg cut off for haemorrhage and fracture and died a few hours after a secondary haemorrhage from the popliteal artery on the side of the knee injury. In Case 47 the joint had been laid open and the knee put up flexed, and when the measure adopted failed to check the advance of toxæmia, the patient was not in a position to stand further operation.

SUMMARY AND CONCLUSIONS.

In dealing with wounds of the knee-joint the natural defensive powers of the part against infection should be borne in mind. To obtain fair play for the defence should be the aim of surgical procedures adopted. Primary prophylactic (that is, within twenty-four hours of injury) operations should be radical, and secondary operations undertaken on account of progressing infection, should, short of amputation, be planned on conservative lines.

The expectant treatment of wounds of the knee-joint is only justifiable in the case of typical perforating injuries due to a rifle bullet.

All wounds of the joint caused by shell fragments or distorted bullets should be considered as primarily infected.

The primary prophylactic treatment should consist in the removal of any foreign bodies present and in the excision of the whole wound track at the earliest possible

time after injury. Any delay beyond twenty-four hours will entail failure in a certain proportion of the cases.

The results at present are particularly bad in cases in which gross comminution of the diaphyses is present. A primary excision or erosion of the joint (within twenty-four hours) would probably improve the results in such instances by preventing the development of entomyelitis.

Repeated aspiration of the joint and the intra-articular injection of any of the antiseptics in common use are calculated to prejudice the natural defence.

It is safest to leave some drainage along the wound track after operation for a few days, certainly when bone injury is present. Any infection then left may become localized in the same way as occurs in the case of the peritoneum. A gauze wick makes a satisfactory form of drain.

Immobilization of the joint during all critical periods is essential. An interrupted plaster-of-Paris splint affords the best means of effecting this.

When general infection of the joint has taken place treatment by fixation, lateral arthrotony, and immunization gives the best chance of saving the limb. Secondary abscesses are to be expected, and should be evacuated after their complete development. Neither cross section and flexion of the joint nor secondary excision of the knee are sound procedures.

I am indebted to Lieutenant-Colonel S. G. Butler, D.S.O., R.A.M.C., for permission to publish these notes and to Captain A. B. Le Mesurier, R.A.M.C., for much help in the treatment and recording of many of the cases.

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ON THE TREATMENT OF CERTAIN SELECTED CASES OF SEPTIC ARTHRITIS OF THE KNEE.

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THE septic knee-joint still presents one of the most difficult problems in surgery. Opinion has not crystallized as to the proper line of treatment. (1) Early "prophylactic" excision, and (2) amputation, have been strongly advocated, but in view of clinical experience the first method is not justifiable, whilst the second is a frank admission of failure to deal with the condition. It is not justifiable to do an early excision within twenty-four to forty-eight hours after the injury as a routine method of treatment, since experience at the base definitely shows that a certain proportion of cases recover after a localized suppuration within the joint, and even after a generalized infection with pus formation.

Rest, fixation, lavage, antiseptic injections, serums, etc., all have their functions and scope within the first week or ten days after injury, and if they fail, then further treatment is required.

As regards amputation, it is admitted that in some very acute infections early amputation is the only hope of saving life. If a conservative line of treatment be pursued, and the joint kept rigidly fixed whilst local incisions, irrigations, etc., are used, then the best one can expect as to an end result, after many weeks or months, is a fibro-osseous union where one has no control over the amount of bone and fibrous tissue. All this time absorption is going on, the cartilages are eroding, the ligaments are being broken down, and the patient is at any moment liable to septic venous thrombosis with embolism, and few will escape without periarticular thigh and calf abscesses.

These complications are the inevitable result of lack of drainage in the presence of pyogenic organisms, and it is clear the whole problem of getting a case free from these complications is one of drainage. If one starts, then, from this basis, that the best one can offer such a case after a dangerous illness is a fibro-osseous union between the eroded bone ends and that the joint is almost inevitably lost, then the problem becomes simpler.

Delay in amputating, septic absorption, multiple septic emboli, were responsible for so many deaths in the early part of the war that it had become a working rule with many surgeons that the safest, quickest, cleanest method of dealing with a limb where the posterior pouches of the knee-joint are involved is amputation; thus life is saved at the expense of a limb with least bother to all concerned. Probably it is true this working rule holds good for the majority of cases, but, however perfect artificial limbs may be, and however cleverly used, it is difficult to believe that a stiff rigid leg, even a few inches short, where the hip and ankle-joints are normal is not infinitely superior and preferable to them; and though the cases are long and tedious and trying, yet the end result is worth having if the patient is satisfied and has a good useful limb in a few years. The problem, then, is: (1) To select suitable cases. (2) To drain completely at the earliest moment after one is satisfied that the joint is lost. (3) To get the sepsis overcome. (4) To get firm union of broad bony surfaces. It resolves itself, therefore, into doing an excision of the knee-joint in two stages in suitable cases.

The Suitable Case.

1. The patient must be young; certainly under 30 years, probably best not more than 25 years of age.
2. The favourable cases are lightly built men with small bones and without great muscular development. Fat and flabby cases are unsuitable.
3. The past history as regards general health must be good.
4. Courage and cheerfulness and a strong desire to keep the limb are most important factors. Querulousness and want of interest as to whether the leg stays on or not are contraindications.

The Local Damage must be Within Limits.

1. If the infection be an extremely virulent one then even immediate amputation may fail to save life, and no temporizing dare to be tried in this type of case.
2. If the bony damage is great, if the head of the tibia especially be shattered, then probably amputation is the best line of treatment. Further contraindications are (a) doubt as to the condition of the main nerves to the leg (the ankle action must be perfect to commence with, and be kept good all through the illness); (b) the presence of other serious gunshot wounds.

Taking these points into consideration, and offering unsuitable cases an early amputation as the best and surest treatment for their condition, there still remain many cases, boys with trivial injuries, where amputation seems a catastrophe, and for those cases one must try and get a better result.

It can be done. Time alone can settle whether it is worth doing, whether the end result is a comfortable limb or not. Certain it is that the patient is satisfied with the early result, and this more than anything else impels me to record experience and treatment of these cases.

The Joint is Lost.

1. From the clinical symptoms, the temperature, the pulse-rate, the nature of the discharge, and the general condition afford indications. Tenderness and oedema are sufficient guides; there is no need for definite periarticular abscess formation to prove that the joint is lost, and delay may mean danger of septicaemia and pyaemia, even after the joint has been laid open.

2. A pathological report on an examination of fluid withdrawn from the joint is a most valuable aid, but inasmuch as there is a percentage of cases which recover, even after the pathologist gives a grave prognosis, the clinical symptoms must remain the chief guide. The greatest value is as a stimulus against too great delay in operating in those cases in which the clinical symptoms lack definition and make one hesitate.

Procedure when Drainage is Necessary.

The septic knee-joint cannot be drained. When one considers the pouches, the ligaments, the spaces beneath the cartilages, this is obvious; therefore complete exposure of the surfaces which constitutes the joint must be obtained, and all abscesses which have resulted from leakage through synovial pouches must be freely opened.

This can be done by means of a Ω -shaped incision carried through the quadriceps tendon, by removal of the

semilunar cartilages, by section of the lateral and crucial ligaments so as to make it possible absolutely to dislocate the tibia from the femur and freely expose the posterior wall of the joint (Fig. 1).

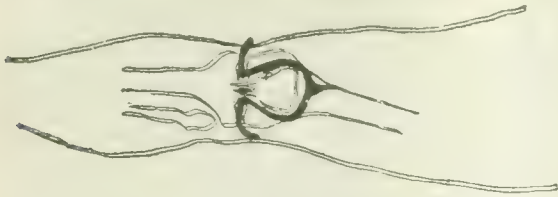


FIG. 1.—Line of incision.

The pocket behind the external tuberosity of the head of the tibia is the guide to calf infection, and, usually, the upper and inner limit of the subcrureus pouch to the thigh periarticular infections. Calf abscesses are opened after getting a guide from a pair of forceps passed down the track from the knee. The thigh abscesses present no difficulty.

When this large surface is exposed one is satisfied that what was once a knee-joint is now a completely drained surface. Anything short of this is tinkering.

Experience has shown that the subsynovial tissue, probably as the result of lymphatic infection, tends to swell enormously, and therefore, as a point in technique, it is worth while spending a little time in excising the synovia, at any rate that of the subcrureus pouch.

Preference is given to the incision across the quadriceps tendon, as this allows of the patella being turned down, and gives better access to the pouch.

The patella is left in the meanwhile so as to keep the skin from shrinking, and a few incisions made into the prepatellar bursa help to keep that from becoming distended. No important structures are cut through in this procedure, very little blood is lost, and the operation is one which as a rule does not cause the patient much shock. It is, on the contrary, usually followed by immediate and great relief. Drainage being thus complete, if osteomyelitis and thrombosis have not already set in as the result of bad judgement and delay in operating, the case should naturally tend to settle down, if no further pocketing of pus be allowed.

The surfaces are kept apart by means of a special splint shown in Fig. 2. It was found that patients could lie for

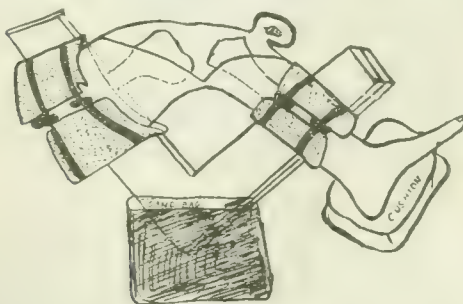


FIG. 2.—Splint applied.

weeks quite comfortably in this position of abduction and rotation outwards of the thigh.

The apparatus was made of wood and perforated zinc, padded with gamgee tissue, but the idea of the splint is passed on to orthopaedic experts for improvement as the position is undoubtedly a good one for the treatment of such cases.

The "abscess" being now thoroughly laid open and the part put at rest it remains to overcome the surface sepsis.

This has not been found easy; cases did badly under "continuous irrigation," and the best results were got, up till lately, with alternated moist carbolic (1 in 40) and spirit dressings, changed once in twenty-four or forty-eight hours. More frequent changing is not practicable, as the dressing is too painful, and the first few dressings require an anaesthetic. After periods varying from three weeks to three months there results a fine clean granulating surface, and after the temperature has been normal for two to three weeks and the general condition of the

patient is obviously improved, one may proceed to the excision.

Whilst up till lately it has been clear that the progress towards an aseptic granulating surface has been more a result of the *vis medicatrix naturae* than the action of the antiseptics applied, it is almost certain that the Carrel method of treatment would be an immense improvement on that formerly used (there has not been an opportunity of making the trial yet), as, in addition to being a less painful dressing, it would hasten the time at which the second part of the operation could be done before contractures have been established.

The last two cases have at this stage been treated with Morison's B.I.P. paste. With perhaps one exception, no previous case has shown in the general and local improvement so rapid an overcoming of the septic process. These dressings did not require changing more than once in four to five days and have been the least painful of all to change, so that there are now at our disposal two greatly improved dressings for this stage, and one can promise the patient and oneself fewer and not very painful dressings and a much shorter period of waiting till the leg is straightened.

Excision.

The excision of the bone ends and the fixation of the limb on a splint which will allow the broad bony surfaces to lie in good apposition need no detailed description. One must cut one's coat to the cloth; provided that there is no rapid overstretching of the popliteal structures and no tension left in the space, then one has taken away sufficient bone without sacrificing any unnecessarily (Fig. 3). The guide is the circulation in the foot and

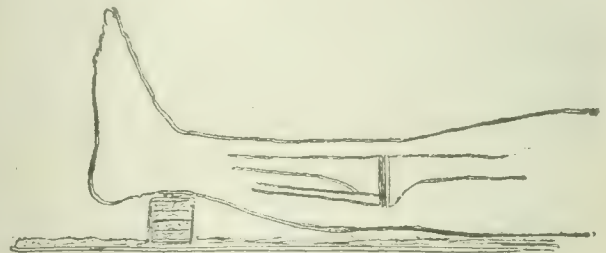


FIG. 3.—Folded layers of gamgee tissue to elevate heel and produce slight hyperextension at joint level.

toes, and proper attention must be paid to alignment of the middle line of the thigh and the tibial ridge, and an endeavour made to get just a shade of hyperextension. Each case is a separate effort requiring individual treatment, but these are the points to be kept before one.

There is always a certain amount of shock, and the patient's general condition must be good before the operation, but little blood need be lost if a flat tourniquet be used and if the leg be bandaged firmly into its splint before the tourniquet is removed. It is usually unnecessary to tie any bleeding vessels, but the bandaging must be firm over a good pad of gamgee tissue.

An average shortening of 2 to 2½ in. can be obtained even with cases where the excision has to be delayed for some months, but this can be improved on greatly if the Carrel and Morison methods fulfil their promise and one has no troublesome contractures of the soft parts to deal with.

The cases are therefore tedious and trying, and require much patient nursing. They should only be undertaken where there is a likelihood that the case can remain in the same hands till bony union has taken place. To pass such cases on at an earlier stage than this is not fair to any one.

The treatment is therefore one best suited for the base.

RESULTS.

Two cases were done in the summer of 1915. Both went to England with good bony union.

Twenty-seven cases were attempted from summer, 1916, to spring, 1917. Of these, 13 have been sent to England with good union, 3 are almost ready to proceed, 8 died, 3 were in the end amputated (all three lived and were transferred to England well).

Of the cases which died, one was a fulminating case and died in forty-eight hours after admission, one died of

perforating gastric ulcer, 2 died of complicating chest conditions (these four cases should not have been attempted), 4 cases died of pyaemia—the result of hesitation and delay in doing the first part of the operation.

Most of these cases were undertaken during the great rush when all the staff were working under great pressure, and the results must be judged accordingly.

Viewing the matter in the light of the experience gained and the conclusions drawn in this paper, I do not see why the mortality after this operation in selected cases should surpass that of amputation as a routine treatment, and some of the results obtained seemed so excellent that the procedure deserves further trial.

The average duration in hospital before complete drainage was ten days. The average period before excision was sixty days. Six weeks after that most of the cases were ready to go to England. The average stay in hospital was thus about four months.

I desire to express my thanks to Lieut.-Colonel E. C. Hayes, R.A.M.C., for permission to publish these notes, and for his encouragement; to Captain Lazarus-Barlow, R.A.M.C., for his valued co-operation in the examination of the fluids taken from the joints; and above all to the nursing staff, the theatre sisters, and the colleagues associated with me in the treatment and care of these cases.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE DETECTION OF DEAFNESS.

IN the JOURNAL of August 25th, p. 252, I see a suggestion by Dr. Eyre as to the detection of deafness, which I must frankly say I do not understand. Is it intended to convey that because a man hears words whispered six or eight inches from his better ear that he is therefore not "hard of hearing"? If this be not implied, what is the point of the memorandum?

The question as to the detection of deafness is by no means simple, even for the expert. Roughly, the class of cases in which malingering may be suspected falls under three categories:

1. Simulation of one-sided deafness.
2. Exaggeration of deafness which is actually present.
3. Simulation of complete deafness.

As the various methods employed for the detection of simulation are discussed in textbooks, I shall merely refer to those which seem to me most useful. Where the patient states that one ear is quite deaf, this may be verified or the reverse by connecting his ears with the mouths of two observers by means of speaking tubes. Each whispers words into his mouthpiece, and the malingerer will probably soon give himself away by repeating those spoken into the deaf ear. The same result may be attained by the employment of a binaural stethoscope with one limb occluded.

Exaggeration of deafness which is actually present is much more difficult to discover, and even the expert will find such cases difficult. Repeated tests, used at intervals, together with weighing the objective appearances and data derived from the history and comparing them with previous experience, afford the best prospect of success.

These, however, will not assist us very much where complete bilateral deafness is simulated. It has been suggested to try the effect of a loud voice to waken the patient from sleep, while it has also been proposed to employ anaesthetics, but the latter requires the assent of the patient. In such instances I see no method available excepting that of espionage, and if possible inquiry directed to those who have known the patient.

It is, of course, very important that injustice should be excluded, and for this reason it is desirable to impress upon those who examine that the tests employed should not be liable to fallacy.

In examining soldiers it will often be found that an inaccurate statement is made from carelessness, but without any intention to deceive. Thus, if the tuning-fork be applied to the middle line of the head, we shall often be told that the fork is perceived only in the better hearing

ear, even if the deafness be not due to involvement of the nerve apparatus. Again, we shall be told that if the good ear be closed the fork is no longer heard. I have seen this so frequently among men who obviously had no desire to impose upon me that I have ceased to attach any value to the phenomenon.

P. McBRIDE, M.D.,

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RUPTURE OF UTERUS: RECOVERY.

ALTHOUGH annular rupture of the uterus in the neighbourhood of the cervico-vaginal attachment is sufficiently common to be described in the larger textbooks, the following case presents unusual features which make it worth placing on record:

I was called to the patient late in the evening of April 3rd by a midwife on account of prolonged labour. The os was fully dilated, the membranes unruptured, and the head and umbilical cord presenting.

On rupturing the membranes the cord immediately prolapsed outside the vulva; no pulsation was to be felt. The head was above the brim of the pelvis, which was flattened in its antero-posterior diameter. I performed internal version without difficulty, but was unable to extract the after-coming head; in endeavouring to extract, I caused a fracture of the cervical vertebrae and pulled away the body of the child, leaving the head behind and tearing through the cord in the process. The head being well pressed down by the midwife, I then perforated and extracted with difficulty with a cranioclast.

On examining again after delivery of the head I found an annular rupture of the uterus extending completely round the cervico-vaginal attachment except for a thin pedicle by which the uterus was still attached posteriorly; the placenta had escaped into the abdominal cavity. I seized the uterus with a pair of craniotomy forceps, placing one blade in the cavity and the other outside, and dragged it down through the vagina; the remaining attachment I ligatured as high up as possible, and so completed the separation of the uterus.

The pulse by this time was very bad, but there were no signs of haemorrhage, and, the nearest hospital being fourteen miles away, I decided to adopt an expectant attitude, and in the meanwhile applied restoratives.

On the following day the pulse was stronger, rate 132, and I considered her fit to stand laparotomy. Mr. Washbourn, of Gloucester, saw her with me in the afternoon, and opened the abdomen in the middle line below the umbilicus. A moderate amount of blood clot was removed from the pelvis, but there was no recent haemorrhage; the placenta was found in the neighbourhood of the splenic flexure; the abdomen was quickly closed with the exception of a gauze drain into the pelvis.

A week later, the discharge through the wound having become purulent, I sent her into Gloucester Infirmary, where she was treated by douches, etc., and discharged five weeks later with the wound closed.

The patient had been married four years, and had had two previous pregnancies; the first terminated in the expulsion of a stillborn fetus (described by the midwife as "macerated") at the eighth month; the second in a miscarriage at the seventh week. The uterus was normal to the naked eye, and it was impossible to determine where the rupture had commenced.

I am indebted to the courtesy of Mr. Washbourn in publishing the later part of this case.

Cinderford.

GEORGE F. RIGDEN, M.B., B.S.Lond.

A HUGE MESENTERIC CYST IN A YOUNG MARRIED WOMAN.

MESENTERIC cysts are extremely rare things. The subject of the instance here reported is a young married woman, aged 25. She had never been pregnant, and menstruation had been recurring regularly, although during the last eighteen months the periodic loss had been increased somewhat. She had never experienced pain in connexion with menstruation. Five weeks before coming under my care she began to experience some difficulty in fastening her corsets, and this increased so rapidly that during the last three weeks she had to dispense with them altogether; this increase in size was her sole trouble. On cross-questioning, she stated that her "stomach" had always, as long as she could remember, been rather big.

I found the abdomen very prominent; it was occupied by a swelling which extended from the pelvis to 5 in. above the umbilicus. The percussion note over the tumour was everywhere dull. The right flank was resonant; the left was dull; fluctuation was readily elicited. By vaginal examination I found the cervix located anteriorly towards the right side. I could not differentiate

the body of the uterus. In the left pelvis was felt a portion of the abdominal swelling. The base of the swelling in the pelvis was traversed by a peculiar network of fine fibrous bands, and this physical sign made me think the tumour might be in the substance of the broad ligament.

Operation.—I experienced the greatest difficulty in gaining an entrance into the peritoneal cavity, as the tumour was in the lower third of the abdomen incorporated with the anterior abdominal wall. On attempting to find the peritoneal cavity the tumour, unfortunately, ruptured, and from it flowed about a gallon and a half of haemo-biliary-looking fluid. When I eventually reached the greatly curtailed peritoneal sac I found the small intestine everywhere incorporated with the sac of the original tumour. The sac was stitched to the abdominal wall and drained. None of the pelvic organs could be felt, a fact which made me think the swelling must have started in the lowermost part of the mesentery and have developed extensively both up into the abdomen and down into the pelvis.

London, W.

JAMES OLIVER, M.D., F.R.S. Edin.

RESUSCITATION OF THE NEW-BORN INFANT BY HEART MASSAGE AND OXYGEN.

On several occasions I have found it possible to resuscitate a baby by heart massage in the manner suggested by Dr. Fisher in the *BRITISH MEDICAL JOURNAL* of August 18th, p. 215.

Recently, after a prolonged labour due to disproportion between the head and the pelvis in a primipara, aged 39, the child was delivered by forceps at 9 p.m. The cord had been pressed upon high up, and was round the child's neck. The child was white and limp and the heart had ceased to beat. Massage of the heart for some minutes started it beating, and artificial respiration was begun. At 9.30 p.m., though the heart was beating feebly and artificial respiration was continued, the child did not breathe naturally. Oxygen was then given in a very gentle stream whilst continuing respiration artificially for more than an hour, when the child began to breathe feebly by itself; he was still cold. Wrapped up in wool and warmed blankets, surrounded by hot-water bottles, he was placed near a fire, and oxygen slowly and continuously administered. By 4 a.m. the child became warm, and at 9.30 a.m., twelve hours after birth, oxygen was discontinued, and he was bathed and dressed. On visiting him later in the day I found him very yellow and his lips much swollen. He is now doing well.

Stevenage, Herts.

ARTHUR DE VINE.

A CASE OF PNEUMOCOCCAL PERITONITIS WITH ACUTE GASTRIC DILATATION.

THE rarity of the condition may make it worth while to record the following case:

Pte. W., aged 20, Middlesex Regiment, was admitted on February 12th with a temperature of 104° F., under Dr. Syrett. Pneumonia was diagnosed, first on the left and later on the right side also. The attack was severe, the temperature reaching 104° on February 13th, 15th, and 20th; then the temperature fell gradually to 99° on February 22nd. The pulse also fell from 132 to 98. Hope was raised that the patient was recovering, but vomiting of dark bilious fluid began, and at 6.30 p.m. the same day, in consultation, we found peritonitis and tympanites reaching up to the fifth rib. Obstruction was diagnosed. It was considered that the patient was too weak for operation. The vomiting became more copious and urgent. At 11.45 a.m. on February 23rd the patient died.

A *post-mortem* examination was made four hours later, and so much did the stomach fill the abdomen that at first no other organ could be seen save the liver. The fundus was pushed up to the fifth rib, and the greater curvature reached to within an inch of the pubis. The transverse colon was in the true pelvis, where the ileum lay quite empty and collapsed. The colon was contracted also. The duodenum was stretched to a diameter of 2½ to 3 inches. The duodeno-jejunal flexure was normal in size, and must have been pressed on by the mesentery, for gas seemed to be entering merely from manipulation during examination.

There were no adhesions or acute obstructions. There were, however, several flakes of lymph, yellowish-white in colour, thready and toughish, as is characteristic of pneumococcal empyema. These came down on to the smaller curvature and fundus from the diaphragm. It would therefore appear that the stomach was paralysed by toxæmia acting on its nervous plexuses, and that distension occurred, which further caused pressure on the terminal part of the duodenum.

Those practitioners who are robbed, as it were, of their pneumonia cases just as they are on the turn for recovery will naturally feel interested in the question of the frequency of such a condition. Messrs. Rowlands and Turner (*Jacobson's Operations of Surgery*) quote 91 cases of this rare disease, all children under fifteen. In 30 cases the peritonitis was secondary to a lesion elsewhere, especially in the lungs and pleura. Primary infections had occurred in the throat or ear in several cases. Of gastric dilatation of the stomach Osler, in *Principles and Practice of Medicine*, quotes 102 cases. Of these, 42 followed operations with general anaesthesia. The next largest group occurs in the course of severe diseases or during convalescence. It is noteworthy also that we had an outbreak of pneumonia, sore throats, and cerebro-spinal meningitis going on during February, when this case occurred, and our past experience leads us to expect appendicitis with this group in the spring season.

This case is published by permission of Lieut. Colonel J. Kearney, R.A.M.C., S.M.O. Harwich Garrison.

E. F. SYRETT, M.D.

W. L. CHRISTIE, Captain R.A.M.C.,
M.D., F.R.C.S. Eng.

GLUE FOR APPLYING EXTENSION IN FRACTURES.

In a useful note on the application of glue extension (Sinclair's method) in the *JOURNAL* of July 14th (p. 60) I notice that there is no reference to the use of spirit glue for similar purposes.

In my experience Heusner's glue is as efficient as that described; and, further, it has the advantage for those who do not need to use the application frequently that it is always ready for use as stored; moreover, it is an excellent and cheap substitute for mastisol, and is a much better adhesive than any form of collodion when used for applying gauze to the skin.

I referred to the preparation in an article published in the *BRITISH MEDICAL JOURNAL* last year ("A simple system of skeleton splinting"), and also in the *British Journal of Surgery* for July (p. 70). The composition I have used is as follows:

Methylated spirit	...	...	50 c.cm.
Benzine	...	...	25 c.cm.
Resin (commercial)	...	...	50 grams.
Venice turpentine	...	...	5 grams.

I consider the preparation to be of sufficient value to the practical surgeon to deserve attention.

C. MAX PAGE,

— Field Ambulance, B.E.F. Captain R.A.M.C. (S.R.)

Reviens.

THE THYROID GLAND.

As a record of eminently original investigations extending over fourteen years, and advancing surely step by step to the full understanding and successful treatment of a group of conditions that are as distressful as they are widely spread, Major McCARRISON'S book upon *The Thyroid Gland in Health and Disease* must rank as the foremost medical publication of the year. It is an outstanding example of that best and most characteristic form of British pathology, the pathology of the active practitioner whose clinical studies and clinical opportunities impel him to investigate, and, with Edward Jenner, to apply the results of his inquiries to the treatment and control of the condition investigated. It promises well for the continued advance of British medicine that in our generation McCARRISON does not by any means stand alone, although it may safely be said that there is no one who has pursued his inquiries under greater difficulties or in greater isolation, and therefore with all the greater credit.

The story is fascinating, and as, with characteristic modesty, in the book before us it is implied rather than definitely stated, and then in the appendix rather than in

¹ *The Thyroid Gland in Health and Disease*. By Robert McCARRISON, M.D. (R.U.I.), D.Sc. Belf., F.R.C.P. Lond., Lauréat de l'Académie de Médecine, Paris; Major Indian Medical Service. London: Baillière, Tindall, and Cox. 1917. (Crown 8vo. pp. 286, with numerous illustrations. 12s. 6d.)

the substance of the work, it may be timely to give it in outline.

In 1902, as a member of the Indian Medical Service, McCarrison, a young Belfast graduate, found himself stationed at the very confines of the empire, high up in the Himalayas, in the Gilgit valley and Chitral district, some 5,000 to 8,000 feet above sea level. Here, as in so many alpine districts, endemic goitre and cretinism were rife. In some of the villages the disease was so common that it was difficult to find a man, woman, or child unaffected. That there is an intimate relationship between water supply and goitre development had already been clearly determined, although what was the nature of the relation was the subject of numerous hypotheses. Bircher and others in Switzerland had shown that the replacement of the water supply from wells by a pipe supply taken from a running stream had resulted in the complete disappearance of goitres among the children in certain villages. Charlton had demonstrated clearly that the incidence of goitre on the island of Montreal depended on the water supply; villages that received their water from the St. Lawrence river or from deep wells were unaffected; those that had shallow wells, presumably receiving surface water, were extensively involved. This pointed to some microbic agency, but not to infection of the ordinary type, since the goitres disappeared when the individuals removed to other non-goitrous areas or altered their water supply.



Before. After.

FIG. 1.—Photographs of a patient suffering from goitre, to illustrate the effect of treatment by thymol. Circumference of neck before treatment, 40½ centimetres; after treatment, 37 centimetres.

McCarrison's first published observation (1906) was upon the incidence of goitre in relation to water supply. He reported upon conditions in a series of seven villages situated one below the other along the course of a stream. He found that the percentage of infected houses, of affected individuals in these houses, and in the total population of the villages affected, showed a steady increase in passing down the valley, there being a slight drop in the incidence in the fourth village, situated below the junction of a tributary diluting the main stream with a purer supply. These observations received interesting confirmation some three years later, when Marine and Lenhart, and after them Gaylord, made parallel observations upon artificially bred trout contained in a succession of wooden troughs, the water from the upper passing to the next lower in the series. That trout may suffer from goitre had already been noted in Germany.

These observations led McCarrison to make investigations (1906-10) upon the goitrogenous constituent of the contaminated water. These were conducted upon non-goitrous men, newcomers to the Gilgit valley. A notoriously goitre-producing water was passed through a Berkefeld filter, and the residue given in milk once or twice a day over periods varying from thirty to fifty-five days. Of thirty-six individuals so treated ten developed a noticeable enlargement of the thyroid, five a transitory swelling only; whereas, of thirty-one individuals who consumed the same suspended matter after it had been boiled, none showed any enlargement.

Here, again, later American observations are curiously parallel. In 1912 Gaylord showed that by scraping the inner surface of wooden tanks in which fish with endemic goitre had been confined, and administering the scrapings to dogs and rats, he could produce the goitrous state in these; he showed also that the agent is destroyed by boiling.

McCarrison's conclusion gained was that the water was probably contaminated with the excreta of the goitrous individuals. To test this during the next two years a series of experiments was conducted upon non-goitrous goats, with the result that 9 out of 20 goats, fed for periods of from 60 to 108 days on a water grossly contaminated with the faeces of goitrous persons, developed goitrous changes—a finding, it may be added, which was confirmed by Sasaki at Heidelberg in 1913. McCarrison obtained yet more definite results in 1913 by employing white rats. With these animals, whether they were fed with an emulsion of the faeces of goitrous persons, or with the filtrate from the same, or with food fouled with their own excrement, 100 per cent. developed goitre. Control rats protected against faecal contamination showed no change.

With this McCarrison had arrived at a clear understanding of the nature of endemic goitre: it arises from faecal contamination of the water or food supply. That ordinary faecal matter will induce the thyroid enlargement indicates the absence of any strictly specific agency: that the filtrate from faecal emulsions will induce the condition indicates that we deal either with a toxæmia or the action of a filterable virus. In favour of the former view are the facts that the condition, if not too long established, disappears when the contaminated water is no longer used, as well as McCarrison's further observation—that the vast majority of goitres are sterile, yielding no cultures. Nevertheless, he



Before. After.

FIG. 2.—Photographs of a patient suffering from goitre, to illustrate the effect of vaccine treatment of goitre (autogenous coli vaccine).

now proceeded to inquire which orders of intestinal bacteria are effective in causing thyroid enlargement, and found that anaërobic bacteria from the faeces are particularly active in inducing the condition. What is more, by feeding female rats with anaërobic cultures obtained from the faeces of goitrous persons, of 19 offspring 10 showed definite congenital goitre, and 11 equally definite parathyroid disease (haemorrhage and fibrosis). The majority of these were born dead. Feeding faecal filtrate from goitrous persons to goitrous female white rats throughout pregnancy (that is, by setting up a milder toxæmia), of 17 young 3 were cretins, 7 had congenital goitre, and the remainder were apparently normal.*

Professor W. H. Thomson of New York had for years emphasized the part played by intestinal toxæmia in the production of Graves's disease, and had recommended treatment by intestinal antiseptics. Farrant also had independently demonstrated the action of the *B. diphtheriae* and other pathogenic organisms in causing thyroid hyperplasia. To my knowledge, no one before McCarrison had attempted the experimental production of cretinism.†

It is evident that from a very early date McCarrison perceived the direction in which his inquiries were leading him; in 1906 he was already treating these goitrous cases with thymol, beta naphthol, and salol, and this with marked success, a success obtained also by Messerli of Lausanne in 1916. In 1913 he similarly reduced the incidence of goitre in a large school in the Himalayas by the chemical purification of the water supply, with the result that the percentage of goitre among the boys was

* It deserves note that in 1903, as Major McCarrison points out, Sajous had called attention to the thyroid hyperplasia induced by bacterial toxins.

† Some of the points noted in the preceding paragraph are illustrated in the photographs reproduced in the BRITISH MEDICAL JOURNAL of July 28th, p. 112.

reduced by one-half. Since then, to reduce the intestinal toxæmia, he has employed with good effect "soured milk," prepared from a good strain of the *B. bulgaricus*, and of late has obtained excellent results, in cases not too far advanced, by employing mixed autogenous vaccines of intestinal organisms, administered in increasing doses, varying from 150 million to 1,000 million of the organisms. *Staphylococcus* vaccines have proved efficacious, as has also a vaccine prepared from a spore-bearing organism, gained from a goitrous horse. It is interesting to note (p. 110) that, despite these good results, Major McCarrison still believes that there must exist a specific intestinal organism of endemic goitre. He explains the action of these other vaccines by holding that they aid the disappearance of secondary infections, and so, by relieving the thyroid of its abnormal burden, enable it to combat successfully the specific toxin. But to repeat, all his evidence points to an intestinal toxæmia rather than to a specific infection. So also, as he points out, do certain remarkable cases of Sir Arbuthnot Lane's, in which the goitre has disappeared after an operation to remove intestinal stasis.

This is not a criticism of Major McCarrison's book upon the thyroid gland; it is a *précis* of the part he has played in the recent developments of our knowledge of thyroid disease. Space forbids a fuller description of his studies upon cretinism, the tetanic form of cretinism, parathyroid disease, and Graves's disease. It is only necessary to state that after this intensive study of the last fourteen years he writes magisterially concerning both the physiology and the pathology of the thyroid system, and to add that the work appears in admirable form, with full justice done to the many most effective illustrations.

J. G. ADAMI.

NOTES ON BOOKS.

DR. A. T. NANKIVELL has written a useful little book on *Health in Camp*,¹ founded on a series of Chadwick Trust Lectures he gave in 1914. It is addressed to soldiers, boy scouts, and caravanners, is thoroughly practical, and avoids unnecessary technical language. The need for such instruction is well expressed by Sir Shirley Murphy in a short introduction. In civilized communities, he says, so much is done for the inhabitants by municipal authorities that when they are converted into soldiers they must be taught how to adapt their habits and utilize their opportunities so as to provide themselves with a healthy environment, for which they have previously largely relied upon municipal aid. The book contains chapters on the choice of a site and the laying out of a camp, the erection of huts, tents, and bivouacs, the provision of surface drainage, latrines, and washing and cooking places. Other chapters deal with refuse disposal, including that from horse lines, and with insect life and minor ailments in camp; there is an excellent chapter on the need and method of day-to-day supervision, and a good index.

Human Physiology,² by Professor STILES, of Harvard University, is a textbook designed for the pupils of high schools and colleges who wish to learn the elements of the science. The author has endeavoured to present the accepted facts to his readers concisely, avoiding contentious matter and mere theory. Details and experimental proofs are not discussed, and conflicts of evidence are indicated rather than described; there are a few diagrams to help out the text. Professor Stiles writes clearly, and gives an excellent yet simple summary of human physiology, so far as that ideal can be attained without reference to practical work in the physiological laboratory. Yet one may feel inclined to ask how far even an embryo physiologist can be brought up with success upon a purely predigested pabulum, however attractive the form in which it is presented.

THE TREATMENT OF CORNEAL ULCER.

DR. TERSON points out to us that in our review of his *Ophthalmologie du Médecin Praticien* we have been guilty of an oversight in stating that for the treatment of corneal ulcers the use of atropine and of a bandage are not mentioned. Dr. Terson does suggest that a light bandage should be used to

support a warm fomentation. This treatment does not recommend itself to us; the use of a moderately firm bandage and a dry pad, which is not mentioned, seems to be the sheet anchor of the medical man who is called in to give first aid to a case of corneal ulcer. As regards atropine, Dr. Terson warns the practitioner against its use. Had he said that care should be taken in employing atropine in the case of elderly persons we should agree with him; but the general condemnation of the drug deprives the patient of the most essential element in the therapy of this dangerous condition. We cannot agree with Dr. Terson that atropine should be reserved for cases complicated with iritis. Atropine is useful to "splint" the eye, and to prevent the formation of posterior synechiae.

MEDICAL AND SURGICAL APPLIANCES.

The Repair of Rubber Operating Gloves.

DR. N. I. SPRIGGS, F.R.C.S., Captain R.A.M.C.(T.) (Leicester), is led by the publication of the note under this heading in the *JOURNAL* of August 18th, p. 228, to call attention to a letter he published in the *Lancet* of March 31st. Being struck by the number of punctured and torn rubber gloves which were discarded, he devised an electric vulcanizer, which he hoped might be put on the market. Technical difficulties intervened, and it was found more convenient to get the firm of W. and A. Bates, Rubber Mills, Leicester, to undertake the repairs with the apparatus. Dr. Spriggs considers that perhaps £10 a year or more could be saved on each 100 beds in a hospital in this way. The repairs thus effected have the following advantages over patches simply stuck on with rubber solution: (1) The patches are so small as to be almost impalpable; (2) they do not come off, even after repeated sterilizations; (3) a new finger can be put on a glove: for instance, the right forefinger of a glove is often lacerated badly and needs renewal; (4) a long slit can be repaired, or a new wrist affixed, or two lacerated gloves made up into one good one. Dr. Spriggs adds that gloves are often sterilized at too high a temperature when done in a high-pressure steam sterilizer, the temperature in which may reach 270° F., which is practically a vulcanizing temperature, so that the gloves become brittle and sticky, and perish very soon. A lower temperature should be used for a longer time, but he is unable to find a sterilizer specially suitable for gloves. When once the "nature" is out of the rubber of course no kind of repairs are of any value, but slits and holes accidentally made in good rubber gloves can be repaired.

Messrs. Bates inform us that they have entered into a contract with the Admiralty for repairing gloves, and that they also repair gloves for some military and civil hospitals. The number of gloves repaired for three large general civil hospitals and three military hospitals in twelve months was 6,042. The cost of the repairs was £98 6s. 3d. They estimate the cost of this number of new gloves at £302 2s.

A Hammock Suspension for Fractures.

A "hammock suspension" for fractures, the invention of Miss Gasetti of Paris, has, it is stated, been extensively employed in France under the authority of the Government, and is now being introduced into this country. It is used in connexion with fractures of the femur and humerus, and the special merits claimed by the inventor are improvement in the comfort of the patient, and that by its use the nursing of these cases is rendered comparatively easy. Four wooden uprights are attached—one to each bed-post—and these are connected above by two longitudinal pieces. On the longitudinal pieces and immediately above the patient's limb rest two transverse pieces, which serve as the basis for the attachment of pulleys, by which the lower limb secured in a splint is suspended from the bed. The splint used for a fractured femur resembles the "Thomas" bed splint, without, however, the dorsal portion of the ring. By means of a transverse piece at the end of the bed attachment is given to a pulley, on which a weight plays for purposes of extension. This pulley can be set at varying angles of abduction. In the case of a fractured humerus, by means of a system of pulleys, not only can extension be made on the arm, but the limb can be suspended from the bed as well. In this way it is claimed the upper limb can, without displacement, accommodate itself to varying positions of the patient's trunk. The appliance has nothing to recommend it over the more simple Thomas bed splint and the abduction splint of Colonel Sir Robert Jones as used at the military orthopaedic hospitals in this country and in British military hospitals abroad for simple or compound fractures of the femur.

¹ *Health in Camp*. By Austin T. Nankivell, M.D., D.P.H., Captain R.A.M.C. London: Constable and Co., Ltd. (Pp. ix, 84. 1s. net.)

² *Human Physiology: A Textbook for High Schools and Colleges*. By P. G. Stiles. Philadelphia and London: W. B. Saunders Co. 1916. (Post 8vo, pp. 405: 71 figures. 6s. 6d. net.)

British Medical Journal.

SATURDAY, SEPTEMBER 1st, 1917.

THE ARMY MEDICAL SERVICE INQUIRY.

THE Committee of Inquiry into the Army Medical Service, promised by the Under Secretary of State for War during the discussion on the Army Medical Vote on August 14th, has now been constituted and is at once going to France. Its reference has been enlarged, inasmuch as it is directed to inquire into various matters connected with the personnel and administration of the Army Medical Services in France, and afterwards to carry out similar investigations in the United Kingdom. The chairman is a general officer who has held many important military commands in peace and war, and the secretary, Dr. Christopherson, is well known for his research work, and as an administrator in the Sudan. Of the six medical members of the Committee five are members of one or more of the statutory committees recognized under the Medical Service Acts—the Central Medical War Committee, the Committee of Reference of the Royal Colleges in England, or the Scottish Medical Service Emergency Committee. The Committee, with the exception of the chairman, thus consists of civilian practitioners, of whom one holds a temporary commission R.A.M.C. The Committee starts with the advantage of a knowledge of the situation at home as it affects the civil population; but, as will be seen from a note in the SUPPLEMENT, the Central Medical War Committee desires that its chairman should be added.

It will be well to recall certain events preceding the appointment of the Committee. The first was the letter addressed by the Central Medical War Committee to the Secretary of State for War on August 3rd, informing him that that Committee was of opinion that no more medical men could be called upon to take commissions in the R.A.M.C. without seriously endangering the supply of doctors for the treatment of the civil community, and that further depletion could only be effected on the responsibility of the Government after carefully comparing the military with the civil needs. The second circumstance was that a series of questions were addressed to the War Office in the House of Commons which brought to the notice of that assembly current allegations to the effect that the number of medical officers claimed by the military authorities in France and at home was in excess of requirements, and that many of those abroad had little or nothing to do, while at the same time the civil population was suffering from a deficiency of doctors. The third circumstance was that during the debate the question of the status of the Army Medical Service in relation to the Army Council was raised.

The appointment of Sir Francis Howard to be chairman of the Committee which has proceeded to France serves to bring prominently to mind the fact that the Army Medical Service is a subordinate branch of the Adjutant-General's Department. This is often forgotten. The Army Medical Service does, in fact, enjoy a large measure of autonomy, and in practice makes provision for the prevention of disease in the armies, and for the evacuation and treatment of wounded and sick, subject to various limitations of

authority relating especially to the provision of transport and supplies other than drugs, instruments, and certain specifically medical stores. The system can be made to give excellent results, as we have seen in the British armies in France, but it may lead to very unfortunate results, as the story of the Mesopotamian Expedition proves. The subordination to the Adjutant-General's department affects not only the army medical branch at home but extends all through, so that the principal medical officer of an army corps is officially related to the general officer in command, not directly, but through the Adjutant-General of the corps, and for certain purposes through the Quartermaster-General. This is a survival into the widely different conditions of to-day of the opinion of Lord Wolseley, founded on experience of minor expeditions, that the proper place for the principal medical officer of a force was at the base. The opinion was never sound; it is now antiquated, and has, we believe, been abandoned by all successful generals.

The Commission appointed to apply the lessons of the South African war heard weighty evidence in favour of making the Director-General, A.M.S., a member of the Army Council; this would have implied that the department of the Director-General, A.M.S., would have been autonomous in the same sense as those of the Adjutant-General and the Quartermaster-General, and would have been dependent or subordinate to neither. The Commission did not accept the advice, but Lord Esher last February admitted that this was a mistake; he wrote: "No one except Sir Alfred Keogh could envisage the Royal Army Medical Corps other than an important but small branch of the 'services' attached to an army in the field. It was not realized that to keep a force in the field was at least as vital a necessity as to recruit it. September, 1914, swept away this illusion—but the mischief was done . . . Certainly the control of the Adjutant-General's branch over the Royal Army Medical Corps was and is responsible not only for the early failure to grip the medical factors of this war, but for the hampering conditions under which Sir Alfred Keogh has worked. His triumphs and those of the Royal Army Medical Corps have been achieved in spite of obstacles that the subordination of science to ignorance, of elasticity to military discipline, explains but cannot justify." Lord Esher went on to appeal to the Secretary of State for War to "strengthen the Army Council by placing upon it the D.G.M.S., and to free from the control of a purely military officer (admirable as is Sir N. Macready in the sphere congenial to him) a body of men mostly volunteers from highly trained professions, and dealing with technical difficulties altogether outside the orbit of vision in which the soldier pure and simple habitually moves. Thus would the work of Sir Alfred Keogh be happily recognized to the infinite advantage of our sick and wounded to-day and to-morrow."

Whether the Committee which has now gone to France will go into this large question of administration we do not know, but its reference appears to be wide enough to justify it in making recommendations on this head. We are aware that there are weighty objections to making so radical a change at this stage of the war, since the existing plan has been made to work, but we have to look to the future, and it is to be hoped that the Committee will take the opportunity of looking into the matter and putting its opinion on record.

But the Committee will probably consider that the main duty of urgent importance before it is to inquire into the manner in which the personnel at the disposal of the Army Medical Department is now utilized and

whether economy in the number of medical officers employed in France and in the United Kingdom can be effected without loss of efficiency. The urgency of this question is well known both to the profession and the War Office.

HARVEY ON THE USE OF THE CIRCULATION.

PROFESSOR JOHN G. CURTIS, of Columbia University, who died in September, 1913, left for publication a book on the work of William Harvey.¹ The task of preparing the manuscript for the press was entrusted by him to his colleague, Professor Frederick S. Lee. The work, which is based on a lecture delivered before the Johns Hopkins Hospital Historical Club at Baltimore in 1907, is an attempt to define Harvey's position in the evolution of physiological thought. Dr. Curtis devoted much labour to the endeavour to reach an understanding of the doctrines of the ancient physiologists which to the modern mind are so mysterious, and his critical discussion of their meaning gives his work a special value to the student of the history of medicine.

It may come as a surprise to those who have not made a first-hand study of Harvey to find that the man who brought about one of the most far-reaching revolutions in science did not, like Bacon, regard the ancients with contempt, but held them in great reverence. He was steeped in their speculations; and even in his old age he is reported to have told John Aubrey to "goe to the fountain head and read Aristotle, Cicero, Avicenna." The gossip Aubrey is not always a trustworthy authority, and one may excusably feel a doubt as to Harvey's alleged recommendation of Cicero as a "fountain head" in physiology or medicine. His respect for Aristotle, however, is conspicuous in his own writings, and the Greek outlook on nature by direct observation and experiment was in harmony with the temper of his own mind. To him the first object of search was the fact, and to critics who like Riolanus attacked his discovery his reply was that objectors "plainly ought to inquire as to its existence before inquiring why it exists: for from the facts which meet us in the circulation regarded as existing its uses and objects are to be sought."

In the absence of positive knowledge Harvey was driven to speculation. In seeking for the uses of the circulation, he was led to consider the feeding of the tissues, the significance of respiration, the cause of the heart-beat, the relative importance of the heart and blood in the economy, the body heat and its source and the seat of the soul. But before the discovery of oxygen no satisfactory explanation was to be found. Aristotle taught that animal heat, which is indispensable to life and to the working of the soul, is kept from burning away too fast by the cooling influence of the inspired air, and following the "master of those who know" Harvey concluded that "it is the nature of animals to need cooling on account of the firing of the soul within the heart." Harvey's private lecture notes of 1616 show that he accepted the ancient view of the importance of the heat of animals, and he spoke of respiration in the language of Hippocrates.

In connexion with the subject of breathing Dr. Curtis made some instructive remarks on the meaning attached by the ancients to those puzzling words

"pneuma," "spiritus," and "anima," which for many centuries were put to such various uses by physicians, philosophers, alchemists, and theologians. In the fourth and fifth centuries before Christ it was believed that something derived from the outer air is in the vessels which also contain the blood. To denote this substance the Greeks used the word "pneuma," the fundamental meaning of which seems to have been "air in motion." The word, however, came to have other significations, such as the breath, the wind, the air, and things which in modern speech are called gas, vapour, steam, exhalation, or emanation. The equivalent Latin word is "spiritus," and in English "spirits" was used to express various meanings of "pneuma." As to the nature of the animal spirits, an expression which only survives in colloquial English, Curtis says the adjective "animal" is used in its original sense of "pertaining to the soul"; for this the Latin word is "anima," the Greek "psyche." "Psychical spirits" would be the best rendering into the English of to-day of either the original Greek "pneuma psychicon" or the Latin "spiritus animalis." These "animal spirits" or spirits of the soul were not peculiar to man but were also possessed by his "poor relations," and even, according to Aristotle, in a lower grade by plants. For Galen the animal spirits were the first instrument of the soul, the medium of sensation and volition; they had their origin in the ventricles of the brain, from which they were supplied, to the spinal cord and nerves, the fibres of which were believed to consist of tubes in which the subtle spirits were contained. The animal spirits were sustained by three kinds of respiration—pulmonary, cutaneous, and cerebral. Curtis says that a modern physiologist might see in the vital spirits a dim foreshadowing of oxyhaemoglobin, and in the operation of the animal spirits a plainer foreshadowing of what is now called nerve impulse.

To Aristotle are largely due Harvey's references to the heart as the central source of indispensable vital heat and to aliment perfected in the heart, and his blending of psychological doctrines with his teaching as to the movement of the blood. Even in his old age the English physiologist wrote that the authority of the Greek philosopher had always such weight with him that he never thought of differing from him inconsiderately. But he was a man whose independence of mind could not allow him *jurare in verba magistri*, and, in opposition to Aristotle, who gave the chief place in the economy to the heart, he transferred that primacy to the blood, which he came to regard as the very seat of the soul. To this doctrine, which sounds so strange to a modern biologist, Curtis devotes a chapter in which he shows that for Harvey the word "soul" did not mean as it did for Hamlet, the immortal part of man, but was simply the equivalent of "psyche" or "anima." Harvey's views as to the cause of the heart-beat, the venous return, the blood and innate heat, and the relations of his teaching to that of the ancients, are set forth with a great wealth of illustration from the writings of his predecessors. A brief account of his controversies with Scaliger and Fernelius on the subject is given—all now to us "a tale of little meaning, though the words are strong." The book ends with a short chapter dealing with Harvey's parallel between the circulation of the blood and the circulation of the heavenly bodies.

In some thirty pages at the end of his book Dr. Curtis indicates the sources of his account of the doctrines of the ancients and of Harvey, and the list is proof of the thoroughness with which the subject was studied. The book is illustrated with a portrait

¹ *Harvey's Views on the Use of the Circulation of the Blood.* By John G. Curtis, M.D., LL.D., formerly Professor of Physiology in Columbia University in the City of New York. New York: Columbia University Press. (Post 8vo, pp. 204; 4 illustrations. 5s. 6d. net.)

of Harvey, a transcript of a passage of his *Prelectiones*, which gives a terrifying presentment of his almost undecipherable handwriting, a photograph of the title-page of the editio princeps of the treatise *De Motu Cordis*, and a picture of the Anatomical Theatre at Padua, which is still one of the sights of the famous University where Harvey studied. The room, which is of modest proportions, has an amphitheatre for the audience around a small central oval pit where the lecturer must have stood close beside his "subject." One can picture the young English student leaning on one of the rails of the narrow tiers watching with close attention every step in the demonstration of his master, Fabricius ab Aquapendente.

"HOW WE ARE TO BE GOVERNED."

A LETTER with the title at the head of this paragraph appeared in the *Times* of August 28th, and though the writer signs himself "An Outside Observer" he is evidently well acquainted with the conduct of public affairs both in Parliament and in Government offices. He begins by the assumption that the Government we shall have after the war will be neither the Government we had before the war nor that evolved during the war, and he lays it down as axiomatic that the functions of a central government are twofold—control and administration. Some departments are concerned almost wholly with control, others are almost wholly executive, but both in the past have been similarly administered. At the head was a politician who only accidentally had any familiarity with the class of business he was set to manage. In the Admiralty and the War Office there were boards of experts, the Sea Lords and the Army Council. In all other departments the permanent secretary was frankly and undisguisedly the head. While the ability, the familiarity with precedents, and the devotion to public interest of the secretariats were all unquestioned, their education was purely literary, and their training made a man an official, not a man accustomed to make rapid decisions on practical affairs. The system might perhaps be described as bureaucracy tempered by questions in the House of Commons. Under the pressure of the war we have seen men of affairs with special practical knowledge placed at the head of several of the great departments of State, but even if this were the best possible solution it is not likely to be continued after the war, when the politician will again take care to come into his own and we shall again have the round man in a square hole, and vice versa. The writer goes on to contend that the country cannot afford after the war to shed from the Government its experts and business men, nor can it be permanently governed by the crowd of *ad hoc* committees called into existence by the emergency of the war. His suggestion seems to be that a Government department should be conducted more or less on the principle of a public company, with a board of expert directors and a managing director to carry out its behests. Lord Rosebery some years ago wrote a paper or made a speech in which he seemed to suggest that the Board of Admiralty should be taken as a model for other departments. The War Office has the Army Council, and the Secretary of State for India has a council, and it can hardly be, the writer from whom we are quoting adds, "that a council in departments such as the Local Government Board, the Board of Trade, and the Board of Agriculture would be a useless excrescence. No department can contain all knowledge within its four walls. The innumerable special committees that have been appointed during the war seem to prove two things: that outside knowledge and experience are of real use, and that men whose services command a high price in the outside market are glad to give

those services to the country gratuitously." It is hoped that when and if a Ministry of Health is constituted the principle of a consultative board of experts will be embodied. Meanwhile the reconstitution of the Ministry of National Service affords an opportunity of putting the principle at once into force. The extent of the work the Ministry is to undertake does not seem yet to be settled, but it has been reconstituted largely to take over recruiting and establish a satisfactory system for the medical examination of recruits. A great deal of the criticism of the working of army medical recruiting during the last six months owed such force as it possessed to what was regarded as the defective system of notification of recruits the medical examining boards were expected to carry out, and to the character of some of the instructions and circular letters issued to them in the Commands. We believe that the new Minister of National Service would do well to institute at once a medical advisory or consultative committee to deal with the principles by which he should be guided in issuing general instructions, and to advise him on any regulations or instructions he may find it necessary to issue from time to time. Such a body should have permanence, and could easily be constituted from members of the Committee of Reference, the Central Medical War Committee, and the Scottish Medical Service Emergency Committee, with, possibly, the addition of medical representatives of certain Government departments concerned. In addition to the matters already mentioned, a consultative committee constituted as suggested would be well qualified to advise the Minister as to the constitution of the local medical recruiting boards, and, with the assistance of the experience of the Local Medical War Committees, to ensure that the members of the local boards were chosen from among members of the medical profession in the various localities able and willing to undertake the responsible work of the medical examination of recruits, so as to ensure recognition of the true physical condition of each man and appropriate classification.

THE ORDER OF THE BRITISH EMPIRE.

A NUMBER of medical men and women are included in the first list of the new Order of the British Empire, which has been instituted for the special purpose of recognizing services to the empire in connexion with the war. Honorary Lieut.-Colonel Edward Stewart, R.A.M.C., Medical Assessor to the British Red Cross Commission in France, is created a Knight Commander. Dr. Louisa Garrett Anderson, organizer of the first hospital run by women at the front; Lady Florence Elizabeth Barrett, M.D., who has rendered valuable service in connexion with the British Red Cross Society; Lieut.-Colonel Jay Gould, I.M.S., Commissioner of the British Red Cross in Mesopotamia; Dr. Thomas Wheeler Hart, County Director of the British Red Cross Society, East Lancashire; Dr. Flora Murray, medical officer in charge of the Endell Street Hospital; Dr. Mary Scharlieb, who has done valuable social work in connexion with the war; and Dr. Alexandra Mary Chalmers Watson, chief controller of the Women's Army Auxiliary Corps, have been made Commanders of the Order. Dr. Wilfred Balgarnie, Assistant County Director of the British Red Cross Society for Hampshire, is made an Officer of the Order; while the first Members of the Order include Dr. S. J. O. Dickens, Commandant and Medical Officer of the British Red Cross Society for Sussex; and Dr. G. C. Franklin, medical officer in charge of the Hawkstone Red Cross Hospital, Fareham, who was President of the British Medical Association in 1905, when it held its annual meeting at Leicester. A remarkable feature of this honours list is the fact that the son and daughter of Dr. Elizabeth Garrett Anderson, the doyen among women medical practitioners, both receive high awards: Mr. Alan Garrett Anderson, lately vice-chairman of the Wheat Commission, and now Controller at the Admiralty, being

appointed Knight Commander, and Dr. Louisa Garrett Anderson a Commander. This family record becomes the more remarkable by the circumstance that Mrs. Chalmers Watson, also a Commander, is a cousin of Dr. Louisa Garrett Anderson and sister of Sir Eric Geddes, K.C.B., First Lord of the Admiralty, and a Knight Grand Cross of the new Order, and of Sir Auckland Campbell Geddes, K.C.B., Minister of National Service, who is a member of the medical profession and Professor of Anatomy in McGill University. Many other workers on behalf of the Red Cross and of various special agencies for the relief of suffering receive recognition in the first list of the Order, among whom we may mention Mr. Arthur Stanley, Chairman of the Joint Committee of the British Red Cross Society and the Order of St. John of Jerusalem; Mr. W. H. Goschen, Chairman of King George V Hospital; and the matrons of St. Bartholomew's, St. Thomas's, Guy's, and the London hospitals. It is announced that lists for India and the Dominions, as well as for the civil, military, and naval services, will appear at a later date. On behalf of the medical profession we congratulate those of its members who have been honoured by inclusion in the first Order of chivalry open to both sexes, and instituted for the sole purpose of rewarding zeal and merit in the national service during war time.

THE CAMPAIGN AGAINST VENEREAL DISEASE IN GERMANY.

At a recent meeting of military surgeons, Ministerial-direktor Kirchner¹ read a paper on new ways in the campaign against infectious venereal diseases. This title was not happily chosen, for he seems to have given a gloomy retrospect of legislative fiascos rather than new and definite schemes for the future. But even his retrospect is interesting, and his tale of laws framed only to be broken is certainly instructive. At the outbreak of the war, the decree of 1907, dealing with prostitution, was suspended by the military authorities, who reverted to the legislative measures of 1898. These measures did not prove satisfactory, and the war had not lasted long before supplementary regulations were demanded. It was urged in some quarters that brothels and their patrons should be shielded from the rigors of the law, while the Conservatives and the Centre hesitated thus to license licentiousness. The nature of some of the suggestions made is shown by the demand that every person should be liable to compulsory examination, that the infected should be isolated compulsorily till they were no longer infectious, and that professional secrecy, as between patient and physician, should not be permitted. Kirchner considered that Neisser's programme—commonly known as Neisser's testament—framed shortly before his death, went too far. Neisser's wish to penalize sexual intercourse by persons knowing that they were infected would lead, in Kirchner's opinion, to blackmailing, the breaking up of family life, and to suicide. Kirchner's attitude to the problems of venereal disease is evidently well epitomized in one of his sentences: "Certainly more must not be done than is absolutely necessary."

URINARY EXCRETION OF SALICYLATES.

HANZLIK, SCOTT, AND THORBURN² have investigated the quantitative excretion of salicyl in acute rheumatism, in non-rheumatic patients, and in normal persons, in the attempt to throw light on the mechanism of the therapeutic effect of salicylates in acute rheumatism. About 20 c.cm. of a 10 per cent. solution of sodium salicylate was given hourly until toxic symptoms appeared; this on an average was after a quantity equalling 13.8 grams of salicylic acid had been taken. The fluid intake was

meanwhile kept as constant as possible, 100 c.cm. an hour, until toxic symptoms appeared, and then 200 c.cm. hourly until salicyl disappeared from the urine, a period of three or four days, when the experiment was finished. It was found that in acute rheumatism the total excretion (60 per cent.) of salicyl was about 15 per cent. less than in normal persons (75 per cent.), and that this difference was greatest during the first ten or twenty hours after administration of the salicylate. Further, the concentration of salicyl both in the blood and in the urine of rheumatic patients when manifesting toxic symptoms was less than in normal persons in the same circumstances. The difference in the urinary excretion is not due to diuresis, or to retention and vicarious excretion, for example, by the skin, but to destruction of salicyl which is more marked in a febrile rheumatic than in a normal person. The excretion of salicyl was also investigated in the following four diseases: Chronic alcoholism, chronic morphinism, febrile tuberculosis, and lessened renal efficiency, and the amount of salicyl was found to be diminished to about the same extent as in acute rheumatism, thus indicating increased oxidation or destruction in these conditions. An important practical point was also noticed in this investigation and confirmed by the observation of some hundreds of cases in the Lakeside and City Hospitals of Cleveland—namely, that the addition of sodium bicarbonate does not modify or prevent toxic symptoms from the administration of salicylates. The late Dr. David Lees strongly insisted on the importance of giving double the quantity of alkali with salicylates in order to prevent salicylism, and British physicians have largely adopted this owing either to the influence of the old alkaline treatment or to the more modern fear of acidosis. It is conceivable that rheumatism does not react to salicylates in America in quite the same way as in this country, for in the earlier editions of Osler's *Medicine*, before the author left Baltimore, English students were surprised to read that the only effect of salicylates on acute rheumatism was the relief of pain. Although this explanation may appear rather doubtful, it is difficult from experience to believe that Lees's treatment is futile. The addition of sodium bicarbonate did not influence the rate of the urinary excretion of salicyl.

PSEUDO-APPENDICITIS ZOOPARASITARIA.

In 1899 Professor G. F. Still found oxyurides in the vermiform appendices of children under the age of 12 years, and considered that catarrhal changes might thus be induced. Two years later Metchnikoff reported three cases of appendicitis associated with the presence of *Ascaris lumbricoides*, which he thought prepared the way for the bacteria responsible for the inflammation. Since then numerous writers have maintained the view that there is a causal relation between worms and appendicitis, and others have opposed it. In an elaborate paper on the pathology of worm infection of the vermiform appendix, based on examination of 103 appendices removed by operation at Freiburg i. Breisgau, and of 23 appendices from the *post-mortem* room at Edinburgh, Dr. Y. Matsuoka¹ concludes that worms are neither directly or indirectly the cause of acute or of chronic appendicitis either in children or in adults. Among the 103 operation cases worms or their ova were found in 48, or in nearly every second appendix, and in 45 instances (25 containing worms) the appendix was normal. In these 25 cases there were clinical symptoms suggesting chronic appendicitis—namely, chronic pains and slight tenderness on pressure in the ileo-caecal region, but fever was absent or there was only a very slight rise of temperature. This condition is more than twice as common in females as in males, and can be recognized by the presence of worms or their ova

¹ *Berl. Klin. Woch.*, March 19th, 1917.

² *Journ. Pharmac. and Exper. Therap.*, Baltimore, 1917, ix, pp. 247-267.

¹ *Yeisaku Matsuoka: Journ. Path. and Bacteriol.*, Cambridge, 1917, xxi, 221-247.

in the faeces. The proper treatment is removal of the worms, not of the appendix. Aschoff, under whom Matsuoka worked, came to similar conclusions, and called the affection appendicopathia, but as this name does not entirely exclude the possibility of an inflammatory origin for the symptoms the title pseudo-appendicitis zooparasitaria is preferred by Matsuoka.

TUBERCULIN IN CANCER.

At a meeting of the Swedish Förening for the Invärtes Medicin, Dr. I. Holmgren¹ gave an account of his experiments with tuberculin in several cases of cancer. While he was medical superintendent of the St. Göran Hospital he had occasion to make necropsies on between three and four thousand tuberculous subjects, and was struck by the complete absence of malignant growths. It was therefore possible, he thought, that the tuberculous toxins might possess an inhibitive action on the growth of cancer cells. He found that the subjects of cancer were astonishingly tolerant of tuberculin, and, after he had experimented some time with comparatively small doses, he realized that much larger doses could be tolerated without any reaction. Indeed, in some cases he gave 100 mg. subcutaneously at the first injection. Of the fifty-two patients thus treated the majority did not react at all. There was no rise of temperature or general symptoms, and in 88 per cent. there was no rise of temperature above 38° C. (100.4° F.). In the few cases in which a febrile reaction occurred it lasted only a few hours. Ultimately Dr. Holmgren came to regard tolerance for tuberculin as such a characteristic feature of cancer that he employed it in the differential diagnosis between cancer of the stomach and simple, chronic, gastric ulcer. He did not consider the absence of a reaction to tuberculin simply to be the outcome of the patient's cachectic condition, for these patients showed great tuberculin tolerance long before the stage of cachexia was reached. He was reserved in his estimate of the effect of the tuberculin on the course of the disease, which in every case was unsuited for operative or radium treatment. In two cases the disease ran a strikingly slow course, showing practically no progress during an observation period of more than a year. Several other patients felt much better for the injections and felt worse when they were interrupted.

PULSUS ALTERNANS AND DIGITALIS.

The bad reputation of digitalis in cases of heart disease showing the pulsus alternans is unmerited, and is explained by Windle² as due to the common error of regarding as the pulsus alternans irregularities in the force of the pulse due to premature or extrasystoles succeeding each normal beat, or to auricular fibrillation. Extrasystolic bigeminy not uncommonly ensues in patients fully under the influence of digitalis, and hence the misconception that digitalis has the power of causing the pulsus alternans. From observation of the effects of digitalis on the pulse of patients with pulsus alternans Windle finds that this form of irregularity is not increased; on the contrary, it not infrequently disappears temporarily while the symptoms are improved in all respects, even though there may be a coincident rise in the arterial blood pressure. The last circumstance is at first sight surprising, for, as the pulsus alternans is invariably the expression of an overtaxed heart, it might be expected to become more pronounced with increased peripheral resistance. It appears, however, that the pulsus alternans signifies disproportion between the contractile power of the heart and the rate at which it is beating; and that, in fact, the most powerful of the factors influencing the persistence, increase, decrease, or

abolition of the pulsus alternans is the rate of the heart; thus in the same patient it is the rule to find alternation increased with a rise and diminished with a fall in the pulse-rate. Digitalis abolishes pulsus alternans only when it slows the pulse, and the rate of the pulse at which alternation ceases is usually the normal, but exceptionally this form of irregularity persists when the rate is somewhat below normal, and is a very ominous sign, for since alternation points to disproportion between the strength and rate of the heart, it follows that the slower the rate of a pulsus alternans the greater is the cardiac exhaustion. A slow pulsus alternans—namely, about the normal rate—is only seen in senile cardio-vascular degeneration, and it is a particularly bad prognostic to find a persistent alternation when digitalis has slowed the pulse down to 70 to 80 per minute.

A FARM COLONY FOR TUBERCULOUS SOLDIERS.

The good work done during the war by the Young Men's Christian Association in the provision of huts and in other ways is well known and has received recognition from many general officers and many medical officers in the field. It is now making an interesting experiment in the establishment of a farm colony to provide a home and industrial training for discharged soldiers suffering from tuberculosis in its early stages. The farm comprises thirty acres of land, arable and pasture, with good buildings and a farmhouse. A number of huts, specially designed for the purpose and each containing two beds, have been erected on a sheltered and wooded portion of the estate for the accommodation of patients. The farm is in the neighbourhood of Poole, Dorsetshire, its soil is gravel and sand, and water is laid on. The colonists are to stay on the farm for periods of not less than three months, determined by the committee on the recommendation of its medical advisers. Patients are put to such useful work as they are capable of performing with benefit to their health, and it is hoped by a system of graduated labour to restore them to their full working capacity. Men who on their admission are unfitted for active exercise begin by making mops, mats, and so on; next they walk from one to six miles a day next they do light gardening work and attend to poultry and rabbits; then they begin to use a small shovel, then to dig broken ground and mow grass, and finally do such heavy work as trenching, mixing concrete, felling trees, and other work on the farm. The honorary medical adviser in London of the committee managing the colony is Dr. T. D. Acland, and it is intended that patients shall, as a rule, only be admitted after examination by him. Dr. Hyla Greves of Bournemouth is acting as consulting physician, and Dr. Small of Poole as visiting physician. The institution is under the general direction of a lady commandant, there is a resident nurse, and an ex-sergeant-major of artillery with two years' experience of Frimley sanatorium will be in charge of the men for discipline and instruction. If this experiment succeeds, as we hope it may, it is the intention of the Y.M.C.A. to form other colonies on similar lines. At a meeting of the National Council of Young Men's Christian Associations at the central office, Tottenham Court Road, on Tuesday next, at 7.30 p.m., Dr. Halliday Sutherland will give an address on consumption, its cause and cure, illustrated by a cinematograph film.

DR. MADISON TAYLOR has tried his hand at drawing up a register for the collection of trustworthy vital statistics. It contains provisions and directions for recording personal and family characteristics, and histories of birth, growth, health, disease, etc., with blanks for such supplemental data as photographs, clinical and dental records. The volume also includes articles on the child as a problem to parents, the building of a citizen, environment and inherited tendencies, personal hygiene, age and age values, and the development of the mind. The publishers are the F. A. Davis Company, Philadelphia.

¹ *Hygien*, March 16th, 1917.

² J. D. Windle: Clinical Observations on the Effect of Digitalis in Heart Disease with the Pulsus Alternans, *Quart. Journ. Med.*, Oxford, 1916-1917, x pp. 274-290.

THE WAR.

AN AMBULANCE IN REST.

BY

CAPTAIN ANDREW MACPHAIL,
CANADIAN ARMY MEDICAL CORPS.

In the Canadian Corps there is a saying that the life of a soldier is a long Newfoundland rest, which means that one stops work and begins again. A field ambulance never rests, unless it be by accident. Such an accident befell one August. There is now no harm in speaking of it, since it happened so long ago, and the phenomenon is of so rare an occurrence.

For more than eleven months we had been in the Ypres salient, still a salient, but now happily turned in the opposite direction. We left it without regret, since that particular part of Belgium is not calculated to inspire much enthusiasm as a place of residence. During that year the only rest was a change of work. But now the corps was on the move, and there was a chance that some particular unit might remain in a sheltered nook whilst the army flowed by.

To move an army corps is a simple, but precise, affair. The corps proceeds by divisions; divisions proceed by brigades; brigades by battalions. Accessory services all have their place—artillery, sappers, pioneers, ambulances, and train. These various units at the initiation of the movement may be scattered over the countryside. They can be set in motion at a word as easily as if they were railway trains. The trick is to start each unit at the proper time, so that it will fall into the column at the appointed place. The capacity of roads is limited. Roads make detours. They cross and converge. It demands nice calculation to set the whole corps going upon a main line of communication fifty miles long.

A unit of the Second Division, for example, may find itself well to the rear when the movement from the front begins. It must move out to give place to an incoming unit, and there it must wait until the First Division has passed, and its own division has come down. On the first day a unit moves out by a short march into an open country. On the second day it makes a long march, and waits in billets until the appointed time. That was the happy chance which befell the Nth Field Ambulance.

The short march brought us from Belgium into France. Every mile the scene of desolation faded. The hops were now hanging in festoons, the buds well formed, and the clear ground between the rows of high poles seemed like an endless bower. By noon we came into a large farm which was at our disposal. The farmer made us welcome. He was a grave, handsome man, and very rich. He owned 110 acres of land. He had two daughters and seven grandchildren in his house. His only son went to the war two years previously, and had not been heard of since.

Next day came the long march. At least it was considered long, and no secret was made of the opinion. By this time the Ambulance was a veteran one, and not a man fell out. It was a holiday for these young Canadians, walking through the pleasant country. War alone could have created such a day upon which peaceable and peace-loving boys should march on the business of war through villages which bore the names of Quæstraete, Oxelaire, Bavinchove, Noordpeene, Belembers, Volkerinchove, Boolezele.

Boolezele was the place of rest. To every man in this particular unit Boolezele will always be remembered as the place "where our caravan has rested." The day's march and the quiet interval that followed was an interlude between Ypres and the Somme. We had moved out at 7 in the morning. Rain threatened, but the farmer assured us that the "barometer was good." In every French farmhouse is a barometer, and it is consulted as if it were an oracle. The farmer was right. The morning continued cool and cloudy until we climbed the shoulder of Mt. Cassels. Then the sun came out, and we had brilliant August weather, with the light in a strong blaze travelling from field to field. France disclosed to us all its dignity, beauty, and richness in dainty châteaux half hidden in wooded parks, in massive buildings set in large undulating

and hedged fields. For such a treasure-house France may well fight.

Towards evening we gained the summit of a hill through a long avenue of trees. The land fell away to the left. A yellow road led down the slope and upward again towards the west. Red roofs were shining in the sun across the valley, and a single spire lifted itself to the sky. The Quartermaster came riding back and met us at this spot. His young face shone as if he had seen an angel. He had been into the promised land. This was our place of rest, and he was to be our guide.

The march was twenty miles. We had been in the saddle, or afoot, for nine hours, and there was yet something to be done before we sought our billets. But we had done it so often that now it did itself. Wagons were parked and off-loaded. The fifty horses were put on their lines. Hospital tents were erected. The cooks were at work. The men were fed and the details of the camp were left to those who were responsible for them.

There was dinner at an estaminet—hot soles from the sea in a rich, brown sauce, two pairs of portly ducks, yards of crisp bread, butter fresh from the dairy, and coffee made with a loving hand. The woman served the meal with a light heart. Her husband was *permissionnaire*; he sat in his own kitchen smoking his pipe, and we gave him much respect. A French soldier is sacrosanct in our eyes. We go softly in his house.

We were in civilization once more. Each house stood square on its own bottom. The walls were intact, and true as a plummet could make them. The church had a spire and its windows glowed in the sun. The Place was undefiled by the debris of war. Women walked in the streets, free and unafraid. We spoke with them. Fresh from witnessing the bowed and broken women of Belgium, who creep in the gloom and mire of their ruined homes, or toil in their heavy black fields, these French women seemed to be creatures of life and gaiety; but at a chance word the smile and sparkle would fade. In the presence of unshed tears the conversation died.

The instinct to set up a separate establishment quickly showed itself. There was a desire to withdraw from the common life, and to eat alone. Out of this arose the idea of hospitality to show how well one lived. In a day a society was created. Invitations were issued, and men who had lived in common for nearly two years now found themselves the guests one of another. It happened at times that all ten officers of the unit found themselves under the one roof, as if they were in the common mess again, but it was quite different. They were fellow guests of the one host, and were governed by a new convention.

One who lives in a house of the richer sort quickly imputes to himself the magnificence of the owner, and classes in the little society were created. The Major, whose hospitality rises to genius, had his billet in the house of a woman who was reputed to be very rich, and very religious. The invitation to visit him was quite formal. One is scrupulously careful to present a visitor to the woman of the house, who is the superior host. Then we are in society indeed, and may even be invited to the kitchen. In the present case the kitchen was a room with a roof of glass, which sloped towards the morning sun. Two enormous grape vines entered the room below the roof and spread themselves over the transparent ceiling. The one vine bore red grapes; the other bore white grapes, and the clusters hung in hundreds within the room.

The woman with her tireless old feet ran for a ladder. She climbed the steps, and cut clusters of red and white grapes. She set them forth on the table and placed a bottle of red wine in the midst. Then she proceeded to our entertainment. She told us marvellous things. This war, she said, was in preparation for forty years. When she was a child, living in her father's house, they had a workman who was a prophet. He foretold that she in her time would see great wonders—namely, ships that sail in the air, engines running in the cities, horses sweeping the streets, and a great war. Five years ago she was returning from a pilgrimage at Lourdes. On the way she stopped in Paris at the house of a nephew, who is a physician. One morning as she was taking a little promenade in the streets of Paris she beheld the first three portents. From that day she expected the great war, and it had come. The story was very long and much complicated by extraneous matter, but as the woman spoke very fast and in a shrill voice, and as she lacked many teeth and her mouth

was filled with grape skins, I could not gather all the finer points of her discourse.

We were indebted to a curious chance for a further introduction to the larger society of the town. I was walking in company with my dog, who was of a whimsical type. A woman began to call to him in a peremptory voice. He suppressed his indignation at the familiarity, and followed close with more than usual gravity. As the woman came nearer she discovered that the dog was not hers, but she was careful to explain the source of her error. She had a dog at home like mine, and I must come and see. She did not think it possible that there were two dogs in the world of that breed. As we walked to her house she explained that her dog had come from Lille, and I assured her that I would seek out his relations when we came to that town. Before the visit was at an end, she said that her son was at the Somme, and I assured her that if I met her son I would bring him the news: that his mother had given me a glass of wine; that she had showed me the garden, the pheasants, the rabbits, the ducks, and the two horses. "And do not forget the dog when you come to Lille," she said. "In that way you will find my relations."

One evening the band of the Xth Battalion played in the Place. They played all the Peer Gynt suite, whereby we were given much respect. All Society was there. Each one introduced the friends he had acquired during the day, and so we were established.

The music was for the entertainment of our hosts, and the performance of the pipe-band was received with excessive politeness. An old man with the sad face and homely dress of a peasant was listening with an expression of deep concern and a trace of shame, as if unwittingly he were present at some alien rite. I asked him how he liked the music. "I do not understand it," he said, and with a gesture of self-deprecation he added, "I am afraid the fault is in my ears."

During those few days each officer manifested his especial genius for making himself comfortable in his own way. The adjutant smoked cigars, and heard never a word that was said to him. The Young Major made a methodical acquaintance with every inhabitant of the town. First, he determined the main family lines; then he investigated the collateral branches and ascertained their relationship. He entered into the joys of the young and the sorrows of the old. He visited the sick, and did not complete his ministrations until he was summoned to the convent to consult and advise upon the condition of the *refugiés* who were sheltered within its walls. The Colonel enjoyed himself in his orderly room poring over establishments, writing his war diary, checking nominal rolls, and verifying accounts. The officer with the Italian voice spent whole days visiting the shops to seek out the strange foods which are affected in foreign parts. One captain passed the time with his stethoscope. It was nearly a year since he had sufficient leisure to expend upon a case and examine the patient to his satisfaction. The sounds he heard seemed to give him as much pleasure as if they originated in an old and well-played violin.

When the newness of the situation wore off, the surrounding district afforded fresh interest. To obtain a general view one climbed the church tower. It was a blue, blowy afternoon, following a sunny, showery morning, and earth and sky were at their cleanest and freshest. From this considerable elevation of hill and tower there was much to be seen. To the north—Dunkirk, with a flash of breaking wave in the Channel beyond; Gravelines to the west of that; and Calais itself in a dun cloud away to the south. Two years ago the advanced guard of the enemy was arrested in this very town. The enemy was within actual sight of Calais. That will be for ever a bitter moment in his history.

The village to the north stands upon higher ground, and from its church tower on a clear day the cliffs of England can be seen. The colonel of a battalion which was billeted there showed his solicitude for his officers by allowing them to climb to the steeple and take a look at England when he could not grant them leave.

Best of all we were out of the mud. With the nearness to the coast, the nature of the soil had changed and the roads were crisp with sand. In Belgium the horses slid and slipped over the greasy earth; here their hoofs bit

into the path with a clean, crunching sound. This was riding for pleasure, by curving paths and sunken lanes as beautiful as any in England, where we had once spent nearly five months in training.

By common consent, the most perfect billet of all was in the house of a man named S—. It was a small house, but it stood in the street of the rich. The man himself had been a scrivener or writer to a notary, and by long service his right hand was cramped and distorted. The malady affected his foot as well, but he was a *rentier*; he owned his house and garden, and was a person of much consideration in the community. His sister lived with him, a silent, shy woman, who crept about the silent rooms in silent slippers of cloth.

The spare room was at the back, a little place with a large bed, and a window that looked into the garden toward the east. This garden was a walled court, with pear trees ripening their fruit against the warm walls, and all manner of vegetables growing in the moist shade. In the middle of the court was a bed of flowers, such as blaze with colour in the late August. Beyond all this were the rich fields of France, wooded slopes, and pastures luscious with grass.

The woman had the repute of being a *chef de cuisine*. In the morning she proved that it was so. In the little room that fronts the street a table was spread. There were pears from the garden, an omelette from the clean kitchen, coffee clear as a trickle from a Highland peat bed, milk hot—yet free from scum—little breads of white flour, and butter made whilst the food was preparing.

Meanwhile the battle of the Somme was in progress. Officers were returning who had gone to prepare the way. They furnished us with an estimate of the casualties we should be obliged to care for. They explained the lie of the land—Tara Hill, the Sunken Road, Death Valley, Casualty Corner, Pozières, and Courcellette. They told us what was expected of the Canadian Corps. Our colonel, commonly called "the dear little colonel," missed not a word which would help him in his enterprise, little recking that this was his *coœna suprema*.

That day a motor ambulance went to St. Omer on its usual business; we were to move in the morning. The driver brought back certain things from the market, and there were four persons at table. That evening the old order passed away. Again there were pears from the garden. There was a mackerel—one apiece—cooked as no fish ever had the honour of being cooked, *à la meunière*, as the miller's wife cooks a fish, with brown butter and parsley. There were two young chickens from a near-by farm, and lettuce so living that the leaf complained aloud before it took the oil. Also there was wine of Burgundy and contentment.

In the morning we moved out upon the road at day-break. It was a morning heavy with clouds. The sun leaped up red. A sergeant from New Brunswick uttered the oracle:

Evening red and morning grey
Will bring the traveller on his way,
But evening grey and morning red
Will bring down showers on his head.

We took the road southward by Watten, and as if the portent were not complete, a rainbow raised its arch in the western sky. "A rainbow in the morning is the sailor's warning," the sergeant said. And it fell out as the sergeant had foretold.

ARMY MEDICAL SERVICE.

A COMMITTEE OF INQUIRY.

THE Secretary of State for War has appointed a Committee composed of

Major-General Sir Francis Howard, K.C.B., K.C.M.G. (chairman),
Sir Rickman John Godlee, Bt., K.C.V.O.,
Sir Frederick Taylor, Bt.,
Sir William Watson Cheyne, Bt., K.C.M.G., C.B., M.P.,
Lieut-Colonel H. J. Stiles, M.B., C.M., F.R.C.S.,
Dr. Charles Buttar,
Dr. Norman Walker, and
Dr. J. B. Christopherson, F.R.C.S., F.R.C.P. (secretary),

to proceed at once to France for the purpose of inquiring into various matters connected with the personnel and

administration of the Army Medical Services in that country.

On their return they will carry out similar investigations in the United Kingdom.

Sir Francis Howard, who distinguished himself in the Sudan campaign of 1898 and during the South African war, was Commander-in-Chief of the Western Command in 1905-7, and Inspector of Infantry 1914-15. Sir Rickman Godlee, Sir Frederick Taylor, and Dr. Buttar are members of the Central Medical War Committee, the last named being Chairman of its Executive Committee. Sir Watson Cheyne, who is a consulting surgeon R.N., as well as M.P. for the Universities of Edinburgh and St. Andrews, is a member of the Reference Committee of the Royal Colleges in England, as are also Sir Rickman Godlee and Sir Frederick Taylor. Dr. Norman Walker is convener of the Scottish Medical Service Emergency Committee. Lieut.-Colonel Harold J. Stiles is the well-known Edinburgh surgeon who in addition to other war work is Deputy Inspector of Military Orthopaedics (for Scotland). Dr. Christopherson, the secretary, saw service during the South African war, and is Director of the Khartoum and Omdurman Civil General Hospitals.

VENEREAL DISEASE IN THE AUSTRIAN ARMY.

At a meeting in Lemberg¹ of medical officers serving in the Austrian army, Dr. Moldovan of Vienna gave an account of the measures taken to combat venereal disease in the army in the field. About 4 per cent. of the men were notified yearly to be suffering from venereal disease. The numbers admitted to the central hospitals showed a decrease in gonorrhoea and soft sore, but syphilis was apparently on the increase; 5 per cent. were infected at the front, 20 per cent. on the lines of communication, 75 per cent. outside the sphere of the army. The majority of infections occurred in brothels. The measures taken were personal prophylaxis, sanitary control of prostitutes, and thorough, timely treatment. The sphere for prophylactic treatment was in the interior; it was more difficult at the front. The sanitary control of prostitutes within the army sphere was most vigorously carried out. There were hospitals and out-patient departments for diseases of women, compulsory examination if necessary, and periodical control of prostitutes. Out-patient departments for soldiers suffering from venereal disease were also provided and field brothels, where examination before, and personal prophylaxis after, intercourse were enforced; thoroughness of treatment was guaranteed by collecting the infected soldiers in a big central hospital. In cases of syphilis Wassermann's reaction was used at intervals of three months after discharge, and treatment was renewed when necessary. By timely treatment and the disclosure of concealed cases all plans for wholesale examinations of the soldiers on demobilization would be superfluous. The control of venereal disease was effected through regular, periodical examination by the army medical men, and by eliminating the sources of infection near the front.

Professor Finger of Vienna discussed venereal disease in the interior, and pointed out that as the ordinary methods of superintending prostitution did not fulfil their aims they must be faulty. Only a small number of women were under control, in Berlin only 5,000, while it was estimated that there were 25,000 clandestine prostitutes. Again, the least dangerous were under control; 70 to 75 per cent. were infected with syphilis before they were registered. The most dangerous were the young women, because they were most in demand and were most recently infected. The principles which had proved successful in combating other infectious diseases must be applied to venereal disease—namely, dissemination of knowledge, facilities for treatment, including compulsory treatment, notification of the dangerously infectious and punishing the careless. In 1906 Denmark gave a lead by adopting legislation on these lines. Treatment by quacks must be forbidden, as also the distribution of leaflets on self-treatment and treatment by correspondence. Unrestricted compulsory notification was not advisable because it required such complicated machinery, and because it frightened patients away and favoured blackmailing, but a

system of notification limited to the dangerously infected was required.

Professor Lukasiewicz of Lemberg described the distribution of venereal disease in Galicia before the war and the condition of the East Galician Carpathians, where syphilis had been endemic since the Russian invasion in 1848. The number of patients treated in hospitals in Galicia in 1913 was about 10,000, and the total number of cases might be estimated at 250,000 at least. The war had made this state of affairs worse. The Russian occupation brought an increase of venereal disease. In 1916 the number of women admitted to hospital through the agency of the police was 1,340 as compared with about 100 in peace. Hospitals, out-patient departments, and consulting rooms were established. He insisted on the need for penalizing the spread of infection, of enlightenment by school medical officers, and on the employment of local practitioners for treatment, the control of wet nurses, and compulsory examination of children who were going to be suckled. He also advocated compulsory treatment, prohibition of quackery, a limited system of notification, and extension of the obligation of professional secrecy to every official who had to deal with venereal disease.

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on August 25th contains a further list of awards for conspicuous gallantry and devotion to duty. The names of the following medical officers appear in the first portion of the list:

D.S.O.

Lieut.-Colonel John Smith Purdy, A.A.M.C.

For conspicuous gallantry and devotion to duty. Although continually under shell fire for seven days, he exercised close personal supervision over the evacuation of the wounded, and by his own example of courage and disregard of danger he animated all ranks with a similar attitude of mind. His work during preliminary preparations displayed the same untiring energy and devotion to duty.

Major Rupert Iggulden Furber, A.A.M.C.

For conspicuous gallantry and devotion to duty. He had charge of an advanced dressing station for five days, during which it was under heavy shell fire most of the time. He displayed the greatest ability and devotion to duty in organizing the dressing and evacuation of a large number of the wounded, on several occasions helping to bring them in himself.

Bar to Military Cross.

Temporary Captain Ernest Harrison Griffin, M.C., R.A.M.C.

Military Cross.

Captains A.A.M.C.: Jack Rowland Stanley Cross Beard, Wendell Inglis Clark, Laurence Bedford Elwell, Raphael Leo Kenihan, Keith Shelley Parker, Harold Powell, Fritz Peter Max Solling, Cedric William Whiting.

Temporary Captains R.A.M.C.: Charles James Lodge Patch, Laurence Cecil Sebastian Roche, John Ross, Bernard Charles Tennant, Herbert George Willis.

Temporary Lieutenants R.A.M.C.: George Errington Lloyd, Frank Gordon Fedley, John Edward Sandilands.

MESOPOTAMIA HONOURS.

In a supplement to the *London Gazette* of August 25th are announced the following appointments, promotions, and awards for medical officers in connexion with the military operations in the field in Mesopotamia:

To be C.M.G.

Lieut.-Colonels and Brevet-Colonels: Matthew Henry Gregson Fell, R.A.M.C.; John Macfarlane Sloane, D.S.O., M.B., R.A.M.C.

Temporary Colonels: Charles Neil Campbell Wimberley, M.B., I.M.S.; Walter Holland Ogilvie, M.B., I.M.S.

Lieut.-Colonel Edward Victor Hugo, M.D., F.R.C.S., I.M.S. Temporary Lieut.-Colonel Thomas Percy Legg, M.B., F.R.C.S., R.A.M.C.

To be Brevet Lieut.-Colonels.

Majors: L. J. M. Deas, M.B., F.R.C.S., I.M.S.; J. D. Graham, M.B., I.M.S.; A. W. M. Harvey, M.B., I.M.S.; H. M. H. Melhuish, I.M.S.; T. S. B. Williams, M.B., I.M.S.

To be Brevet Lieut.-Colonels on promotion to rank of Major.

Captains: L. Dunbar, M.B., R.A.M.C.; W. MacNaughtan, M.B., R.A.M.C.; L. H. L. Mackenzie, M.B., I.M.S.

D.S.O.

Acting Colonel Hugh Murray Morton.

Lieut.-Colonels: James Henry Robinson Bond, R.A.M.C.; Edmund Ludlow Perry, I.M.S.; William Arthur Woodside, R.A.M.C.

Major and Brevet Lieut.-Colonel George Browne, M.D., I.M.S. Acting Lieut.-Colonel Edmund Tytler Burke, M.B., R.A.M.C. Temporary Lieut.-Colonel Arthur Brownfield Fry, M.B., I.M.S.

¹ *Deut. med. Woch.*, April 5th, 1917.

Majors: Samuel Robert Godkin, F.R.C.S.I., I.M.S.; Thomas George Ferguson Paterson, M.B., I.M.S.

Captains: Graham Rigby Lynn, M.B., I.M.S.; John Smith McCombe, M.B., R.A.M.C.; William Kenneth Morrison, M.B., R.A.M.C.; Douglas Chetham Pim, M.B., R.A.M.C.

Bar to Military Cross.

Captain Charles Albert Wood, M.C., M.B., I.M.S.

Military Cross.

Captains: Lionel Danvers Bailey, R.A.M.C.; Walter Bisset, M.B., R.A.M.C.; Hari Chand, I.M.S.; James Melvin, M.B., R.A.M.C.; Stephen Harold Middleton-West, M.B., I.M.S.; Carl Henry Rainhold, F.R.C.S., I.M.S.; Narendra Singhi Sodhi, I.M.S.; Charles Henry Neil Baker, I.M.S.; Edward Percival Allman Smith, M.B., R.A.M.C.

Temporary Captains: Alfred John Ireland, M.B., R.A.M.C.; Donald McDonald Wilson, M.B., R.A.M.C.; Arthur Budd, M.B., R.A.M.C.

ORDER OF THE INDIAN EMPIRE.

The following officers of the Indian Medical Service are appointed Companions of the Order of the Indian Empire in recognition of meritorious services in connexion with the war:

Lieut.-Colonel Felix Oswald Newton Mell; Lieut.-Colonel Bhola Nauth; Major David Munro.

FOREIGN DECORATIONS.

The following medical officers are included in the list of naval officers upon whom the King of the Belgians has conferred decorations for distinguished services rendered during the war:

Order of Leopold.

Commander: Surgeon-General Sir Arthur W. May, K.C.B., F.R.C.S., K.H.P.

Order of the Crown.

Commander: Deputy Surgeon-General Daniel J. P. McNabb.
Officer: Fleet Surgeon Kenneth H. Jones, M.B.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

LIEUT.-COLONEL F. D. BLANDY, R.A.M.C.(T.F.).

Lieut.-Colonel Francis Dawson Blandy, R.A.M.C.(T.F.), was reported as killed in action, in the casualty list published on August 27th. He was educated at the Middlesex Hospital, where he gained the Entrance exhibition in 1895, the Second Year exhibition in 1897, and the Senior Broderip Scholarship in 1900; and took the M.R.C.S. and L.R.C.P.Lond. in 1900, the M.B.Lond. in 1901, and the M.D. in 1905, and also the D.P.H. of Victoria University, Manchester, in 1905. After acting as house-surgeon and house-physician of the Middlesex Hospital, he went into practice at Tynemouth, Northumberland, where he was honorary surgeon to St. Oswald's Home, Cullercoats; to St. Aidan's Home, Tynemouth; medical officer in charge of the troops of Tynemouth Garrison, and Admiralty surgeon and agent. He joined the 1st Wessex (Exeter) Field Ambulance on May 3rd, 1910, became captain on January 6th, 1915, and had since been promoted to major and to lieut.-colonel.

MAJOR E. F. B. WILSON, S.A.M.C.

Major Edmund FitzGerald Bannatyne Wilson, South African Medical Corps, was killed in action on August 17th, aged 57. He was the fourth son of the late Rev. David Wilson, D.D., of Limerick, and was educated at Trinity College, Dublin, where he graduated M.B. and B.Ch. in 1881 and M.D. in 1890. Before the war he was in practice at Harrismith, Orange River Colony, where he was district surgeon and medical officer to the Central South African Railway.

CAPTAIN J. B. RAWLINS, R.A.M.C.(T.F.).

Captain John Branley Rawlins, R.A.M.C.(T.F.), was killed in action on August 16th. He was the elder son of the late Mr. John Rawlins of Erdington, Birmingham, and was educated at St. Mary's Hospital. He took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1914. He joined the 3rd London General Hospital as lieutenant on October 30th, 1914, and was promoted to captain after a year's service.

CAPTAIN C. WELLER, R.A.M.C.

Captain Charles Weller, R.A.M.C., was killed in the trenches on August 16th. He was the only son of Mr. Charles Weller of Redhill, and was educated at Guy's Hospital. He obtained the diplomas of M.R.C.S. and

L.R.C.P.Lond. in 1910. He took a temporary commission as lieutenant in the R.A.M.C. on November 1st, 1914, and was promoted to captain after a year's service.

LIEUTENANT C. M. ATKINSON, R.A.M.C.

Lieutenant Charles Mason Atkinson, R.A.M.C., was reported killed in action in the casualty list published on August 22nd. He was educated at University College, London, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1896. He went into practice at Ashford, Kent, where he was medical officer of the East Ashford Union Workhouse and infectious diseases hospital. He had only recently taken a temporary commission in the R.A.M.C.

Died of Wounds.

Captain J. C. Harris, R.A.M.C.

Died on Service.

CAPTAIN D. ARTHUR, M.C., I.M.S.

Captain David Arthur, M.C., I.M.S., died as a prisoner of war at Entelli, in Asia Minor, on July 31st, aged 32. He was the youngest son of the late Provost Arthur, of Airdrie, and was born on May 21st, 1885, and educated at Airdrie Academy and at Glasgow University, where he graduated B.Sc. in 1905, and as M.B. and Ch.B. in 1907. After acting as house-physician of the Western Infirmary, Glasgow, and as assistant medical officer of health of Cheadle, he entered the I.M.S. as lieutenant on July 31st, 1909, and was promoted to captain on July 31st, 1912. Before the war he was acting as medical officer of the 8th Rajputs, but was at home on leave in the summer of 1914, and returned to India at the beginning of the war. He went to Mesopotamia with the first force sent there, and took part in the landing at Mohammara, the fighting on the Karun river, the battle of Kurna, the capture of Kut-el-Amara, the battle of Ctesiphon, where he was wounded, and the siege and surrender of Kut. He was twice mentioned in dispatches, and was gazetted as a recipient of the Military Cross on October 19th, 1916. He is the officer called by the name of Gaspard in Major Barber's book, *Besieged in Kut and After*, a notice of which appeared in our issue of August 4th.

SURGEON-CAPTAIN R. A. BOSTOCK.

Surgeon-Captain Robert Ashton Bostock, Reserve of Officers, Scots Guards, died in London on August 17th. He was the son of the late Surgeon-General John Ashton Bostock, C.B., Scots Guards, was educated at Wellington and at St. Bartholomew's Hospital, and took the diplomas of M.R.C.S. and L.S.A. in 1885, and of L.R.C.P.Lond. in 1887. He entered the Army Medical Department as surgeon in 1886, and joined the 2nd Scots Guards as medical officer in 1887, but retired in 1898, and settled at Cefn Môr, Penmaen, Glamorgan. As an officer of the Reserve, he rejoined the colours on August 11th, 1914, and had been employed on recruiting duties at Whitehall.

Drowned.

Colonel T. Daly, C.M.G., R.A.M.C.

Wounded.

Major J. P. Kenny, Australian A.M.C.

Captain H. M. Anderson, R.A.M.C. (temporary).

Captain C. Dundee, R.A.M.C. (temporary).

Captain E. Edie, New Zealand Medical Corps.

Captain A. P. Gray, R.A.M.C. (temporary).

Captain F. Harris, M.C., R.A.M.C.(T.F.).

Captain R. I. Harris, M.C., M.B., R.A.M.C. (temporary).

Captain G. A. Hodgson, R.A.M.C.(S.R.).

Captain J. Kearney, R.A.M.C.(S.R.).

Captain W. J. Knight, M.C., M.D., R.A.M.C. (temporary).

Captain J. C. Metcalfe, M.C., R.A.M.C.(T.F.).

Captain I. Ogilvie, R.A.M.C. (temporary).

Captain J. E. Rutherford, R.A.M.C. (temporary).

Captain D. M. Smith, R.A.M.C. (temporary).

Captain H. S. Turner, M.C., R.A.M.C. (temporary).

Lieutenant Charles Dundee, M.B., R.A.M.C. (temporary).

Lieutenant C. J. E. Edmonds, R.A.M.C. (temporary).

Lieutenant and Quartermaster R. G. Johnston, R.A.M.C.

Lieutenant J. H. Mayston, R.A.M.C. (temporary).

Lieutenant T. D. C. Watt, R.A.M.C. (temporary).

Sister M. Benallack, Q.A.I.M.N.S., Reserve.

Sister S. Flanagan, Q.A.I.M.N.S., Reserve.

Missing.

Captain E. Newton, R.A.M.C. (temporary).
Captain A. K. Sinha, I.M.S.

DEATHS AMONG SONS OF MEDICAL MEN.

Alston, Ernest Alfred Brooke, Lieutenant-Colonel Northampton Regiment, fourth son of the late Surgeon-Major W. E. Alston of Sandgate, Kent, killed August 11th. He was born in 1877, educated at Tonbridge School, entered the Militia in 1895, and from there was gazetted to the Northampton Regiment, with which he served through the South African war, receiving the Queen's Medal with three clasps. He attained the rank of captain on July 26th, 1908, and on October 29th, 1914, was appointed second in command of the 5th Service Battalion (the first-service battalion raised) of his regiment, with the temporary rank of major. With it he went to France in May, 1915. A year later he was given the command of a battalion of the Duke of Cornwall's Light Infantry. He had twice been mentioned in dispatches.

Cahill, John Archibald, M.C., Captain Royal Berkshire Regiment, only son of Dr. John Cahill, of 12, Seville Street, Lowndes Square, S.W., killed August 16th, aged 27. He was educated at Epsom, and qualified as a solicitor in 1912. He joined the Artists' Rifles in 1907, volunteered at the beginning of the war in 1914, and went to the front, got a commission in February, 1915, and was severely wounded in the following month, and again on July 1st, 1916. He got his Military Cross last March.

Darling, Ronald Harry, Cadet, Royal Irish Rifles, youngest son of Dr. J. S. Darling of Lurgan, late president and treasurer of the Ulster Branch of the British Medical Association, was killed in action in the recent fighting in France, aged 18. Great sympathy will be felt by members of the Association with Dr. Darling in his bereavement.

Hamilton, Henry Edward Redmond, Captain Canadian Railway Troops, elder son of Dr. H. T. Hamilton of Barnes, was killed in action on May 19th, aged 31. He was an able and experienced railway engineer, and a member of the Institute of Civil Engineering of Canada. His brother is Captain C. E. P. Hamilton, D.S.O., R.A.M.C.

Irving, David Piercy, Second Lieutenant Royal Scots Fusiliers, third son of Dr. M. H. C. Irving, British Guiana Medical Service, aged 19. He was educated at Epsom College, where he was captain of the cricket eleven in 1915, and at the Military College, Sandhurst. He was gazetted to the Royal Scots Fusiliers in January, 1916, was reported wounded and missing on July 30th, 1916, and is now presumed to have been killed on that date.

Moore, Gerald F. H., Second Lieutenant Border Regiment, only surviving son of the late Colonel J. H. Moore, R.A.M.C., accidentally killed, August 12th, aged 31. Before the war he was in the Gold Coast Civil Service, and came home to join the army.

Moore, William, Second Lieutenant Royal Irish Fusiliers, elder son of Dr. A. P. B. Moore, Ashley House, Albertbridge Road, Belfast, was killed in action on August 16th, aged 24 years. He was educated at Campbell College and Queen's University, where he graduated with honours in 1914. After taking part in the suppression of the Sinn Féin rebellion, and acting as bombing instructor at Newtownards, he went to France in June last.

Penny, Bernard Willoughby, Second Lieutenant Royal Fusiliers, youngest son of Dr. E. J. Penny, of Yiewsley, Wolverton, Bucks, died of wounds August 18th, aged 22.

Reid, Donald, Lieutenant Highland Light Infantry, killed in action on August 17th, aged 19. He was the only son of Dr. J. Reid of Preston. He was educated at Preston Grammar School and Watson's College, and entered Edinburgh University with a view to joining the medical profession. He became a member of the University O.T.C., and passed out of it to the Cadet School at Gales, where he completed his military training.

Reid, John Shute, Second Lieutenant 2nd South Wales Borderers, attached to 87th T.M.B., only son of Dr. Edgar Reid (Major R.A.M.C.T.), of Swansea, died on August 17th from wounds received the previous day while leading his gun team into action, aged 20. He was educated at Wells House, Malvern Wells, and at Sedbergh School.

Shine, James Owen, Captain Royal Dublin Fusiliers, eldest and only surviving son of Colonel J. Shine, A.M.S., killed August 16th. He attained the rank of captain on April 28th, 1915.

Stockwell, Thomas Hodges, Lieutenant Canadian Forces, youngest son of the late Frederick Stockwell, M.D., of Bruton, Somerset, killed August 15th, aged 33.

Worthington, Winton, Private, Royal West Kent Regiment, only son of Dr. Humphrey Worthington, of Luton, Bedfordshire, killed August 3rd, aged 19.

MEDICAL STUDENT.

Johnstone, J. D., Second Lieutenant King's Own Royal Lancaster Regiment, killed July 31st, aged 29. He was the son of Conncillor T. Johnstone of Barrow, and was educated at St. Paul's School and at St. Bartholomew's Hospital, and had passed the first M.B. Lond. He enlisted early in the war, got his commission in 1915, went to France three months later, and had twice been wounded.

[If we shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

Ireland.

IRISH NURSING BOARD.

With the approval of the Royal College of Surgeons in Ireland, an Irish Nursing Board has been established for the purpose of standardizing the education of nurses, framing a curriculum, supervising examinations, and keeping a register of qualified nurses. The board consists of the president of the Royal College of Surgeons, with three members of the medical profession, and twenty-two nurse members elected by their fellow-nurses. It is hoped that the Irish Nursing Board will take the place in Ireland that the College of Nursing in London aims at taking in England. The co-operation of all Irish hospitals and institutions interested in the welfare of nurses and of the sick public whom they serve is desired by the board.

WAR AND INSANITY.

Dr. William Graham, Medical Superintendent of the Belfast District Lunatic Asylum, in his annual report says: "We are developing a wrong type of civilization, and this fact bears vitally on insanity and on war. The economic and social conditions of the world are ultimately the product of the spiritual ideals on which civilized life rests. Therefore, if the war should lead men to abandon the materialistic ends, or subjugate them to higher purposes, and so develop a new type of civilization, implying greater happiness and more mental equilibrium, might we not expect less insanity in the future? What we need is a startling indictment of a modern civilization with a demand for a new basis. That is a new spiritual ideal. I am certain that much of the insanity that prevails is the product of a false civilization. Civilization may be said to consist in the humanizing of man. We must learn to control our anger, to suppress antisocial and egotistic cravings, and to push into the unconscious impulses inherited from our animal ancestry. These impulses are frequently not changed or sublimated, but simply repressed. Down in the depths of the unconscious are the very same desires that actuated neolithic man—revenge, murder, and pitiless hate, and all uncharitableness. We find here, as it were, a recapitulation of the history of the race; as the different strata of the earth reveal the different levels of the evolutionary process, so in the unconscious may be detected different levels of cultured advance. War is a reversion to the original barbarism. It is an anachronism in the civilized world, a regression to the primitive instincts of the race. Hence, atrocities occur in proportion as the combatants surrender to these instincts. The responsibility for a war must rest ultimately upon the nation which first surrendered to its barbaric instincts, and thus dragged other people into the bloody maelstrom. To rouse the dormant powers of mischief that lie in the unconscious of the race, to stimulate them into activity by every device of ingenious wickedness—that is the crowning crime against civilization, and the nation guilty of it stands condemned at the bar, not alone of morality, but of rational thought. From the psychological point of view, militarism and ultra-pacifism must alike be rejected as unsound. The courageous and adventurous spirit, the aggressive and masculine impulses must be directed into new channels. Instead of wrecking the creations of civilization, these forces must be so controlled and used that they will work out man's greater good. War against disease, against the blind energies of nature, against human ignorance and misery, call for a courage and self-devotion so abundantly displayed amid the horrors of the European inferno. It is thus that the repressed instincts of a martial order can be 'sublimated' and the deepest cause of the war be destroyed at its root."

Canada.

THE MEDICAL SERVICES IN CANADA.

No satisfactory arrangement has yet been made as far as the control and care of invalid soldiers in Canada is concerned, and difficulties arising out of dual control by the military authorities and the Hospitals Commission have by no means disappeared. A memorandum was recently submitted to the Parliamentary Committee appointed to

inquire into questions relating to returned soldiers some months ago, by Surgeon-General J. T. Fotheringham, in which the serious drawbacks of the present situation were pointed out. The matter was also taken up at a special meeting of the Toronto Academy of Medicine on July 10th, when the following resolution was passed:

Whereas it has always been the custom to have wounded and invalided soldiers retained under military regulations until discharged, and treated professionally by physicians and surgeons responsible only to the military authorities; and whereas in Canada a plan has been followed whereby wounded and invalided soldiers are placed under the professional care of physicians and surgeons, who are made responsible to a civilian commission; and whereas the hospitals for the care of returned wounded and invalided soldiers, instead of being under the control of the Militia Department, have been placed under the control of the Military Hospitals Commission; and whereas up to the present the Commission have not assumed full control of these hospitals inasmuch as the medical care of patients is still, to a large extent, under medical officers responsible in part to the military authorities and in part to the Military Hospitals Commission, there exists a state of dual control which is eminently unsatisfactory, and does not ensure provision of the best treatment available for the soldiers;

Therefore be it resolved, and it is hereby resolved, that in the opinion of the Academy of Medicine, Toronto, there should be one united medical service in Canada, and that the medical care of all soldiers, invalided or otherwise, should be placed directly under a surgeon-general, to be known as Surgeon-General of Canada, with direct responsibility to the Honourable the Minister of Militia, and with a seat on the Militia Council; further, that the Surgeon-General of Canada should absorb the duties of Director of Medical Services, Invalids, and be chief medical officer of the Military Hospitals Commission, and be *ex officio* a member of the Military Hospitals Commission and of its executive. Further, that Surgeon-General Fotheringham, who has been recalled from overseas to become Director of Medical Services, Invalids, should be appointed forthwith as Acting Surgeon-General of Canada; further, that the views expressed by Surgeon-General Fotheringham in his evidence before the Parliamentary Committee on Returned Soldiers at its sitting on June 12th, 1917, are generally endorsed.

THE TORONTO ACADEMY OF MEDICINE.

The Toronto Academy of Medicine was formed in March, 1907, with 184 resident and 3 non-resident fellows; it now has 485 fellows—434 resident, 42 non resident, 4 life, 4 honorary, and one corresponding. The progress of the library of the academy has been most satisfactory, and at the tenth annual meeting, on May 1st, the president, Dr. John Ferguson, suggested that practitioners in Ontario should be asked to send any rare book or manuscript or any information relating to the history of medicine in the province to the academy, and that a fund should be opened for the purchase of old and rare editions and works on the history of medicine. He suggested also that the transactions of the academy should be published, a course which, he believed, would serve as a stimulus in maintaining a high standard in contributions made to the academy and in advancing the cause of medical education in Toronto. Dr. D. J. Gibb Wishart was elected president for the session 1917-18.

WORKMEN'S COMPENSATION ACT IN ONTARIO.

The Workmen's Compensation Act was recently amended by the Ontario Legislature. As the Act stood previously, no provision was made for the payment of the doctor's fees in cases of accident or illness resulting from accident. An arrangement has now been made by which the Compensation Board will defray all the medical, surgical, hospital, and nursing expenses incurred by an injured employee for thirty days after the accident. The amount will be paid out of the Board's Accident Fund, and employers are not permitted to collect money from employees for this purpose unless a first-aid organization which is acceptable to the Board has been provided.

Australia.

STATE CHILDREN RELIEF BOARD, NEW SOUTH WALES. In New South Wales the State maintains no barrack "homes" for the waif, the stray, and the orphan, but boards them out in the homes of other families, or of their own if there be a widowed mother or other relative remaining. The plan has just been through the fire of a

severe criticism. The Report of the State Children Relief Board for 1915-16, by its president, Mr. Alfred William Green, states that the press had given prominence to reports of cases of alleged ill treatment or neglect of State children. The majority of these were found upon inquiry to be quite baseless. In some instances the children were not wards of the board, but had been placed out by private establishments or by their own relatives, and neglect or ill treatment had been detected by the Board's officers in the course of usual inquiry.

The experience of the department is that neglect or ill treatment, when it does occur, takes place in the case of children placed with their own relatives. . . . There are, of course, instances in which the boarding-out system is abused, but these are rare indeed. . . . Every system has its defects, and the boarding-out system is no exception. The contention is, however, that boarding-out, as a system for the upbringing of neglected and dependent children, has fewer defects than any other system established for a similar purpose. Wherever it has been tried under reasonable conditions it has proved successful. Its outstanding merit is that any abuse of it is readily detectable—it is practised in the light of day; the community as a whole is competent to inspect and criticize it from individual instances; it is not possible for neglect to occur at any time to any large number of children, nor can neglect or ill treatment occur in any individual instance for any length of time without the whole community conniving at it—the school teacher, the clergy, the police, the neighbours all unite in natural co-operation with a natural system. . . . The experience of this State in securing the happiest results from boarding-out corresponds to that elsewhere. . . . Suggestions made that this system should be replaced by a system of State boarding schools must, therefore, be regarded as due to general ignorance of the whole question as well as total disregard to the results achieved in New South Wales.

The proportion of State children is 6.6 per 1,000 of the total population of the State. Rather more than half are with their own mothers. The actual cost to the State for each child boarded-out apart from its parents was £17 Os. 11d. Allowances to widows and deserted wives works out at an actual cost of £10 10s. 8d. for each child, the costs of other Australian States which retain the boarding school system are set out, and also some of the charges paid in London. There can be no doubt of the economy of the boarding-out system.

Special arrangements are made for difficult cases. Truant and uncontrollable children are housed with families living at Hawkesbury River, and a Government launch calls for them daily and takes them to and from school. It is stated that the plan works well. There are special cottage homes for weak and ailing children, and for the feeble-minded. Arrangements are made to apprentice the boys and girls, mostly in the country districts. The boys go to farms and the girls to domestic service. It is proposed to establish special trades schools for the children.

Besides this the Board is responsible for the working of the Neglected Children and Juvenile Offenders Act. It controls farm homes and industrial schools for young offenders, and takes oversight of those discharged on probation. It has the supervision of the children licensed for street trading. The Children Protection Act, which requires the registration of children under the age of 3 years who are taken into "nursing homes," is administered by the Board, also the licensing of theatres for child performers. Finally, its officers play the part of school attendance officers to the State schools. Altogether the work done by this Board appears to be admirable.

As the result of the law making the muzzling of dogs compulsory in Cuba, there has been a notable reduction in the number of cases of hydrophobia. Whereas in 1914 there were fourteen deaths, in 1915 and 1916 there was one each.

THE United States Secretary of State for War has approved an order creating a sanitary corps under the Medical Department in the army. It will include various classes of experts in sanitation, sanitary engineering, and bacteriology, and men skilled in the work of supply, transport, and storage in connexion with the Medical Department. The total number of officers in the corps is not to exceed 1 for every 1,000 of the total strength of the military forces authorized from time to time in accordance with law. There will be no rank above that of major, and no officer of the medical corps will be appointed to the sanitary corps.

Correspondence.

REAMPUTATIONS.

SIR,—Captain Sampson Handley, in the *JOURNAL* of August 25th, has forestalled me in a contribution upon the subject of reamputations which I had proposed sending you. But a few additional remarks may serve to support his opinions, as well as to indicate what appear to me some advantages in the method I practise.

He acknowledges the difficulty of obtaining efficient Gigli saws. I have always used the chain saw; and the method of its employment is as follows: An incision of required extent—two to three or four inches—is, in the case of the thigh, carried up the outer side of the limb, and hard down to the portion of the bone it is designed to remove. This incision may or may not divide vessels that may need to be ligatured. By means of an aneurysm needle curved laterally a silk suture is carried round the femur at the level at which the bone is to be sawn through. This can be fairly easily effected by forcibly retracting the walls of the incision. The silk suture is disconnected from the eye of the needle, and used as a guide and tractor for introducing the chain saw. The operator stands at a convenient height above the stump, the latter being firmly held down by the assistant. To prevent the saw locking in the compact bony tissue, and to facilitate its up and down action, carbolic oil is constantly dropped upon one side of the chain; this, trickling down to the seat of severance, very effectually lubricates the parts. In only then remains to detach the freed fragment of projecting bone. The advantages of this method of reamputation—in principle that adopted by Captain Handley—have been sufficiently well indicated by him; and although the technique in performance of the two methods differ, the results in both instances appear equally good. As nearly all the cases are more or less septic, it is of no little moment that the area of fresh tissue exposed should be as small as possible, so that the risk connected with infective absorption may be reduced to a minimum. And equally important is it to remove only as much bone as can be efficiently covered by the practically undisturbed soft tissues; in other words, the stump should be rendered as long as possible. In both these important particulars, not to mention others of a minor degree, these methods of removal of projecting bone, either by the Gigli or the chain saw, fulfil the objects aimed at, and should commend themselves for adoption in all suitable cases, thus taking the place of the commoner practice of reamputation by newly formed flaps.

A detail in the dressing of more particularly painful stumps which I have carried out in several cases is, I think, of some practical value and worthy of more extended application. Some stumps seem very sensitive to movement or manipulation of any kind; and the process of removing or applying a bandage is not infrequently fraught with a great deal of discomfort and even distress to the patient. To mitigate these drawbacks in the usual method of dressing I have had wire cages constructed which can be lightly lined or packed with antiseptic dressings and into which the stump can be slipped and rest upon a bed of soft tissue. Thus, little or no pressure is exercised upon the wound; and perfect freedom is given to the outflow of the discharges. These "stump cages" have been made for me by Messrs. Alexander Cousland and Sons, wire workers, 3, Mitchell Street, Glasgow, at the moderate price of 3s. 6d. each.—I am, etc.,

Glasgow, Aug. 27th.

A. ERNEST MAYLARD.

A SIMPLE METHOD OF BLOOD TRANSFUSION.

SIR,—I read in the *BRITISH MEDICAL JOURNAL* of April 21st a paper from James Buchanan, M.B., on a cannula for direct blood transfusion. This apparatus is made of glass and curved in the shape of an 'S'.

I would like to remind you of a paper I published in the *Correspondenzblatt für Schweizerärzte* (No. 77, 1916) after having been head surgeon in a Red Cross hospital at Lyons (France).

You will find (p. 17) a drawing of the cannula I used for blood transfusion; this cannula has been made purposely

for me on my indications. I have used it ever since with complete success whenever blood transfusion had to be undertaken in the service of my beloved and lamented "Chef" Professor Kocher in Berne.

You may see that Dr. J. Buchanan's cannula is identical with mine. After the publication of my paper in 1916 I heard that the American surgeon, Fauntleroy,¹ had also made use of a cannula of the same kind. Dr. Buchanan will have to acknowledge, as I had to do then, that there is nothing new under the sun, and that it is very difficult nowadays to be first in a new invention.

The technical method of your author is identical to that of Tuffier² in Paris and Bérard³ in Lyons. I have somewhat altered this method, as you will see in a new publication which I sent last spring to the University of Berne, and which will appear shortly in the *Swiss Correspondenzblatt*.—I am, etc.,

C. A. PETTAVEL, M.D.,
Ancien Chef de Clinique du Professeur
Th. Kocher à Berne.

Neuchâtel (Suisse), Aug. 12th.

IMMUNITY AND TUBERCULOSIS.

SIR,—I am unable to accept the explanation of the extinction of the Tasmanians which Dr. Glover gives in the *BRITISH MEDICAL JOURNAL*, May 12th, p. 633, because it deals only with the lesser side of immunity—the acquired.

It has been argued, to the point of conviction, that acquirements are not transmitted, and if this conclusion of biologists be correct, it follows that "the presence or absence of previous racial infection—that is, the presence or absence of immunization"—does not, as Dr. Glover states, explain the extinction of the natives of Tasmania by tuberculosis.

Natural immunity is an innate quality of the species that protects humanity against such a disease as tuberculosis. Acquired immunity protects the individual against such a disease as small-pox. Natural immunity becomes more intense as disease eliminates those who have had transmitted to them a low degree of this quality, and as those who have a high degree transmitted to them become more numerous. Thus it comes about that the Jews, who have been in constant contact with tuberculous infection, show a high degree of racial immunity.

It is admitted that the action of tuberculin is due to the toxin of the organism of tuberculosis. Therefore, if it be possible to acquire immunity against tuberculosis, the injection of this active principle of the disease should set up acquired immunity in the as yet uninfected individual. The belief that glandular bovine tuberculosis in children protects them against extensive human tuberculosis in adult life seems to arise from mistaking natural for acquired immunity.

The cases that recover under sanatorium treatment are those that possess a considerable degree of natural immunity, the balance of which has been upset by devitalizing processes in the presence of infection. The war brings this out most clearly.

Natural immunity indicates that:

1. The State should make great efforts to destroy infection and discourage marriage amongst those who are tuberculous.
2. That sanatoriums should be for those who show early tuberculosis under the stress of vicious environment.
3. That hospitals should be provided for infectious cases.
4. That notification should not be abused so as to make consumptive colonies in the so-called good-for-consumption places.—I am, etc.,

W. STAPLEY, M.D., M.R.C.V.S., D.V.Sc.
Cambridge, New Zealand, June 27th.

THE FUTURE OF VOLUNTARY HOSPITALS.

SIR,—The correspondence with the Ministry of Pensions as to the hospital treatment of disabled soldiers makes the present a suitable opportunity for the profession to consider the whole hospital question.

The subject would have been brought before the Annual

¹ A Simplified Method for the Transfusion of Blood, *Medical Record*, September 3rd, 1910.

² Tuffier: La transfusion du sang, *Presse Médicale*, 1912, No. 62.

³ Bérard and Lumière, *ibid.*, 1915, No. 41.

Representative Meeting by a rider of the Nottingham Division if the Ministry of Health scheme had been discussed in detail. The rider in question was: "That all hospitals under the public scheme should be State controlled."

The position of hospitals in this country, especially in industrial districts, has undergone a radical change during the past twenty years. They are no longer, strictly speaking, charitable institutions. They are supported very largely by employers of labour and by organized collections among workpeople. As a consequence of the latter fact, the workpeople repudiate the idea of charity; they have their representatives on the hospital boards and they claim the institutional treatment as a right for which they are paying. To the employers of labour and the insurance companies the hospitals are a means of getting the workers back to their employment quickly, and their support is a mere matter of business.

The only people who regard the hospitals as charitable institutions are the medical profession and a minority of the subscribers who give their support from purely charitable motives.

In this Division we consider that the Council's scheme, whereby the voluntary hospitals continue as at present and are subsidized by the State for some of their patients, is unpractical if not unworkable.

I hope some discussion upon this subject will follow which may be helpful to the Council in their future deliberations.—I am, etc.,

C. J. PALMER,
Representative Nottingham Division.

Mansfield Woodhouse,
Aug. 20th.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—I have seen the Circular (M.I.), dated August 4th, which is being sent by the Medical Secretary of the British Medical Association to secretaries of Local Medical and Panel Committees, with reference to the above subject, from which it would appear (par. 4), that the Commissioners submitted certain proposals on the above subject to the Insurance Acts Committee of the British Medical Association, to which the latter agreed, stipulating that the arrangements contemplated should be regarded as experimental, in which view the Commissioners concurred.

Apparently the proposals referred to were (par. 5):

1. That the disabled men discharged in future shall be attended under the same regulations as those at present applying to "temporary residents," and at the same rate of remuneration.

2. But that if the 9s. paid into the pool should not be sufficient to pay 100 per cent. of the amounts proved to be due for general practitioner treatment of disabled men, the Treasury will make up the deficit.

3. Concerning the men already discharged: It will be optional for practitioners to retain them on their capitation lists, or attend them in future on the attendance basis, as from the first day of the following quarter.

Does the executive of the British Medical Association, then, wish the practitioners throughout the country to regard this as the firstfruits of the collective bargaining which the British Medical Association has volunteered to carry on for the profession?

Let us mark the diplomatic steps in this important piece of collective bargaining.

1. The Commissioners submit certain proposals.

2. The Insurance Acts Committee of the British Medical Association accept them with the proviso that they be experimental and capable of revision.

3. The Commissioners concur in the proviso and proceed to draft the regulations.

And these proposals, which were so glibly settled, concerned perhaps the most vitally important matter which has been awaiting a settlement ever since the war began.

This is the matter which has been carefully held over so that neither side should be committed to a hasty decision, which has been kept in the background, and for a settlement of which practitioners have waited patiently and hopefully, while they found

(a) Their lists being deteriorated at least 50 per cent. by the removal from them of all the strong, healthy lives of men of military age, leaving them only old men, women, and growing boys, the part of their lists which always meant working at a loss.

(b) The substitution of a large number of women of very mixed standards of health, most of whom are engaged upon work the character of which is such as to make them frequent visitors to their panel doctors.

(c) The absence of any suggestion that a war bonus or other form of recognition was felt to be due to the practitioners who have been subjected to these disabilities, and who are at the same time helping the war by carrying on the work of absent practitioners at half fees.

(d) Their notification fees are reduced from 2s. 6d. to 1s. so that the paltry sum of £23,000 should be saved the country, while the same week they saw the railway men (organized labour) being granted a bonus which will cost the country £7,500,000 per annum.

Through all these experiences they waited, I say, because they felt certain that due and fair consideration would be given to all of them when the time came for the all-important matter of fair remuneration under the altered conditions to be considered.

This matter of a fair basis of remuneration is of such vital importance that everything else may be said, in a way, to be dependent on it. It must be adequate, it must be fixed, and it must be paid punctually.

The suggested settlement is:

1. For these unfortunate disabled men—who will in the future probably constitute the worst element in our lists—we are offered the same contract rate as for the strong and healthy and employed persons—9s. a head—which, of course, we know by experience, means 7s. But, as a great concession, if the pool is not sufficient to pay in full, the Treasury will make up the deficit.

2. The payment is to be on an attendance basis on the same principle as that of "temporary residents"—that is, the system which is universally conceded to be so troublesome and so bad, that numbers of doctors prefer to attend such temporary residents as they cannot avoid taking, for nothing, rather than compile the necessary literature about them.

3. With regard to the men already discharged, we can choose whether we treat them on the same basis as those to be discharged in future, or on the capitation basis at the 7s.

Is this, then, what we have waited for? And is this all the British Medical Association could do for us? Here was an opportunity to wipe off scores of grievances and to heal dozens of scars. It was a grand opportunity for the Government to offer a generous recognition of all that the medical profession has been doing, and is ready to do in the future.

The least that should have been offered was a capitation fee of 10s. a head for all disabled men over and above the cost of drugs and appliances. The medical profession would accept that—it is due to them, and it is due to the discharged men. The Treasury should find the money; it is a national charge to which no one will object, and the approved societies should be allowed to have all the contributions paid in respect of the men since they joined the colours as a set-off against the loss they will incur in sick pay.

I call on every practitioner in the country, whether on the panel or not, to say that he will accept those terms, and on no other terms will he accept any responsibility for attendance upon these poor fellows. It is a national job, and as such it must be carried out.

With regard to the British Medical Association, I think this ought to convince all who still remain unconvinced that the British Medical Association and politics must part. Either the executive of the British Medical Association are persons who can be exploited by the clever politicians at the Insurance Commission just as they like, or they think the practitioners throughout the country are persons who can be exploited by the British Medical Association Executive at the bidding of the Insurance Commissioners.

I would earnestly ask every practitioner in the country—insurance or other—to send me a post-card saying whether or not he agrees with me, and I will then indicate the next step to be taken. There must be no delay; the regulations are being drafted. It is no use to say that this matter will arise as part of a general settlement after the war. It is a matter which should be settled now. It is the first skirmish in the big fight that is bound to take place, and if we let the first skirmish go by default it will be a bad omen for the result of the whole war.

We must act now.—I am, etc.,

J. A. BELL,

Chairman Gloucester Local Medical and Panel Committees.

55, Barton Street, Gloucester, Aug. 16th.

MINISTRY OF HEALTH.

SIR,—The unwieldy scheme for the immediate establishment of a Ministry of Health has been generally approved at the Annual Representative Meeting. The Council has been urged to secure its acceptance by the Government "so far as possible." I am writing to ask those members of the British Medical Association who disapprove of this "rushing" policy to form an Internal Reform Committee to thwart the perpetration of such a political and social outrage on the members of the medical profession now serving abroad. A strong political clique, headed by an ambitious Minister, is, through a command of the press, indulging in an attempt to foist immature and ill-considered legislation of this nature on the public. It promulgates its scheme of selling the medical profession fighting overseas under the despicable guise of national expediency and infant welfare. It has captured members of the Association who are not serving overseas, and unless an indignant protest is made it will probably succeed in hoodwinking the nation and its legislature.

The establishment of a Ministry of Public Health will prove a sound measure. As one who has devoted years to the study of this question, and who has prepared a scheme which has been submitted to the Government, I can safely prophesy that a well-worked-out and thoroughly discussed scheme can be devised which would in later years be of enormous benefit to the administration of medical affairs in the State and to the national health. But this is a period of war. Such an innovation cannot with any sense of justice or reason be described as a war measure. It cannot be defended on any ground of national expediency or urgent necessity. Before such schemes are placed on the statute book, the medical profession as a whole, especially the younger men who will have to work the details of the administration, ought to have an opportunity of hearing the question discussed in all its bearings, and such schemes can wait till the period of reconstruction. It is not a little astonishing that, with the example of the Insurance Act and the chaotic state of its administrative problems before us, a deliberate and indefensible policy of forcing the establishment of a medical bureaucracy on the State without full and mature consideration and without expert advice should be attempted while the country is at war and while a third of the qualified medical men are scattered on active service overseas—in Mesopotamia, Malta, Salonica, Egypt, Italy, Africa, and France. Surely such men have rights as well as duties. They are doing their share. Performance of duty ought to necessitate careful guardianship and preservation of their rights by the State, their fortunate colleagues at home acting as sentinels to repel any encroachments. But the age of such principles has flowed past us in the tide of war. The Prussian type amongst us is in the ascendant. This is the period of the burial of political rights, of the destruction of professional *esprit de corps*, and of the deliverance into political slavery of absent colleagues engaged on a noble duty.

Little can be said again \ special legislation dealing with infantile mortality. This may or may not be necessary. No sound argument can be brought against a preliminary discussion of a scheme for establishing such a Ministry, but to acquiesce in a proposal for its immediate establishment under present conditions is not statesmanship. It is not even clean politics. It is political burglary. Such an outrage can scarcely be disguised under the cloak of supposedly representative medical opinion or of national well-being. Have we thrown overboard the principles of true representative government? Has any stay-at-home medical man the right—even if he has the conscience—to shackle his colleagues *in absentia* with legislation of far-reaching effect and with future responsibilities of professional and national importance? Theft of a medical practice is unprofessional conduct. Is embezzlement of political rights the acme of noble statesmanship and patriotism? The following remarks pass muster at the Annual Representative Meeting as the concentrated essence of our wit and political statesmanship (vide daily Press):

1. "Are we at home to be old women? The proposal to postpone effective consideration till after the war is the proposition of lawyers, the last refuge of the destitute."

2. "War time is the time when much desired changes should be made."

No wonder the political wire-pullers snap their fingers at our manoeuvres. One can scarcely hope that the age and sex change suggested will take place—at least physically.

The second is a political maxim which should be crushed at once. It is unsound, dishonest, and Prussian. War time is the time to win the war and to promote only such changes as have a direct effect in the securing of victory. The establishment of a Ministry of Health now will not shorten the war by a day. The professional Prussian at home should be fought as strenuously as his international prototype abroad. If those who disagree with the decision of the Representative Meeting will make an effort to fight this outrage, the common sense of the nation can be won to their side. But we must be up and doing; the press will probably be closed to us. Professional despots may thwart us, but there is always the direct appeal to Parliament, either by a petition, or, preferably, by a memorandum addressed to every member of each House.—I am, etc.,

H. B. MORGAN,
Temporary Captain R.A.M.C.

B.E.F., France, Aug. 2nd.

MEDICAL STUDENTS IN AND OUT OF THE
RANKS.

SIR,—There are a large number of medical students who, at the outbreak of war, 1914, inspired by patriotism, voluntarily left their studies to join the fighting forces. After the publication of A.C.I. No. 2290, dated December, 1916, many applied to be allowed to return to qualify, feeling it to be now their duty to the State, owing to the coming shortage of medical men. The War Office would not allow temporary demobilization (granted with the right to wear the uniform of their late regiment) until qualified and able to transfer to the R.A.M.C., but insisted on those holding commissions resigning same. The consequence is that those so situated, now always wearing plain clothes, are continually being subjected to insults in public, being classed with conscientious objectors and those stricken with syphilis.

Those who joined the senior service, however, as surgeon-probationers have, in many cases, been allowed to return to qualify. They have been courteously thanked for their past services, temporarily demobilized, and allowed to retain the use of their uniform. Another outstanding injustice to those who have served in the army is the fact that those who did not answer their country's call are now qualified or nearly so, and will be senior to their more patriotic fellows who volunteered at the commencement of hostilities and are not granted even a day's seniority for past services when they are able to obtain their commissions in the R.A.M.C. Like "J. A. A.," in his letter in your JOURNAL of July 21st, we are forced to ask, "Does patriotism really pay?"—We are, etc.,

August 27th.

EXCOMBATANTS.

SIR,—This is a subject of some importance, not only to the profession, but to the army, and I venture to urge that it should not be laid aside just now. The war may very likely end next year, and I ask through your columns what is the British Medical Association and what is the General Medical Council prepared to advise with reference to those students who so unselfishly answered the call of their country in 1914? I respectfully press this question now, and I should like to know from some one in authority what it is intended to do about them. Can Sir A. Keogh enlighten the minds of those of his medical brethren whose sons have so nobly given of their best? Surely the British Medical Association will make a move in so urgent a matter. It would be interesting to know to what degree the R.A.M.C. is now suffering or by next year will be suffering by reason of the supineness of those in authority in 1914. Some one has the figures. Let them be produced.—I am, etc.,

Manchester, Aug. 27th.

BASIL W. CONWAY.

THE ARMY MEDICAL CORPS AND ITS WORK.

SIR,—May I offer a few words of appreciation to the author, whoever he may be, of the article in your issue of August 18th entitled "The Army Medical Corps and its Work"?

After eighteen months' experience as a regimental

medical officer in France I confess that I commenced to read his article in a rather critical mood. I finished it with full appreciation of a well-expressed concise epitome of the conditions of medical work in the line, and am awaiting his next contribution.—I am, etc.,

B.E.F., France, Aug. 20th.

CAPTAIN R.A.M.C.

Obituary.

JOHN BELL FISHER, M.D., D.P.H.,

PRESIDENT OF THE BORDER COUNTIES BRANCH.

It is with deep regret that we record the death of Dr. Fisher of Whitehaven. For some twelve months he had been suffering from symptoms of angina pectoris. He had been very much overworked of late, and he left home on August 15th for a short holiday, travelling by sea to Liverpool. He was taken ill soon after his arrival and died on August 18th, aged 60 years.

A native of Whitehaven, he was esteemed and respected by all classes of the community among whom he lived and worked, and his loss will be keenly felt by a large circle of friends. He studied medicine at Edinburgh, graduating M.B., C.M. in 1880; he took his M.D. degree with commendation in 1902 and the D.P.H. Edin. in 1908. Settling in practice he was in 1883 elected honorary surgeon to the Whitehaven and West Cumberland Infirmary and held this office for twenty-two years when, owing to the claims of private practice and his other appointments, he relinquished the office. He was appointed medical officer of health for Whitehaven borough twenty-two years ago, and he was also medical officer for the Whitehaven Town and Harbour Boards, school medical officer to the Whitehaven Education Committee, medical officer for the Rural District of Whitehaven, and head of the recently established Whitehaven Maternity and Child Welfare Centre. He took a keen interest in his public health work, and the writer of this notice is indebted to the County Medical Officer of Health, Dr. Morison, for the following brief appreciation: "Few men, I think, did their work more thoroughly and with less parade than the late Dr. J. B. Fisher. His loss will be severely felt in the public health service of the county. He was most conscientious and thorough in the discharge of his duties as medical officer of health, and only those who were brought intimately into contact with him in his work, as I had the privilege of being, can realize the immense amount of work he did. His genial presence, as well as his able and willing help, will be sadly missed by his colleagues." Dr. Fisher was an active and loyal member of the British Medical Association, and had the thorough confidence of his professional brethren, as is shown by the fact that he was in 1912 elected chairman of the English Division of the Border Counties Branch. He was also chairman of the Provisional Medical Committee for Cumberland in 1912. For his services in this latter capacity his fellow practitioners presented him with a piece of plate. From 1914 until his death he was president of the Border Counties Branch, and his presidential address on National Health Insurance was published in the *JOURNAL* of July 25th, 1914. He was also chairman of the Cumberland Medical and Panel Committee, and was most assiduous in his attendance at its meetings. Quite recently Dr. and Mrs. Fisher celebrated their silver wedding. Dr. Fisher is survived by his wife, one son (a lieutenant in the army), and one daughter, with whom much sympathy is felt in their sudden bereavement.

The funeral took place at Whitehaven on August 22nd. There was a large attendance, including the Mayor and Corporation, the borough officials, members of the medical profession, and a representative gathering of old patients and professional and trading gentlemen of the town and neighbourhood, all testifying to the esteem and respect in which Dr. Fisher was held.

WILLIAM HENRY SYMONS, M.D., M.R.C.S., L.R.C.P.,
D.P.H., M.O.H. BATH.

THE death occurred on August 25th, at the age of 63, of Dr. William Henry Symons, Medical Officer of Health for the City of Bath. He was educated at Taunton, first adopted chemistry as his vocation, and became analytical chemist to Messrs. Idris, aerated water manufacturers.

He also practised as a consulting chemist and was appointed examiner under the Pharmacy Act. While assistant demonstrator in *materia medica* at St. Bartholomew's Hospital he decided to qualify in medicine with a view to specializing in sanitation. He became a student at St. Bartholomew's, and in 1894 he took the diplomas of M.R.C.S. and L.R.C.P. Lond. and the M.D. degree of Brussels, while in the following year he obtained the Diploma of Public Health both at Oxford and Durham. Dr. Symons was also a Fellow of the Institute of Chemistry, of the Microscopical Society, and of the Royal Sanitary Institute. After serving as medical officer of health in the parish of St. George-the-Martyr, London, he was elected, in 1896, M.O.H. of Bath, and during his tenure of office he remodelled the health department of the city and modernized the meteorological department. Dr. Symons was a pioneer in the campaign against flies and made a number of breeding experiments with house-flies.

WITH the death, on March 11th, of Dr. SELWYN HARVEY, of South Kensington, there disappeared a courtly physician of the old school. He was a contemporary of the late Dr. Pyc-Smith at Guy's Hospital, to which he was greatly attached. Dr. Harvey bore his advanced years exceptionally well to the last, continuing in active work until quite recently. He had practised for many years in Boulogne before settling in London in 1890. Of equable temperament and unchanging kindness, he was always happy to assist younger practitioners, whether by advice made valuable by his own ripe experience, or, whenever possible, by generous handing on of work. A man of cultivated taste and of varied interests, as well as of attractive and sterling character, Dr. Harvey will be greatly missed by a large circle, and by none more than by the writer—himself an old "Guy's" man.

MR. THOMAS SANSOME died on August 13th at his residence at West Bromwich, aged 75. He was born at Evesham; he received his medical education at Sydenham College, Birmingham, and took the diploma of M.R.C.S. Eng. in 1866, and that of L.S.A. in 1868. He went to Bromwich about fifty-three years ago as an assistant to the late Dr. Male, and succeeded to the practice on the death of his principal shortly after. From 1871 to 1908 he held the office of honorary surgeon to the West Bromwich District Hospital. On relinquishing the post, in which he was succeeded by his son, who is now mayor elect of the borough, he was appointed consulting surgeon. He was a member of the West Bromwich Division of the British Medical Association, and of the Midland Medical Society. In 1902 he was appointed to the commission of the peace; before the ordinary business of the local police-court on August 16th the chairman referred to the loss the borough had sustained in the death of Mr. Sansome, and expressed his sympathy with the family in their bereavement.

DR. GAETANO RUMMO of Naples, who died suddenly a short time ago at the age of 64, was one of the most prominent figures in the medical profession of Italy. He studied at Naples, and after graduation worked in Paris under Charcot, Sée, and Potain, and in the laboratory under Vulpian and Cornil. While still quite young he won by competition the appointment to the chair of medical pathology in the University of Siena; he was successively professor of the same subject at Pisa, Naples, and Palermo. After a time he returned to Naples, where he soon gained a leading position as a clinical teacher. He was the author of a long series of publications on cardiokynesis, leukaemia, pleurisy, the toxicity of blood serum, the pathology of the nervous system, cardiophtosis (a disease which is sometimes called after him), and many other subjects. Outside his native country Rummo was best known as the founder and editor of the *Riforma Medica*, one of the leading medical journals of Italy. For twenty years it was a daily periodical—the only one in the world devoted to medicine; it still continues to flourish as a weekly. Rummo was a member of the Chamber of Deputies.

The Services.

EXCHANGE.

QUARTERMASTER, home service field ambulance, R.A.M.C., stationed Ireland, desires exchange quartermaster in field ambulance on active service in France. Address, No. 2900, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Universities and Colleges.

SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have been approved in the subjects indicated:

SURGERY.—*J. L. D. Buxton, *C. A. W. Chapman, *D. C. Clark, *W. Fletcher Barrett, *A. Selby Green, *D. E. Hearn, *S. G. Mahomed, *E. J. G. Sargent, *C. Segal.
MEDICINE.—*G. S. Ashby, *W. F. Barrett, *J. Behesnilian, *C. G. Bunn, *C. A. W. Chapman, *D. C. Clark, *E. F. Deacon, *E. W. Diggett, *F. C. M. Gabites, *D. E. Hearn, *I. Liberman, *A. G. Curzon Miller, *E. J. G. Sargent, *G. R. Sharp, *L. Zarchi.
FORENSIC MEDICINE.—W. F. Barrett, D. C. Clark, A. S. Green, D. E. Hearn, B. A. M. Henderson, I. Liberman, G. L. Mitchell, E. J. G. Sargent.
MIDWIFERY.—W. F. Barrett, D. A. Dyer, B. A. M. Henderson, I. Liberman, J. Stephen.

* Section I.

† Section II.

The diploma of the society was granted to W. Fletcher Barrett, C. A. W. Chapman, D. C. Clark, E. W. Diggett, A. Selby Green, D. E. Hearn, E. J. G. Sargent, C. Segal, and G. R. Sharp.

Medical News.

AT Hinckley, on August 23rd, Dr. A. W. Jenkins was presented with an address and a pair of bronzes in recognition of his ten years' valuable work as honorary surgeon to the Hinckley and District Cripples' Guild.

COLONEL C. GORDON WATSON, C.M.G., F.R.C.S., A.M.S., assistant surgeon to St. Bartholomew's Hospital, London, and Dr. William E. Audland of Wellingborough, have been appointed Knights of Grace of the Order of St. John of Jerusalem.

THE Rockefeller Institute for Medical Research has, it is stated, undertaken to supply the allied armies with an antitoxin serum believed to be effective against gas gangrene. Cultures of the bacillus were obtained in Europe last year by Dr. Carroll G. Bull and Miss Ida W. Pritchard, and these investigators have experimented on animals with results said to be satisfactory.

MR. E. TEMPLE THURSTON gave in the *Sunday Pictorial* for August 26th some account of the suggestion of the French Government to raise a lasting monument to those who have fallen in the war, by forming a road from the Flemish coast to Alsace, planted on either side with forest trees. The scheme would include the preservation in their present state of the devastated villages and the careful tending of graves.

AN interesting addition has recently been made to the Erskine Hospital for Limbless Men. Lieutenant Napier, the military governor, has presented to the institution Erskine Ferry Inn, an old building beautifully situated on the banks of the Clyde just outside the hospital. Therein are provided convenient refreshment and rest rooms for visitors calling on patients. The opening ceremony was performed by Lady Dunlop, wife of the Lord Provost of Glasgow, and Sir William Macewen, who was in the chair, said that although the hospital was large every part of it was needed, and already about 250 beds had been added to it at the urgent request of the War Office.

AN article in a recent issue of *Le Journal*, Paris, states that the number of permanent nurses employed in the French military hospitals at the outbreak of war was eighty; the number of nurses now temporarily employed is 3,000. In addition there are 62,000 nurses belonging to the various French Red Cross Associations, of whom some 6,000 are in the army zones. The writer of the article makes an eloquent reference to the manner in which the nurses of friendly nationalities, to the number of about 10,000, have come forward to help the French. He refers first of all to the Scottish Women's Hospitals, where a staff of eighty nurses have been maintained for three years, and mentions that Miss Ivens, the *médecin-chef* of the hospital at Royaumont, has recently been decorated with the Legion of Honour. Nurses for other units have been provided by the Russian Red Cross, by a Swiss nursing school at Lausanne, by Italian organizations on the Riviera, and by Spanish organizations at Biarritz.

THE Board of Agriculture has reissued, after revision, a leaflet on jam making in war time. The chief novelty to housekeepers in it is the recommendation to replace one-third of the sugar ordinarily used by glucose (corn syrup or glucose chips, sold retail at 7d. or 8d. per lb.). Directions for making jam with glucose alone are also given. The liquid glucose gives the jam a superior flavour to that prepared with glucose chips, but the objection to both is that they are not so sweet as sugar. It is suggested that this may be remedied by adding a small quantity of saccharine. Copies of the leaflet can be obtained free on application to the Secretary of the Board, 3, St. James's Square, London, S.W.1.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are (1) *EDITOR* of the *BRITISH MEDICAL JOURNAL*, *Aitology, Westrand London*; telephone, 2631, Gerrard. (2) *FINANCIAL SECRETARY AND BUSINESS MANAGER* (Advertisements, etc.), *Articulate, Westrand London*; telephone, 2630, Gerrard. (3) *MEDICAL SECRETARY*, *Medisera, Westrand London*; telephone, 2634, Gerrard. The address of the Irish Office of the *British Medical Association* is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

ANSWERS.

DR. FRED. H. HAYNES (Leamington) writes: In answer to "W. M. B." (*BRITISH MEDICAL JOURNAL*, August 25th, p. 276), I would recommend him to try mercury either by inunction or hydr. creta gr. 3 to gr. j three times a day. It is not generally recognized that epilepsy is usually due to syphilis (inherited), and that mercury in children is almost a certain cure, and often, too, if epilepsy begins at puberty.

LETTERS, NOTES, ETC.

A TOO-PUNGENT MOUTH-WASH.

MR. EDMUND BALDING, L.D.S. (London, S.W.), writes: From clinical observation extending over twenty-five years I can emphatically confirm Mr. J. T. Hall's assertion that highly pungent washes, powders, and pastes are a source of marginal gingivitis. I will even go further, and say that they are a cause of a peculiarly aggravating and distressingly sensitive form of interstitial caries. I make it a rule to question patients suffering from such as to the prophylactic measures employed, and more frequently than not I receive the reply that a carbolic dentifrice is regularly used. Indeed, such a question is often anticipated by patients volunteering the information, in an injured tone that they "cannot understand why there should be such an amount of caries when they use carbolic tooth-powder twice a day." Some years ago a chemist showed me a sample of carbolic tooth-powder of his own compounding for which he had a large demand, which he attributed to the large percentage of carbolic acid in it.

KILTS AND DECENCY.

DR. ROBERT CRAIK (Ealing) writes: On boarding a tram at Hammersmith to go out to Fulham last Saturday afternoon it happened that I followed upstairs a soldier of the London Scottish. Looking up as I came to the turn on the stair, I was astonished to have a full view of the soldier's buttocks with the testicles dangling down. Is this considered full dress for the regiment?

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0 5 0
Each additional line	0 0 8
A whole column	3 10 0
A page	10 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

British Medical Journal.

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: SATURDAY, SEPTEMBER 8TH, 1917.

EDUCATIONAL NUMBER, SESSIONS 1917-1918.

THE PROFESSION OF MEDICINE.

THE main object of this issue of the *BRITISH MEDICAL JOURNAL* is to meet the needs of two classes—those who require information as to the course which must be followed in order to become a legally qualified practitioner of medicine, and those who, having already attained this position, are doubtful as to what particular part in medicine they should choose as a career after the war.

In the United Kingdom the conditions with which those who desire to enter the medical profession must comply are regulated by a statutory body known as the General Medical Council, and a statement of its requirements will be found on page 311. The task of examining candidates as to their fitness to practise medicine is left to the universities and to certain corporations in England, Scotland, and Ireland. But the Council takes steps to ensure that the tests imposed do not fall below a certain standard, and that none of these bodies admits to its examinations persons who have not undergone certain definite courses of instruction at a recognized medical school.

Successful candidates at such examinations eventually receive from the body holding them either degrees, in the case of the universities, or diplomas or licences, in the case of the corporations, entitling them to claim insertion of their names in the *Medical Register* kept by the General Medical Council. At one time the holders of diplomas and licences formed the great majority of all medical men, especially in England and Wales, but of recent years universities have greatly multiplied. Consequently so many practitioners now hold degrees that, save in exceptional circumstances, the wisest course for a medical student is to aim at a degree, though it may be desirable to take also a diploma or licence.

Apart from the degrees and diplomas and licences, on the strength of which the General Medical Council admits to the *Medical Register*, most of the bodies in question bestow on candidates who have passed further examinations higher titles, such as "Fellow" and "Doctor of Medicine." It may be said that as a rule they are worth obtaining, though the difficulty of doing so, and the added professional status they confer, vary considerably. There are also a certain number of diplomas in special branches of work, such as public health and tropical medicine, which are superfluous in the case of most medical men, but either useful or indispensable for those who wish to specialize in the work covered by them.

The expenditure involved in successfully completing a medical curriculum varies so much that no single precise statement on the subject can well be made. Apart from differences in the charges made by different medical schools for instruction, there are differences also in the fees for examination, as well as in those charged for the actual certificates given to

successful students. Besides this, not all students, however industrious, get through examinations with equal facility. Since in any case their professional education must continue for at least five years—a period exceeded by the vast majority—and since the cost of living in different parts of the kingdom varies much, and personal expenditure varies still more, it can only be said that no one should think of entering the profession who is unprepared to spend on his medical education about £1,000.

When once a medical graduate, diplomate, or licentiate has obtained the insertion of his name in the *Medical Register* there are many courses open to him. He can aim at becoming a general practitioner; or at entering one of the Government services at home or abroad; or at specializing in public health or asylum work, or in pure science, or in one or other of the many modern subdivisions of medicine and surgery. Most of these different paths in medicine are considered in detail elsewhere, but a few observations may here be made as to the first and last of them.

A man becomes a general practitioner either by taking a house and waiting for patients to seek his services, or by entering into partnership with some already established practitioner. The successful conduct of a private practice demands, however, a great deal of knowledge other than that acquired at the medical schools, and consequently no man is likely to be accepted as a partner, or to prove successful as an independent practitioner, unless he has first gained experience in private practice as an assistant.

The path of those whose ambitions lie in the direction of becoming consultants or specialists is rugged. Their eventual success will depend not only upon their mental attainments and capacity for hard work, but on their possession of the various qualities which help to win for a man the confidence both of his colleagues and of the general public. Moreover, since it is certain that, however well equipped they may be, they will not for many years make as specialists enough to pay their outgoings, this path is only open to those with sufficient means to maintain themselves for an indeterminable number of years, or who are able, by teaching or in other ways, to make sufficient to defray their expenses.

It is not the purpose of this number to put forward any opinion as to what paths in medicine offer the greatest attractions, whether financial or scientific. Whatever the branch of medical or surgical practice chosen, it must be remembered that the large majority of medical men make but a moderate income. The financial returns of even the most successful practitioners compare but ill with those obtained by persons of equal ability in other walks of life. The Insurance Acts stand for a movement that has done much to convert the general practitioner who is on the panel into a part of a piece of official mechanism,

but nothing to maintain or improve the status of the medical profession, unless it be by the increased opportunities for scientific work afforded by the Medical Research Committee established under the Act of 1911. The full effects of the National Insurance scheme on the profession cannot yet be estimated, for, in spite of modifications by many hundreds of successive orders, circulars, and regulations, it is still far from having reached any stable form.

The effects of the war upon the medical profession, and more especially upon medical education, have, of course, been profound and far reaching; it will suffice to indicate a few of them briefly in this place. It was stated in Parliament last year that the Army and Navy together were employing the services of more than 12,000 medical men, and owing to the increasing demands of the army this figure must now be considerably greater. For comparison we may point out that before the war some 3,300 medical officers were accredited to the Services year by year in the *Medical Directory*. Further, a great many practitioners in civil practice are devoting a share of their time to attendance at military hospitals of various kinds; while medical recruiting boards employ a considerable number of civilian doctors. From all this it is evident that the civilian population must be dispensing with a large part of the medical attendance it receives in normal times, while many, if not all, of the civilian practitioners at home are very hardly worked. The searching investigations of the statutory professional bodies engaged in selecting civilian doctors for the army and safeguarding the medical needs of the civil community have shown that there are now scarcely any areas from which further doctors can safely be taken under existing conditions and powers. A communication pointing out this serious state of affairs has, therefore, been forwarded to the Government.

The effect of the war upon the number of medical students in their different years of professional study has been described from time to time by Sir Donald MacAlister in his presidential addresses to the members of the General Medical Council. Between the years 1910 and 1914 the annual entry of first year medical students averaged roughly 1,440. Since the war the number of these entries has increased by several hundreds a year. At the request of the Director of Recruiting, Sir Donald MacAlister obtained this year from the deans and registrars of medical schools in the United Kingdom a return of the number of students actually pursuing medical studies in January, 1917. This return showed that while in May, 1916, the whole number of medical students was 6,103, including 1,379 women, in January, 1917, the whole number was 6,682, including 1,735 women. This increase was, of course, mainly in the first and second years; the fourth and final years taken together were stationary. The third year, which, according to calculations, will supply most of the newly qualified practitioners of 1919, numbered in January last only 572 men and 261 women. Since February, however, a fresh call by the War Office for the combatant ranks, extending to one group of medical students not classified as fit for general service, has had the effect of reducing the above numbers. It is now clear that certainly in 1918 and 1919, and probably in the present year, a serious shortage of newly qualified medical practitioners must be expected. On the other hand, owing to the larger entries into the medical schools during the past two or three years, an increase in the number of registered practitioners, both men and women, may be expected in the years 1920 and 1921. All these facts have been placed before the military authorities,

and in his address last May Sir Donald MacAlister acknowledged that they had received from the Director of Recruiting (Sir A. C. Geddes) the consideration which might be expected from an officer himself familiar with the requirements of medical education. From replies to questions in the House of Commons by the Under Secretary of State for War it appears that the present policy of the War Office is not to call up medical students if they are within twenty-four months of qualifying, provided they are enrolled in an officers' training corps; while fourth and fifth year students already serving in the combatant ranks are to be released in order to complete their medical studies. An Army Council instruction of December 8th, 1916, laid down that *bona fide* medical students below category "A," and fourth and fifth year men of all categories were to be relegated to the reserve and required to return to their professional studies and enrol in an officers' training corps.

Another feature of the last three years has been the great increase in the number of women going in for the study of medicine. For this the war must be held largely responsible. As for the professional instruction of these large numbers of medical students, men and women alike, there can be no doubt that the war, by diverting the activities of many of their teachers into other channels or other spheres, has considerably depleted the teaching staffs of the hospitals and other educational institutions in which the preliminary subjects and various branches of medical science are taught. Nevertheless, the teachers who continue at their posts are making every effort to maintain the standard of instruction; and, in spite of war-time difficulties, it may be said that now that the Board of Education is gradually assuming a larger share in the general direction of medical studies, the educational prospects of the medical student should show a steady improvement year by year.

What will be the prospects of the medical profession when the war is over? The medical services have acquitted themselves extremely well in the war, and medical science will come out of it with an enhanced reputation. Surgery has made considerable advances, the treatment of wounds has improved greatly, orthopaedic treatment for the crippled and maimed is more successful than ever; preventive medicine in camp and trenches has, with but few exceptions, scored far greater triumphs than could ever have been expected; the work of the pathological laboratory and of the bacteriologist has proved to be of the utmost value. In civil life the spirit of the times is all in favour of extension and co-ordination of the public health services. This is reflected in the widely-supported proposal for the setting up of a Ministry of Health. In the near future more medical care will be provided for expectant mothers, for infants, for children, and for the victims of certain diseases; a great increase in the public work of pathological laboratories all over the kingdom may be confidently expected. All this means an increase in the official medical services. What fate is in store for the private practitioner we will not venture to prophesy. Before the war his position had been profoundly affected by the Insurance scheme. It has converted the majority of general practitioners into part-time civil servants, and subjected them to the discipline of Insurance Commissioners. Pecuniarily it has benefited some and impoverished others. Many believe that the State will gradually tighten its grip on the medical profession.

Finally, it should be noted that a quality every medical man should possess is a strong sense of *esprit de corps*. Medicine, like the Church, is a

profession which the general public—as also public authorities—persistently regards as being of a semi-philanthropic character. Furthermore, it is a profession whose aims and requirements are very ill understood by persons who have not undergone a medical education. Consequently the interests of the medical profession, both on its financial and scientific sides, are continually being attacked, sometimes openly, sometimes insidiously. For this reason it is absolutely essential that medical men should band themselves together for the common protection of themselves and the profession that they represent, and to this end join the British Medical Association¹ as soon as they have entered their names on the *Medical Register*. For the objects of this body are to promote the progress of medical science and the interests of the medical profession, and its past history shows that it has well fulfilled them.

THE GENERAL MEDICAL COUNCIL.

THE General Medical Council is a body which was called into existence by the first Medical Act of 1858. A certain number of its members are elected by the medical profession, and the rest—who form the great majority—are nominated by Government itself and by the universities and such medical corporations of the United Kingdom as have a statutory right to issue diplomas. Its head quarters are at 44, Hallam Street, Portland Place, W.1, and it has branch offices at 54, George Street, Edinburgh, and 35, Dawson Street, Dublin. Its duties are to control the medical and dental professions in the interests of the general public, and to that end to maintain a register of legally qualified practitioners. It is admission to this *Register*, and not the possession of a medical degree or diploma, that constitutes a person a legally qualified practitioner. The Council is bound to admit to the *Register* those who hold the degrees or diplomas granted by the bodies represented among its members, but it can prescribe the terms on which those bodies shall grant such diplomas or degrees, and it can erase from the *Register* the name of any medical man or dentist who has been convicted before a court of law of an ordinary crime or of a serious offence against public morality, or who is proved before the Council itself to have been guilty of certain actions which the Council regards as professionally infamous. Its disciplinary powers are strictly limited to legally qualified practitioners, and it has no control whatever over irregular practitioners of any kind.

An account of the regulations that the Council has drawn up in respect of the education of medical students here follows. The primary important things to note about them are that they entail (1) the production of proof of a certain degree of proficiency in subjects of preliminary or general education; (2) application for registration as a medical student either at the head quarters office in London or at one of the branch offices in Edinburgh and Dublin, although this latter requirement is not invariably enforced.

PRELIMINARY EDUCATION.

The regulations with regard to the subjects of the preliminary examinations recognized by the Council have been modified since our last Educational Number. At a meeting of the Council in November, 1916, the question of Latin as a compulsory subject in the preliminary examination in general knowledge for medical science was brought to a point. The Education Committee recommended in its report that in the matriculation examinations for the faculties of arts and science, and equivalent examinations, the Council should no longer regard Latin as a compulsory subject. For practical purposes the recommendation was that all examinations accepted for matriculation in the

faculties of arts and science in any university of the United Kingdom should be approved by the Council as qualifying a successful candidate for admission to the *Students' Register*. This carried with it the recognition of degrees in arts and science of any university of the United Kingdom or of the British Dominions. The recommendation, which applied only to the senior or higher grade student, was accepted by the Council. So far as the junior or lower grade of candidates are concerned, the Education Committee, as a matter of expediency rather than of logic, proposed that Latin should remain compulsory for these candidates, since they do not, as a rule, produce as evidence of general knowledge certificates of examination by a university.

The lists of educational bodies whose examinations are now accepted under the regulations made by the Council for the maintenance of the register of medical students, together with other particulars, are published with the *Students' Regulations*, which may be obtained from the various offices of the Council, price 6d.

REGISTRATION OF MEDICAL STUDENTS.

In addition to showing that he has passed one of these examinations, any person applying for registration as a medical student must (1) produce satisfactory evidence that he has attained the age of 16 years; (2) show that he has commenced medical study at a university or school of medicine, or at a teaching institution recognized by one of the licensing bodies and approved by the Council. The commencement of professional study will not be reckoned as dating earlier than fifteen days before the date of registration.

Application for registration should be addressed to the Registrar for the division of the United Kingdom in which the applicant is residing—England and Wales, or Scotland or Ireland. It must be made on a special form, which can be obtained on application at the offices either of the General Medical Council itself or of one of the various licensing bodies and medical schools, and when forwarded it should be accompanied by the certificates as to age and general education.

The regulations with regard to registration apply equally to medical and dental students, with the exception that in the case of the latter pupillage with a registered dental practitioner may be regarded as a commencement of professional study, and that applications for registration should be addressed to the London office only.

PROFESSIONAL EDUCATION.

The rule is that it is only from the date which appears against his name in the *Students' Register* that the medical student's career officially begins: thereafter five years must pass before he can present himself for the final examination for any diploma which entitles its lawful possessor to registration as a qualified medical practitioner under the Medical Acts.

There are, however, certain important exceptions to this rule: thus (1) to meet the circumstances brought about by the dates at which sessions of the medical schools commence and end, the close of the fifth year may be reckoned as occurring at the expiration of fifty-seven months from the date of registration. (2) Graduates in arts or science of any university recognized by the General Medical Council, who have spent a year in the study of physics, chemistry, and biology, and have passed an examination in these subjects for the degrees in question, may be held to have completed the first of the requisite five years. (3) The Council will accept as six months of that year six months passed, subsequent to obtaining a certificate in general education, as a student of chemistry, physics, or biology at any teaching institution recognized by a licensing body and approved by itself. In any case, the period of five years must be one of bona fide study, and during its course education in the following subjects must be pursued and examinations passed:

- (i) Physics, including the Elementary Mechanics of Solids and Fluids, and the rudiments of Heat, Light, and Electricity.
- (ii) Chemistry, including the principles of the science, and the details which bear on the study of medicine.
- (iii) Elementary Biology.
- (iv) Anatomy.
- (v) Physiology.
- (vi) Materia Medica and Pharmacy.
- (vii) Pathology.

¹The ordinary subscription of members resident within the United Kingdom is £2 2s., but as from January 1st, 1915, those admitted within two years from the date of their registration pay only 25s. until the expiration of four years from such registration. Members resident outside the United Kingdom pay 25s. to the parent Association.

- (viii) Pharmacology and Therapeutics.
- (ix) Medicine, including Medical Anatomy and Clinical Medicine.
- (x) Surgery, including Surgical Anatomy and Clinical Surgery.
- (xi) Midwifery, including Diseases peculiar to Women and to Newborn Children.
- (xii) Theory and Practice of Vaccination.
- (xiii) Forensic Medicine.
- (xiv) Hygiene.
- (xv) Mental Disease.
- (xvi) Anaesthetics.

The practical study of Subject (xi) shall not commence until the student has held the offices of Clinical Clerk and Surgical Dresser, and the work done in connexion with it must follow prescribed lines. The Council also expects that study of the Subjects (vii) to (xvi) shall extend over not less than twenty-four months subsequent to success at the examination in Subjects (iv) and (v). It also now recommends licensing bodies to require of candidates at their final examinations evidence of instruction in the administration of anaesthetics and in infectious diseases, and of sedulous attention in hospital wards, out-patient departments, and *post-mortem* rooms, as clerks and the like.

Wherever the first of the five years is spent, the next three must be passed at one of the schools of medicine recognized by any of the licensing bodies enumerated in the schedule of the Medical Act of 1858. The final or fifth year the Council recommends should be devoted to clinical work at any public hospital or dispensary at home or abroad which is recognized by any of the licensing bodies.

SPECIAL CONSIDERATIONS.

The requirements of the General Medical Council in respect of the education of those who desire to enter the medical profession have now been given in outline, but before leaving this part of the subject the steps which the aspirant should take may finally be rehearsed in their due order:

- (1) Pass an examination in arts;
- (2) Enter himself at a medical school or other scientific institution recognized by the Council;
- (3) Get himself registered as a medical student;
- (4) Study for a minimum of five years certain prescribed subjects;
- (5) Meanwhile pass sundry intermediate examinations; and, finally, at the end of the fifth year, one which will entitle him to receive at the hands of a licensing body a legal authority to practise.

The Arts Certificate.—There are, however, other important considerations; thus, it is not a matter of indifference what certificate of proficiency in general education, or arts, the student obtains. The General Medical Council, it is true, will accept any of the large number of tests to which reference has been made, and this, too, is the case with practically all the college corporations in England, Scotland, and Ireland. But all the licensing bodies are not equally accommodating; some of the universities require that their own ordinary matriculation should be passed, others have special matriculation examinations for those wishing to join their medical faculty, and a third and larger number will accept any arts degree and certain matriculation examinations, as well as several other of the tests entered in the Council's list.

The first thing, therefore, the future medical student should, if possible, decide is at what degrees or diplomas he intends to aim, and then find out what arts certificate will be required. If he cannot decide the question in advance, the best course probably would be to matriculate at London University. It is a troublesome examination in many respects, but gives a wide choice of subjects, and has the advantage of being accepted as sufficient testimony to general education by a larger number of bodies than is any other analogous examination.

The Minimum Period.—Another point to remember is that the period of five years mentioned is a minimum; a good deal more will almost certainly be required even by the man of good abilities and reasonable industry. Besides these qualities, a student to obtain a registrable qualification in the minimum period of five years, or fifty-seven months, must have a considerable amount of good luck; in other words, he must keep in good health through every term, and never fail at a single examination. Otherwise

it is almost inevitable that his career as a student should be prolonged for a greater or smaller number of months beyond the possible minimum. Thus, for instance, a student before presenting himself for any examination has to get what is called "signed up" for the subjects covered by that examination; this means that his teachers have to certify that he has attended the required number of lectures or classes in the subjects in question. If, however, the student happens to be ill during the term when such lectures or classes are taking place, he may miss a sufficient number of them to make it impossible for him to be "signed up." Then, again, should a student fail to satisfy the examiners at some examination, he cannot present himself again for re-examination for at least three months. This fact generally entails further consequences, because, apart from the student's success at the next stage in his career being imperilled by his having to give up some time to restudying the subjects in which he has failed, the Examining Boards in the majority of instances insist upon a definite interval elapsing between a student passing one examination and his presenting himself for that which should follow it. Then, again, many Boards refuse to recognize lectures and classes which have been attended at a date anterior to that at which the student has passed the requisite examination in earlier subjects. Failure at an examination may thus not only mean deferment of the date of examinations, but deferment of the commencement of the student's study of certain subjects. It is thus exceedingly easy for a student to fail to qualify in five years, and as a matter of fact, the vast majority of students take very much longer than that period.

Furthermore, in speaking of the minimum period, it is to be remembered that that time is only sufficient to gain a registrable qualification, such as a Bachelorship of Medicine or Surgery or a diploma of one of the Royal Colleges. These are quite sufficient for the purposes of general practice, or for entering the Services, etc., but those who wish to take a higher qualification—for instance, the F.R.C.S. Eng.—must prolong their work for another year or more. So, too, must in some cases those who desire to convert their Bachelorship into an M.D. This may entail further formal examination, but at some universities the M.D. is obtainable on presentation of a thesis when the Bachelor has attained a certain age, and has practised his profession for a certain number of years. However, a student's career proper may be considered, perhaps, to have ended at the time he obtains his first registrable qualification, for while preparing himself for any further tests he can, and usually does, hold some junior appointment which more or less covers his expenses.

The Normal Course.

In conclusion, it may be convenient to sketch the general fashion in which the student will pass his five years or more, but discussion of this need not be prolonged, because once a student has entered at a school, and chosen the degrees or diplomas at which he wishes to aim, the dean of the school will guide his steps in every particular.

Whatever the precise final goal, the path thereto is in all cases identical in broad outline. Practically it is divided into three stages, the conclusion of each being marked by an appropriate examination. In the first stage the student acquires a more or less extensive knowledge of the preliminary sciences—chemistry, physics, and biology; in the second he studies anatomy and physiology; and the third he devotes to the real work of his future life—medicine and surgery and their branches. During each of these stages the student must attend not less than the prescribed number of lectures and classes to ensure getting "signed up" in the subjects of the stage, and also do a very considerable amount of practical work. As for the examinations at the end of the stages, these are known by different titles by different examining bodies, but "preliminary science," "intermediate," and "final" are in common use. Some bodies demand that the student should pass in all the subjects of one stage at one time; others allow the candidate to present himself in each of the subjects separately, thus multiplying the actual number of examinations, but limiting their scope. There are also differences in the requirements of the different licensing bodies as to the length of each stage, but practically all demand that the second shall be longer

than the first, and the third not shorter than the second. By the length of the allotted stage the candidate may gauge the comparative importance the licensing body attaches to the subjects within the stage and the difficulty of the tests it will impose, and he may feel certain that the time allotted is none too much.

In any case it should be the aim of the student to get through his first two stages as quickly as his abilities and the regulations will allow; and, as a rule, he should have completed the first stage by the end of his first year, and may hope to complete the second stage not later than the end of his third year. He will then have two years in which to prepare for his final examination, and it will prove a very crowded period, for he has to get into it not only medicine, surgery, and midwifery proper, but many other allied subjects, such as pathology and bacteriology, forensic medicine, gynaecology, and therapeutics. In the first of the final two years he may be able to complete his formal lectures, and thus have the fifth year for entirely practical work and private study; during those two years, too, he will take part in the work of his hospital by holding clerkships and dresserships in the wards and out-patient department for the periods laid down by the licensing bodies. Then, at length, after perhaps a few weeks of special coaching, he will be ready to present himself for his final examination, which the regulations of most bodies will allow him to divide into two or more parts. The final examination passed in its entirety, he will be able to claim registration as a qualified medical practitioner at the hands of the General Medical Council, and become an independent personage. There is still room for him to continue a student's career if he will, for, apart from the higher qualifications to which reference has been made, it may seem to him worth while to devote time to acquiring greater knowledge of some particular branch of medicine, such as ophthalmology or laryngology, or to undergo the courses of study necessary to obtain a diploma of special proficiency in questions of public health (page 341), or in tropical medicine (page 340). Points such as these, however, the student will be fully capable of deciding for himself when he has reached the stage to which our account has now brought him.

The next matters to be considered, therefore, are the requirements in detail of the different licensing bodies, and what they have to offer in the way of degrees and diplomas.

THE WAR.

The Council advised the licensing bodies that its recommendations respecting the courses of medical study represent, in general terms, the minimum curriculum that should be required by the various licensing bodies. But it recognizes that during the present national emergency it may be advisable for them to modify or even suspend their regulations. It feels sure, however, that the licensing bodies concerned will recognize the importance, in the public interest, of maintaining unimpaired the present standard of knowledge and skill required of all who seek to be admitted to all the status and privilege of registered practitioners. It will therefore be desirable to secure in every instance that the requirements of the minimum curriculum are to be substantially fulfilled. The standard of the qualifying examinations, in other words, is to be maintained.

The English Universities.

THERE are eleven universities in England and Wales, and some account of each of them follows. With one exception they all have fully developed medical faculties. The exception is the University of Wales, whose constituent colleges are those of Aberystwith, Bangor, and Cardiff. It is in a position, however, to grant degrees, and has laid down a six years' curriculum for candidates for the M.B. degree, and it already provides, at the School of Medicine at Cardiff—of which an account will be found at page 331—thorough training in the work of the first three or four years.

UNIVERSITY OF OXFORD.

THE professional degrees conferred by this university are those of Bachelor of Medicine (B.M.), Bachelor of Surgery (B.Ch.), Doctor of Medicine (D.M.), and Master of Surgery

(M.Ch.). It also grants a diploma in State Medicine and a diploma in Ophthalmology. On receiving the B.M. the candidate is entitled to registration by the General Medical Council. In favourable circumstances this degree and the B.Ch. may be obtained in six or seven years from matriculation. Before receiving either, however, the candidate must have taken a degree in Arts (B.A.), for which three years' residence within the university is necessary. This, however, does not necessarily mean deferment of professional study for that period; for some of the subjects chosen for the final stage of the arts course may be the same as those in which examinations would in any case have to be passed for the medical degrees.

THE B.A. DEGREE.

A candidate may obtain the B.A. degree in either of the following ways:

(a) By passing Responsions (or one of the examinations which are accepted as equivalent), Moderations, a Scripture examination, or, in the event of a candidate objecting, an examination in some substituted book; and the Final Pass School in three subjects, two of which may be the same as two in the preliminary examinations in natural science.¹

(b) By passing Responsions, an additional subject in Responsions, the Scripture examination, some of the preliminary examinations in the Natural Science School,¹ or the Preliminary Examination and the School of Jurisprudence, or the Honour School of Mathematics in the first public examination; and one of the final honour examinations.

Responsions and the additional subject may be passed before a candidate is a member of the university;² Moderations and Scripture can be passed in or after the second term; the final pass school may be taken any time after Moderations; a final honour school may be taken at the end of the third or within the fourth academical year—that is, twelve or sixteen terms respectively; the preliminary examinations of the Natural Science School may be taken as soon as Responsions have been passed.

PROFESSIONAL DEGREES.

To obtain the B.M., B.Ch. degrees the candidate must first pass in four of the subjects of the Preliminary Examination of the Natural Science School—namely, physics, chemistry, zoology, and botany.

He then has two further examinations to pass—the First M.B. and the Second M.B. These take place twice a year, the first on the Thursday, the second on the Wednesday, of the eighth week of Michaelmas and Trinity terms. Every candidate at the First M.B. is examined in human anatomy and also in physiology and in organic chemistry, unless he has previously taken a first or second class in the two latter subjects in the Natural Science School. Once he has passed this examination he can, on production of certain certificates, be examined as soon as he pleases in pathology, forensic medicine, and hygiene, materia medica, and pharmacology³ (subjects of the second examination), but cannot present himself for the remaining subjects—medicine, surgery, and midwifery—until the twenty-fourth term from the date of his matriculation, and not until a period of at least twenty-two months have elapsed from the date of his passing the first examination, and he must take all the three subjects at one and the same time.

D.M. AND M.Ch. DEGREES.

A Bachelor of Medicine who wishes to proceed to the M.D. must have entered his thirty-ninth term and must present a dissertation for approval by the appointed examiners. If a candidate for the M.Ch., he must have entered his twenty-seventh term and must pass an examination which is held in June.

TEACHING.

The several colleges provide their undergraduate members with tutors for all examinations up to the B.A. degree.

¹ The four subjects of the medical preliminary examinations are four of the subjects in the natural science preliminary, and can be commenced directly after passing Responsions.

² Membership is constituted by matriculation and by becoming either a member of a college or hall, or a non-collegiate student.

³ A candidate who passed in materia medica and pharmacology under the old regulations in the First Examination before April 14th, 1909, is exempt from the examination in materia medica and pharmacology in the second examination.

In addition, the university provides certain courses of instruction, including lectures, demonstrations, and practical work, which cover all the subjects of the Preliminary Examination and First M.B., and in part those of the Final Examination. For the diploma in State Medicine and the diploma in Ophthalmology certain of the courses can be taken in Oxford.

SCHOLARSHIPS.

The several colleges grant scholarships of £80 a year, tenable for four years, in natural science, chemistry, physics, and biology. Exhibitions of varying value are also awarded in these subjects. Particulars can be obtained on application to the college tutors. A Radcliffe Travelling Fellowship of £200 a year, tenable for three years, is conferred annually; candidates must have taken the B.M. degree. A Philip Walker Studentship in Pathology of £200 a year, tenable for two years, is awarded biennially for the encouragement of research in pathology, as also are the Rolleston Memorial Prize, for research in natural science (including pathology), and the C. Theodore Williams Scholarships in Anatomy and Physiology, and in Pathology, of the value of £50 each, tenable for two years. A Burney Yeo King's College Hospital Scholarship of £80 is awarded annually.

FEES.

An annual fee of £2 10s. is paid to the university for the first four years, being reduced to £1 when the B.A. has been taken. For the degree the fees are—the B.A., £7 10s.; the B.M. and B.Ch., £14; the D.M., £25; the M.Ch., £12. College fees, varying in amount, are paid for the first four years of membership and in taking degrees. Tuition fees vary from £21 to £30. The minimum annual cost of living during the three university terms may be regarded as not less than £120.

UNIVERSITY OF CAMBRIDGE.

THE professional degrees given by this university are those of Bachelor of Medicine (M.B.) and Bachelor of Surgery (B.C.), which entitle the possessor to admission to the Register by the General Medical Council, and the higher degrees of Doctor of Medicine and Master of Surgery. It also grants diplomas in Tropical Medicine and Public Health to persons who are registered medical practitioners, but not necessarily graduates of the university.¹ A candidate for the M.B., B.C. degrees need not possess a degree in arts; it is sufficient if he has passed the *Previous examination* or some other examination accepted by the university as its equivalent.

PROFESSIONAL EXAMINATIONS.

To obtain the M.B. the candidate must pass three examinations of which the latter two take place twice a year, in the Michaelmas and Easter terms; those who are finally successful receive the B.C. degree without further examination.

First M.B. or Preliminary Examination in Science.—This comprises (1) chemistry, (2) physics, (3) elementary biology. The parts may be taken together or separately. In either case the candidate before admission to examination must have satisfied the requirements in respect of the *Previous examination*, paid the matriculation fee, and entered on his first or some later term of residence. During the continuance of the war students may be admitted to this examination though they have not commenced residence. The other requirements must be satisfied. The examination is held three times a year—in October, December, and June.

Second M.B.—This examination, which cannot be passed until the first examination has been completed, comprises Part I, human anatomy and physiology; Part II, elementary pharmacology, including pharmaceutical chemistry and the elements of general pathology. No one may enter Part II unless he has passed Part I. The candidate must be signed up in both subjects and have dissected for six months.

Third M.B.—This is divided into two parts, to neither of which is the candidate admitted until he has passed the examinations previously mentioned. A candidate for the first part, which deals with surgery and midwifery, must have completed five years of medical study and be signed up in these subjects and have completed two years of hospital practice.

Before admission to the second part the candidate must have completed five years of medical study and be duly

signed up in all subjects and have completed three years of hospital practice. He must also possess certificates showing that he has fulfilled all the recommendations as well as the requirements of the General Medical Council. The examination is in the principles and practice of physics, pathology, and pharmacology.

Act for the M.B.—Before receiving his degree, a candidate who has been successful at the Final M.B. has to write a thesis. This he reads in public on an assigned day, and is then questioned concerning it and other subjects of medicine by the Regius Professor of Medicine. If approved at this test he is then certified as having "kept the Act" satisfactorily, and in due course receives his degree. Medical degrees may be taken in absence, the candidate sending a thesis to the Regius Professor of Physic, which is laid before the Board.

THE HIGHER DEGREES.

The M.D. degree may be taken by an M.B. of three years' standing after keeping a further Act and writing a short extemporary essay, in which he may deal at his choice with either medicine, physiology, pathology, or State medicine. The M.C. degree may be granted to a candidate who has qualified for the B.C. at least three years previously; he is then examined in pathology, surgery, surgical anatomy, and surgical operations, or submits books or writings of his own which constitute original and meritorious contributions to the science and art of surgery.

FEES.

In addition to college fees, tutorial fees, and the expenses of living, the following examination fees are payable: First M.B., £4 4s.; Second M.B., £4 4s.; Third M.B., £9 9s. For schedules referring to the examinations, lists of schools recognized by the university, and other information, application should be made to the University Registry.

UNIVERSITY OF LONDON.

UNDER the regulations of the University of London, the degrees obtainable in the Faculty of Medicine are those of Bachelor of Medicine and Surgery, Mastery of Surgery in two branches, and Doctor of Medicine in six different branches. The university has its own matriculation examination, and this is of so peculiar a kind that candidates should secure and carefully study the booklets relating to it.

In no circumstances is a degree granted to any one in less than three years after the date at which he passed the Matriculation Examination or obtained registration in some other way; and unless they are already registered medical practitioners of a certain age and standing, all students must pass not less than five and a half years in professional study subsequent to matriculation. Four and a half of those years must be passed at one or more of the medical institutions or schools at home or abroad recognized by the university for the purpose; and not less than one in a school of the university itself.

PROFESSIONAL EXAMINATIONS.

M.B., B.S.—There are three examinations, the last two being subdivided. They are held twice a year.

The First Examination covers inorganic chemistry, general biology, and physics, there being two papers, a practical test, and a possible viva voce test in each subject. The names of successful candidates are placed in alphabetical order, with a note as to any subject in which a candidate has distinguished himself.

The Second Examination, Part I, cannot be passed within six months of the passing of the First Examination. It covers organic and applied chemistry, the candidate's knowledge being tested as in the earlier examination. It is a pass examination, but a mark of distinction may be won.

Candidates for Part II must have passed the First Examination at least eighteen months previously besides having completed Part I of the Second Examination. The subjects are anatomy, physiology, and pharmacology, the tests being written, oral, and practical. Candidates who fail in one subject may offer themselves for re-examination in that subject alone if the examiners think fit.

¹ See pp. 340 and 342.

No candidate is admitted to the Third M.B., B.S. Examination within three academic years from the date of his completing the Second Examination. The subjects are medicine (including therapeutics and mental diseases), pathology, forensic medicine and hygiene, surgery, and midwifery and diseases of women. They may be divided into two groups, one comprising medicine, pathology, forensic medicine and hygiene, and the other surgery and midwifery and diseases of women. Either group may be taken first at the option of the candidate, or the groups may be taken together. Only candidates who show a competent knowledge of all the subjects comprising a group are passed. There is no separate examination held for honours, but in the list of successful candidates the names are divided into an honours list and a pass list, in each of which the names are placed in alphabetical order, and a university medal may be awarded the candidate who has most distinguished himself in the whole examination.

THE HIGHER DEGREES.

M.D.—An examination for the M.D. is held twice yearly—in December and July. Every candidate must have passed the examination for the M.B., B.S., unless he became M.B. before May, 1904. He may present himself for examination in any one of the following branches: (1) Medicine, (2) pathology, (3) mental diseases and psychology, (4) midwifery and diseases of women, (5) State medicine, (6) tropical medicine, and, if he wishes, may pass also in another branch at a subsequent examination.

The period that must elapse between acquiring the M.B. and sitting for the M.D. in any branch varies with the nature of the candidate's previous work between one year and two years, and in all cases evidence must be afforded of special study of the subject chosen, whatever the branch; both written and practical examinations must be passed, though exemptions can be obtained from the former in exceptional circumstances. In each branch the scheme of examination is the same: two papers on its special subject, a paper on an allied subject—for example, medicine in the case of branch (4), pathology in branch (1)—an essay on one of two suggested topics connected with the special subject, and a clinical or other practical test. In any branch of the M.D. Examination a gold medal of the value of £20 may be awarded.

M.S.—The regulations with regard to the Mastership in Surgery are of a corresponding kind, but there are only two branches in which it may be obtained—General Surgery and Dental Surgery.

FEES.

For Matriculation: £2 for each entry. First Examination: £5 for each entry to the whole examination. For re-examination in one subject the fee is £2. Second Examination, Part I: £2 for the first and each subsequent entry. Second Examination, Part II: £3 for each entry to the whole examination. For re-examination in one subject the fee is £4. M.B., B.S. Examination: £10 for each entry to the whole examination, and £5 for examination or re-examination in either group. M.D. and M.S. Examinations: £20, and £10 on re-examination.

SPECIAL REGULATIONS IN RESPECT OF THE WAR.

Internal students who have failed at an intermediate or a Final Pass Examination for a First Degree in a Faculty other than Medicine, but who passed in one or more subjects on the last occasion when they presented themselves for such examination, and who have been debarred from presenting themselves for the corresponding Intermediate or Final Examination held between September, 1914, and a date to be determined later by the Senate, by service under the War Office or Admiralty, or by hospital service in connexion with the war, will be credited with the subjects in which they passed on the occasion in question.

In cases in which students, owing to War Service, have been unable to attend a course of lectures given only in alternate years, they will be permitted, if necessary, on the resumption of their work after the war, to count special tuition approved by the authorities of the school or institution concerned in place of attendance at such courses.

Military service during the war will be counted as equivalent to not more than two terms of a course of study in military science for internal students in any one

of the three years over which such course of study would ordinarily extend.

During the continuance of the war, students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology, but who have completed one year's study after passing the First Examination for Medical Degrees, will be allowed to count not more than six months' service as clinical clerk or not more than six months' service as surgical dresser in a recognized hospital as if they had so passed the examination in question.

UNIVERSITY OF BIRMINGHAM.

This university confers the ordinary medical and surgical degrees—M.B., Ch.B., M.D., and Ch.M., and also diplomas and degrees in State medicine and dentistry. It has a plan, too, by which, extending his study to six instead of five years, the M.B., Ch.B. candidate may become a Bachelor in Science as well. Of the five years' curriculum, the first four must be spent, as a rule, at the university itself, the fifth being passed at any approved school or schools. Occasionally, however, the Senate will reduce the period of enforced residence to three years and exempt from the First M.B. those who have passed elsewhere an examination considered to be its equivalent.

All students in the Medical Faculty must either (1) matriculate in mathematics, in chemistry or experimental mechanics, in the English language and literature and history, a foreign language, and in either another language or an additional science; or (2) show that they have passed elsewhere an examination deemed an equivalent. Subject to certain provisos, the following are at present thus regarded:

(a) The Previous Examination of the University of Cambridge if it includes the "additional subjects." (b) Responsions of the University of Oxford, except in mathematics. (c) The Matriculation Examination of a recognized university. (d) The Higher Certificate of the Oxford and Cambridge Boards. (e) The Oxford or Cambridge Senior Local Examination. (f) The Senior Certificate of the Central Welsh Board.

PROFESSIONAL EXAMINATIONS.

The candidate for the M.B., Ch.B. degrees has five examinations to pass. In the second and final examinations the candidate must pass in all the prescribed subjects or undergo the whole examination again.

First M.B.—This deals with chemistry, physics, and elementary biology; it may be passed before the student commences residence at the university, provided the regulations as to matriculation have been met.

Second M.B.—This deals with anatomy and physiology, and the student must pass in both simultaneously.

Third M.B.—This deals with general pathology and bacteriology, materia medica, and practical pharmacy.

Fourth M.B.—This takes place at the end of the fourth year, the subjects being forensic medicine, toxicology, public health, therapeutics, and special pathology.

Final M.B.—This comprises medicine, surgery, midwifery and diseases of women, ophthalmology, and mental diseases. The candidate, in addition to more ordinary certificates, must be prepared with a certificate of having acted as a *post-mortem* clerk for three months, and received special instruction in anaesthetics and clinical instruction in diseases peculiar to women, asylum ward work, and ophthalmology. In respect to the latter he must show that he has learnt refraction work. He also has to present to the examiners reports drawn up by himself on six gynaecological cases, and certificates drawn up by himself regarding four actual cases of lunacy, and notes respecting two others.

M.D.—An ordinary candidate for this degree must be an M.B., Ch.B. of not less than one year's standing. He presents an original thesis for approval, and then passes a general examination in the principles and practice of medicine. From the latter the Board of Examiners may exempt a candidate whose thesis is of exceptional merit. The regulations respecting the Ch.M. are of the same general character. Subject to certain requirements as regards special research or other post-graduate study,

* The University of Birmingham having joined the Joint Matriculation Board of the Northern Universities, the above matriculation regulations are in force up to October 31st, 1917. After October 31st, 1917, all communications respecting the Matriculation Examination and examinations accepted in lieu thereof should be addressed to the Secretary to the Board, Joint Matriculation Board, 24, Dover Street, Manchester.

graduates of other universities may obtain the M.D. and Ch.M. in the same way as the holders of the Birmingham M.B., Ch.B.

FEES.

The fee for matriculation is £2, and for each of the first four professional examinations the same amount; M.B., Ch.B. degree fee, £8; M.D. and Ch.M. examination, £10 each. For further particulars application should be made to the Dean of the Medical Faculty.

UNIVERSITY OF BRISTOL.

The university grants the following degrees: In medicine and surgery, M.B. and Ch.B., M.D., Ch.M. (the M.D. may be taken in State medicine); in dental surgery, B.D.S., M.D.S. Diplomas in public health (D.P.H.) and dental surgery (L.D.S.) are also granted. Candidates for degrees must pass the Matriculation Examination (or some equivalent examination accepted in lieu thereof; see the Regulations for Matriculation), and study at the university itself for at least three years of the five and a half years' curriculum, two such years being subsequent to the passing of the Second M.B. Examination. The Matriculation Examination comprises five subjects: (1) Mathematics; (2) a language other than English; (3) English grammar and composition; (4 and 5) two subjects at choice, one of which must be a foreign language. It is held in July and September. The winter session opens on October 2nd, 1917.

PROFESSIONAL EXAMINATIONS.

M.B., Ch.B.—There are three examinations for this degree. They must be passed in proper order, and before admission to them the candidate must be duly certified as having attended in the subjects involved. The first M.B. comprises chemistry, physics, botany, and zoology. The second M.B. comprises organic chemistry, elementary anatomy (Part I), advanced anatomy, physiology (Part II). The two groups may be taken separately or together. The Final Examination includes materia medica and pharmacy, pharmacology, and therapeutics, general pathology, morbid anatomy and bacteriology (Part I), special pathology, forensic medicine, toxicology and public health, obstetrics (including diseases of women), surgery (systematic, clinical, practical, and operative), medicine (systematic, clinical, and practical), including mental diseases (Part II). The two groups may be taken separately or together. At the option of the candidate, forensic medicine and toxicology may be taken either with Group I. or Group II. First or second class honours may be obtained by a candidate whose work is deemed of sufficient merit, but cannot be awarded to one who has recorded against him a failure at any examination after the First M.B.

M.D.—A candidate for this degree must be an M.B. and Ch.B. of at least two years' standing. He has a choice between presenting an original dissertation, undergoing a general examination in medicine (including medical anatomy, medical pathology and bacteriology, systematic and clinical medicine), or passing an examination in State medicine.

Ch.M.—A candidate must have attended, since becoming M.B., Ch.B., and for not less than two years, a public institution affording opportunity for the study of practical surgery, and produce certificates to that effect; the candidate shall be required to pass a general examination in surgery (including surgical anatomy, surgical pathology and bacteriology, operative and clinical surgery), and to present a dissertation in some department of surgery. He must be of two years' standing as an M.B., Ch.B.

Applications for other information should be addressed to the Dean of the Medical Faculty.

DENTAL DEPARTMENT.

The university grants the degrees of Bachelor and Master in Dental Surgery (B.D.S., M.D.S.) and a Diploma in Dental Surgery entitling to the letters L.D.S. The courses of the university are available equally for these qualifications and for those of other licensing bodies. Both courses are open to men and women alike.

UNIVERSITY OF DURHAM.

To its own graduates, who may be of either sex, this university grants the degrees of Bachelor and Doctor of Medicine (M.B. and M.D.) and Bachelor and Master of Surgery (B.S. and M.S.); it also grants special degrees and diplomas in State Medicine, Psychiatry, and Dental Surgery. To become a graduate, however, at the university it is not necessary to pass the major portion of the five years' curriculum within its precincts, or even to commence that period by matriculation. It is sufficient if, before he presents himself for his final examination, the candidate has passed at least one year in study at the University of Durham College of Medicine, including the practice of the Royal Victoria Infirmary in the same city. The earlier examinations may be passed while the student works elsewhere, but not less than a year must elapse between the date when the student satisfies the requirements of the university as regards matriculation and his presenting himself for the Final M.B., B.S. Examination.

MATRICULATION.

The university has its own matriculation examination, but accepts the tests of a considerable number of other educational bodies as a full or partial equivalent. A list may be obtained on application.

PROFESSIONAL EXAMINATIONS.

There are four professional examinations for the M.B., B.S. degrees. Each is held twice a year—in March and June. The first deals with elementary anatomy and biology, chemistry, and physics; the second with anatomy and physiology; the third with pathology, elementary bacteriology, medical jurisprudence, public health, materia medica, and pharmacy. At the final M.B., B.S., the candidate is examined in medicine and clinical and psychological medicine; surgery and clinical surgery; midwifery and diseases of women and children; clinical and practical gynaecology; therapeutics; diseases of the throat, nose, and ear; diseases of the skin; and diseases of the eye.

M.D.—A Bachelor of Medicine who wishes to proceed to this higher degree must be of at least two years' standing, and satisfy the university that he knows either Greek or German. He then submits a typewritten essay dealing with original work or observations of his own, and is examined in its subject. If the candidate is not an M.B. of the university, he must be a practitioner of fifteen years' standing and submit to special tests.¹

B.S.—A candidate for this degree must have passed the examination for the M.B. of the university, and have attended courses on operative surgery and regional anatomy. He must then perform operations on the dead body before the examiners.

M.S.—Candidates for this degree must, like those for the M.D., satisfy the authorities as to their knowledge of Greek or German, and must have been engaged in practice for at least two years subsequent to becoming B.S. Durham. They are submitted to an examination which covers the whole range of surgical knowledge.

FEES.

The following fees are payable: Matriculation or its equivalent, £1 10s.; First, Second, and Third M.B. Examinations, each £5; Final M.B., £10; M.D., B.S., and M.S., £5 for each examination and £6 6s. for each degree. Further information respecting the examinations and degrees may be obtained from Professor Howden, at the University of Durham College of Medicine, Newcastle-on-Tyne.

UNIVERSITY OF LEEDS.

The degrees granted in the Medical Faculty of this university are Bachelor of Medicine, Bachelor of Surgery (M.B. and Ch.B.), and Bachelor of Dental Surgery (B.Ch.D.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), and Master of Dental Surgery (M.Ch.D.). It also gives diplomas in public health, psychology, and in dental surgery.

Candidates for the M.B. must have attended courses of instruction approved by the university for not less than five years, two at least of such years having been passed in the university subsequently to the date of passing the

¹ See p. 344.

² See p. 338.

first examination. They must also have matriculated by satisfying the examiners in (1) English (composition and literature); (2) English history; (3) mathematics; (4) three of the following, one of which must be a language: (a) Latin, (b) Greek, (c) French, (d) German, (e) some other modern language approved by the Board, (f) either mechanics or physics, (g) chemistry, (h) geography, (i) natural history or botany. Exemption from the examination may be granted to applicants holding certificates of having passed examinations of a standard deemed by the Matriculation Board to be at least equal to the Board's examination.

PROFESSIONAL EXAMINATIONS.

The examinations for the M.B., Ch.B. number three. The first deals with (1) physics and chemistry, (2) biology. In each subject laboratory work is included, but the two parts can be taken separately. For neither can the candidate present himself until after matriculation, and at least two or three terms' approved work in the respective subjects indicated.

Second M.B.—This may be taken in two parts: (a) anatomy and physiology, including practical work; (b) materia medica and pharmacy, including actual compounding of drugs. The candidate's certificates must show, among other things, that he has dissected during at least five terms.

Final M.B.—This may be divided into three parts. The first part, pathology and bacteriology, may be taken at the end of the tenth term; the second part, forensic medicine and public health, and the third part, medicine, surgery, and obstetrics, cannot be taken before the end of the fifth year; and before being admitted to the examination in its subjects the candidate, in addition to ordinary certificates, must produce proof that he has done both intern and extern maternity work, and received clinical instruction in gynaecology, in diseases of the eye, skin, or larynx, and in the administration of anaesthetics. This division covers all branches of surgery, medicine (including mental diseases and diseases of children), and obstetrics and gynaecology. Passages for translation from French and German are included in the papers on medicine. First and second class honours may be obtained in this division.

M.D.—A candidate for this degree must be an M.B., Ch.B. of at least one year's standing. He presents a dissertation embodying the results of personal observation or original research, and, if this is approved, passes an examination which consists in the writing of an extemporary essay, and answering questions on the history of medicine and the subject of his dissertation.

Ch.M.—The candidate for this degree must have been admitted to the M.B., Ch.B. not less than a year previously, and during that time must have held for at least six months a surgical appointment in a public institution affording full opportunity for the study of practical surgery. In addition, he must have attended certain special courses, including one on ophthalmology and one on bacteriology; he is then examined in the subject of surgery in all its branches.

FEES.

The matriculation fee is £2, and on readmission £1 10s. For each of the other examinations £5, and £2 on re-admission. On conferment of the degree of Ch.M. £5 is payable, the same remark applying to the M.D. degree.

UNIVERSITY OF LIVERPOOL.

This university, besides granting degrees in medicine (M.B. and M.D.) and in surgery (Ch.B. and Ch.M.), gives a degree in dental surgery (B.D.S.), a degree in hygiene (M.H.), and degrees in veterinary science (B.V.Sc., M.V.Sc., and D.V.Sc.). Diplomas are awarded in dental surgery (L.D.S.), tropical medicine (D.T.M.), public health (D.P.H.), veterinary science (D.V.H.), and in several single subjects.

MATRICULATION.

The Matriculation Examination is governed by the Joint Matriculation Board, 24, Dover Street, Manchester, which accepts under certain conditions the tests of several other bodies as its equivalent. These include the Matriculation of London University, the Senior Local Examination of Oxford and Cambridge, the Higher Certificate of the Joint

Oxford and Cambridge Board, Responsions of the University of Oxford, the Previous Examination of the University of Cambridge, the Leaving Certificate of the Scottish Education Department, and the Senior Certificate of the Central Welsh Board. Of the five years' curriculum, not less than two must be passed in the university itself, one such year being subsequent to the date of passing the First M.B. Examination.

PROFESSIONAL EXAMINATIONS.

Candidates for the M.B., Ch.B. degrees have three examinations to pass, the first including (1) chemistry, inorganic, organic, and physical; (2) biology, including zoology and botany; (3) physics. Section 2 may be taken alone or in conjunction with Sections 1 and 3.

Second M.B.—This test covers (a) (1) anatomy, (2) physiology, including physiological chemistry and histology; and (b) (3) materia medica and pharmacy, (4) pharmacology. Candidates may present themselves in (a) and (b) separately.

Final M.B.—This examination deals with six subjects, which may be taken all together or divided into three parts: (1) General pathology, morbid anatomy, and bacteriology; (2) therapeutics; (3) forensic medicine, toxicology, and public health; (4) obstetrics and diseases of women; (5) surgery, systematic and clinical, including mental diseases and diseases of children.

M.D. and Ch.M.—Candidates for these degrees must have received the M.B. and Ch.B. at least a year previously. The M.D. candidate submits for approval a dissertation covering original work, the M.Ch. candidate undergoing an examination in all subjects of surgery, including ophthalmology. Other information concerning the diplomas of this university and its medical school will be found on page 332.

FELLOWSHIPS, SCHOLARSHIPS, AND EXHIBITIONS.

The university awards Fellowships annually to students of distinguished merit, as follows:

(1) Alexander Fellowship in Pathology and Bacteriology, value £100 and tenable for one year. (2) Ethel Boyce Fellowship in Gynaecology, value £100 and tenable for one year, open to fully qualified medical students of either sex. (3) John W. Garratt International Fellowship in Bacteriology, value £100 and tenable for one year. (4) Robert Gee Fellowship in Human Anatomy, value £100 and tenable for one year. (5) Holt Fellowships in Physiology and Pathology, two in number, value £100 each and tenable for one year. (6) Johnston Colonial Fellowship in Biochemistry, value £100 and tenable for one year. (7) Thelwall Thomas Fellowship in Surgical Pathology, value £100 and tenable for one year.

There are, in addition, scholarships and exhibitions open to medical students.

VICTORIA UNIVERSITY OF MANCHESTER.

This university grants the four ordinary degrees in medicine and surgery, M.B. and Ch.B. and M.D. and Ch.M.; a diploma and a degree (B.Sc.) in public health; a certificate in factory and in school hygiene; a diploma in psychological medicine; and a degree and diploma in dental surgery. Candidates for degrees must pass the special Matriculation Examination prescribed by the Faculty of Medicine (or some equivalent examination accepted in lieu thereof; see the prospectus of the Joint Matriculation Board), and study at the university itself for at least two years of the five years' curriculum, one such year being subsequent to the passing of the First M.B. Examination. The Matriculation Examination comprises (1) Latin, (2) mathematics, (3) the English language, its literature and history; (4) English history; (5) two subjects at choice, one of which must be a language approved by the Joint Board, the other being elementary mechanics, or physics, chemistry, geography, natural history, or botany. It is held in July and September.

PROFESSIONAL EXAMINATIONS.

M.B., Ch.B.—There are four examinations for this degree. They must be passed in proper order, and before admission to them the candidate must be duly certified as having attended in the subjects involved. At all examinations the subjects, or groups of subjects, prescribed can be taken separately or together, as the candidate pleases. The First M.B. is divided into Part 1, inorganic chemistry and physics;

Part 2, biology (including animal and vegetable morphology, physiology, and laboratory work); Part 3, elementary organic chemistry and biochemistry. The parts may be taken separately or together. At the Second M.B. the candidate is examined in anatomy and physiology; at the Third in pathology, hygiene, and pharmacology and therapeutics (including *materia medica* and practical pharmacy). The Final Examination includes medicine, systematic and clinical (separate papers being given on mental diseases), and diseases of children, surgery (systematic, clinical, and practical, with a separate paper on ophthalmology), obstetrics and gynaecology, and forensic medicine and toxicology.

M.D.—A candidate for this degree must be an M.B. of at least one year's standing. He has a choice between presenting an original dissertation or undergoing a written (as well as practical and clinical) examination in medicine, and a written and practical examination in pathology, and one other subject to be selected by the candidate.

Ch.M.—A candidate must have held, since becoming Ch.B., and for not less than six months, an appointment in a public institution affording opportunity for the study of practical surgery, and produce certificates of having attended certain courses of study. The examination comprises the general field of surgery, including ophthalmology and bacteriology.

FEES FOR EXAMINATIONS.

The following fees are payable: Matriculation, £2; on readmission, £1 10s. Each M.B. examination, £5; on re-admission, after failure, £2. M.D., including the conferring of the degree, £10. Ch.M., £5 each for the examination and degree. Application for further information should be addressed to the Dean of the Medical Faculty.

UNIVERSITY OF SHEFFIELD.

The degrees of this university (M.B., Ch.B., and M.D. and Ch.M.) and the diploma in public health are open to candidates of either sex. Candidates for a degree must have matriculated in the university or have passed such other examination as may be recognized for this purpose.

PROFESSIONAL EXAMINATIONS.

A candidate for the degrees of M.B., Ch.B. must produce certificates that he will have attained the age of 21 years by the day of graduation; that he has pursued the courses of study required by the university regulations during a period of not less than five years subsequently to the date of his matriculation, or exemption from matriculation, three of such years at least having been passed in the university, one at least being subsequent to the passing of the first examination. He or she has eventually to pass the following examinations in due order:

First Examination.—The subjects are chemistry, physics, and biology. The Intermediate examination in science—chemistry, physics, and zoology—will, on payment of the required additional fee, be accepted instead of this examination. Candidates on presenting themselves for this examination are required to furnish certificates of having attended for not less than one year approved courses of instruction, after matriculation, in (i) chemistry, inorganic and organic; (ii) physics; (iii) biology.

Second Examination.—The subjects are anatomy and physiology. The candidate must have completed the third winter session of professional study, must have passed the First Examination, and must have attended (1) lectures on anatomy, and dissections during five terms; (2) lectures on physiology during four terms; practical, experimental, and chemical physiology during four terms, and histology during one term.

Third Examination.—The subjects are pathology and pharmacology. Candidates must have completed the fourth year of medical study and completed the requisite courses in these subjects, including *post-mortem* clerkship for three months.

Final Examination.—The subjects are medicine (including forensic medicine, public health, mental diseases, and diseases of children), surgery, and obstetrics (including gynaecology). Candidates must satisfy the examiners in all subjects at the same examination. Candidates must have completed the fifth year of study.

M.D.—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the Professor of Medicine, and must pass an examination in the principles and practice of medicine.

Ch.M.—Candidates for the degree of Master of Surgery must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, and must, since taking the degrees of M.B., Ch.B., have held for not less than six months a surgical appointment in a public hospital or other public institution affording full opportunity for the study of practical surgery. The subjects of examination are systematic, clinical, and operative surgery, surgical anatomy, surgical pathology, and bacteriology.

Other information concerning this university will be found in the section devoted to Provincial Medical Schools.

UNIVERSITY OF WALES.

The Supplemental Charter and statutes of the University of Wales provide for a Faculty of Medicine and for the granting of the following degrees: Bachelor in Medicine (M.B.), Bachelor in Surgery (B.Ch.), Master in Surgery (M.Ch.), and Doctor in Medicine (M.D.).

A candidate for the M.B., B.Ch. cannot be admitted to examination until the completion of not less than six academic years subsequent to matriculation in the university, and of these years at least three must have been passed as a student in one of the constituent colleges of the university. He must also hold an Arts or Science degree of the University of Wales, or of some other university approved for this purpose. Some of the courses of study pursued for a B.Sc. or B.A. degree may be counted as part of the courses required for the degrees in the Medical Faculty.

The courses for the M.B., B.Ch. are divided into two sections, of which the first include the preliminary subjects—physics, chemistry, botany, zoology; and the ancillary subjects—organic chemistry, human anatomy, and physiology. Study of the preliminary subjects must extend over at least one academic year, study of the ancillary subjects must extend over at least two academic years, and, excepting organic chemistry, cannot be commenced until all the preliminary courses have been completed; hence the first section of the course must occupy not less than three years. The second section includes courses in pathology, bacteriology, pharmacology, medicine, surgery, and obstetrics, and cannot be commenced, except in the case of pharmacology, until the examinations relating to the preliminary and ancillary courses have been passed. Examinations in the earlier subjects are held at the end of each academic year, and in the subjects of the second section each July.

During the continuance of the war clinical service at a medical unit of the forces, or at an approved hospital, will be recognized as hospital practice, under certain conditions, for the purpose of the M.B. degree.

English Medical Corporations.

THERE are three medical corporations in England—the Royal College of Physicians, the Royal College of Surgeons, and the Society of Apothecaries of London. The first two combine for certain purposes to form what is known as the "Conjoint Board." Details concerning this body, its component colleges, and the third licensing body here follow.

THE CONJOINT BOARD.

This body deals with the qualifications of all candidates for the Licence of the Royal College of Physicians of London and for the Membership of the Royal College of Surgeons of England. It prescribes for them certain periods of study, and recommends those who satisfy it for the licence and diploma of Membership respectively. The successful candidate is then entitled to admission to the *Medical Register* as an L.R.C.P.Lond., M.R.C.S.Eng. It performs the same task in connexion with diplomas in State medicine and tropical diseases jointly issued by the

two colleges in question. It obliges all candidates to pass one of a large number of examinations which it considers satisfactory tests of general education, and thereafter to pass five years in professional study at a recognized medical school, allowing, however, six months to be spent at any institution which may be recognized by the Board as giving efficient education in chemistry and physics. A list of such institutions, as also of the tests accepted in regard to general education, can be obtained from the Secretary of the Board at the Examination Hall, Queen Square, Bloomsbury, W.C.1.

PROFESSIONAL EXAMINATIONS.

There are three examinations for the Conjoint diploma, or L.R.C.P., M.R.C.S., which are commonly known as First Conjoint, Second Conjoint, and Final.

First Conjoint.—This examination is in four parts: (1) Chemistry, (2) physics, (3) elementary biology, (4) practical pharmacy.

A candidate must present himself for examination in Parts (1) and (2) together until he has reached the required standard to pass in both, or in one of these parts, but he will not be allowed to pass in one part unless he obtains at the same time half the number of marks required to pass in the other part. A candidate may take Parts (3) and (4) separately, or he may present himself for the whole examination at one time.

Before admission to either part the candidate must show that he has undergone certain courses of theoretical and practical instruction, but these courses need not be completed within one year, nor need they run concurrently, and they may be commenced or attended before the candidate passes the required preliminary examination in general education. A candidate referred in any part or parts will not be admitted to re-examination for three months. If referred in chemistry, physics, or biology, he must produce evidence of further instruction. Those who are already graduates in medicine, or who have passed an examination in the same subjects before a university board for a degree in medicine, may obtain exemption from re-examinations in those subjects at this examination.

Second Conjoint.—This examination deals with anatomy and physiology, and both subjects must be passed at the same time. A candidate must have attended at a recognized medical school lectures on anatomy, physiology, and a course of practical physiology and histology, and have dissected for twelve months during the ordinary sessions. The study of anatomy and physiology before passing in two of the first three parts of the first examination is not recognized. If rejected, a candidate, before being admitted to re-examination, must continue his studies at a recognized medical school for not less than three months.

Final Conjoint.—This examination consists of three parts: Part I, medicine, including medical anatomy, pathology, practical pharmacy,¹ therapeutics, forensic medicine, and public health; Part II, surgery, including pathology, surgical anatomy, and the use of surgical appliances; Part III, midwifery and gynaecology. The examination may be passed at one time or in each part separately. Evidence of attendance at courses of instruction in the subjects of the three parts must be produced, and also of having conducted twenty labours. A candidate will be admissible to Parts I, II, and III of the Third or Final Examination at the expiration of two years (twenty-four months) from the date of passing the Second Examination, and on production of the required certificates of study, provided that the examination is not completed before the expiration of five years (five winter and five summer sessions) from the date of passing the Preliminary Examination. A rejected candidate must produce evidence of further instruction during three months.

NOTE.—A person holding a Colonial, Indian, or foreign qualification which entitles him to practise in the country where such qualification has been obtained is, after a course of study and examination equivalent to those required by the Regulations of the two Royal Colleges, admissible to the Second and Third or Final Examinations without any interval. Members of an English, Scottish, or Irish university are under certain conditions eligible for admission to the Third or Final Examination two years after passing at their university the subjects included in the First and Second Examinations of the Board.

A member of an Indian, Colonial, or foreign university recognized for the purpose, who shall have passed examinations at

his university for the degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First and Second Examinations of the Conjoint Board, will be eligible for admission to the Third or Final Examination two years after passing in the said subjects.

No special conditions relating to the war have been laid down, beyond allowing candidates to take midwifery before the completion of the fifth year of study. The committee of management, however, are willing to consider special cases where it has been difficult to fulfil certain details of the curriculum.

FEEES.

First examination, £10 10s. Re-examinations, Parts I and II, £3 3s.; Parts III and IV, each £2 2s. Second examination, £10 10s. Re-examination, £6 6s. Third examination, £21. Re-examination, Part I, medicine, £5 5s.; practical pharmacy, £2 2s. Part II, surgery, £5 5s. Part III, midwifery and diseases of women, £3 3s. Members of an English, Scottish, or Irish university, £5 5s. for examination and £36 15s. for the diplomas.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

This College has three grades—its Licentiates, its Members, and its Fellows. The Licence is now only issued through the Conjoint Board. The Membership is only granted to those who have passed the final examinations for the Licence; or those who are registered practitioners and graduates of a recognized university; in any case they must be persons over 25 years of age, who do not practise in partnership, dispense medicines, or engage in trade. Candidates are examined in pathology and the practice of physic, partly in writing and partly viva voce. Those under 40 are also examined in Latin, and either Greek, French, or German. The examination fee is £6 6s., the Membership fee being £42, or the difference between that sum and what the candidate has already paid if a Licentiate. The body of Fellows is maintained by election from among the Members.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

This College has two grades—Members and Fellows. The Members are admitted as stated in the section dealing with the Conjoint Board. The Fellowship is granted after examination to persons at least 25 years of age who have been engaged in professional studies for six years. There are two examinations—the first in anatomy and physiology, which may be passed after the third winter session; the second, chiefly directed to surgery, which may be passed after six years of professional study. Candidates must pass the Final Examination of the Examining Board in England and be admitted Members of the College before admission to the Second Examination for the Fellowship, except in the case of graduates in medicine and surgery of not less than four years' standing of universities recognized by the College for the purpose, who are required to attend for one year the surgical practice of a general hospital recognized by the College after obtaining their degrees. The College also issues a diploma in dentistry.

Fees.—At first examination: £5 5s. At second examination: £12 12s. Diploma fee: Members, £3 3s.; non-members, £13 13s.

SOCIETY OF APOTHECARIES OF LONDON.

This body confers a registrable diploma in medicine, surgery, and midwifery, now known as the L.M.S.S.A., on those successful at the following examinations:

Primary Examination.—This is divided into two parts, of which Part I includes elementary biology, chemistry, chemical physics, practical chemistry, pharmacy. Part II includes anatomy, physiology, and histology, and cannot be passed before the completion of twelve months' practical anatomy with demonstrations. The subjects cannot be taken separately, except in the event of the candidate having previously passed in one. Candidates will be excused any or all the subjects of the primary examination on producing evidence that they have passed equivalent examinations before an examining body recognized by the

¹ Candidates who have previously passed in practical pharmacy will not be re-examined in that subject at the Third Examination.

Society. Candidates referred in anatomy will be required to produce evidence of further work in the dissecting room before being admitted to re-examination.

Final Examination.—This is divided into two sections, the first of which is subdivided into three parts. Part I includes the principles and practice of surgery, surgical pathology, operative manipulation, surgical anatomy, instruments and appliances. Part II includes: (a) The principles and practice of medicine (including therapeutics, pharmacology, and prescriptions), pathology, and morbid histology; (b) forensic medicine, hygiene, theory and practice of vaccination and mental diseases. Part III includes midwifery, gynaecology, and diseases of newborn children, obstetric instruments and appliances. A candidate for any part of Section 1 must have passed not less than three winter sessions and two summer sessions at one or more of the medical schools recognized by the Society. Section 2 consists of clinical surgery and clinical medicine and medical anatomy, and a candidate before appearing at it must have completed five years of medical study.

FEES.

Primary examinations, £5 5s.; final, £15 15s. Further information may be obtained from the Secretary, Court of Examiners, Apothecaries' Hall, Blackfriars, E.C.4.

The Scottish Universities.

THERE are in Scotland four universities, each of them possessing a faculty of medicine, and having the right to confer degrees which admit the holder to the *Medical Register*. In essential points the regulations in their medical faculties for undergraduates are on all fours with one another, so that an account can be given of all of them together.

The universities in question are those of Edinburgh, Glasgow, Aberdeen, and St. Andrews, and in point of standing and repute it is not easy to differentiate between them. What provision each of the cities in which these universities are situated makes for the education of medical students will be found in the section on Medical Schools in Scotland; here it need merely be said that degrees in medicine from Scotland as a whole have always enjoyed an excellent repute.

The degrees granted in medicine and surgery to candidates of either sex are four in number—Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.). The two former are not obtainable one apart from the other. Besides these degrees a diploma in tropical medicine and hygiene is obtainable from the University of Edinburgh, as also a diploma in psychiatry. As for public health, registrable degrees in this subject are granted both by the University of Edinburgh and that of Glasgow, while diplomas in public health may be obtained from the universities of St. Andrews and Aberdeen.

MATRICULATION.

There is a special matriculation examination for medical students, the subjects being English, Latin, elementary mathematics, and either Greek or French or German. Candidates are required to pass in all these subjects either at one or at not more than two examinations, but they can present themselves as often as they please. Many corresponding tests held by other bodies are accepted as the equivalent of this examination.

PROFESSIONAL EDUCATION.

The regulations comply in all respects with the requirements and recommendations of the General Medical Council, and in addition necessitate definite study for stated periods of diseases of children, of the larynx, ear and nose, of the skin, of ophthalmology, and of mental diseases. In respect of the various courses certificates must be obtained showing that the student has not only attended regularly, but has duly performed the work of the class. Out of the necessary five years of medical study, not less than two must be spent at the university whose degrees the student hopes to obtain, and the balance at any place officially recognized for such purpose. In each academic year there are two sessions—one lasting from the

beginning of October to the middle of March, and the other from the middle of April to the end of June.

PROFESSIONAL EXAMINATIONS.

The distinctive feature of the Scottish curriculum is that, though nominally there are only four examinations, each of these may be, and habitually is, split up by the student into sections. Hence, a student may complete some stage of his career during the course of nearly every session. Thus, by the end of the first winter session the student may pass in physics and chemistry. At the end of the first summer session he can finish with botany and zoology, and with anatomy and physiology at the end of the second. Practical materia medica may be taken at any period of examination after the necessary course of instruction has been attended. Pathology and materia medica he will pass at the end of the third year, and soon, until the final examination in midwifery, surgery and medicine, and the corresponding clinical subjects at the end of the fifth year of study. At each examination the candidate may pass "with distinction," and a record is kept of the merit displayed, so that, when the time comes for the candidate to graduate, one who has done well throughout can be declared as graduating with first or second class honours. A further point in the system is that the student's own teachers commonly take some part in his examination.

Of the four examinations, the first deals with physics, botany, zoology, and chemistry; the second with anatomy and physiology; the third with materia medica and pathology; the fourth with medicine and surgery (clinical and systematic), midwifery, forensic medicine and public health, and clinical gynaecology. The first three examinations are held three times a year; the final twice a year.

Exemption from the first professional examination can be obtained by candidates who have passed a degree examination in its subjects at any recognized university. When a candidate presents himself for an examination in several of its parts, but is not successful in all of them, he is credited at the next examination with those subjects in which he has previously been approved.

THE HIGHER DEGREES.

It is open to those who are already M.B., Ch.B., to proceed either to the M.D. or the Ch.M. A candidate for the former must have been engaged for not less than one year in work in the medical wards of a hospital, or in scientific research in a recognized laboratory, or in the Naval or Military Medical Services, or have been at least two years in general practice, and he must be 24 years of age. He has to write a thesis on any subject not exclusively surgical, and is examined in clinical medicine and in some one or other of its special departments. The regulations for candidates for the Ch.M. are of a corresponding character, a period of surgical work in a hospital or elsewhere being substituted for medical work, and the thesis being on a surgical rather than a medical subject. He is examined in surgical anatomy, clinical surgery, operative surgery, and in some of the special departments of surgery.

FEES.

It is estimated that the class, examination, and other fees for the M.B., Ch.B. come altogether to about £160, the separate examination fees included in this calculation being as follows:

	£	s.	d.
Preliminary Examination ...	0	10	6
First Professional ...	6	6	0
Second Professional ...	5	5	0
Third Professional ...	4	4	0
Final ...	7	7	0

Re-entry in any subject in which the candidate has failed entails a fresh payment of £1 1s. Candidates for the M.D. and Ch.M. pay £15 15s., and on re-entry £5 5s.

More detailed information with regard to the University of Edinburgh can be obtained from the *Medical Programme*, price 2d., which is published by Mr. Thin, 55, South Bridge, Edinburgh, or on application to the Dean of the Faculty of Medicine. Similar information about Glasgow should be sought from the Assistant Clerk, Matriculation Office, Glasgow. With regard to Aberdeen, application may be made to the Secretary of the Medical Faculty, Marischal College. In respect of St. Andrews information can be obtained either from the Secretary of

the University, or alternatively, the Secretary of the United College, St. Andrews, or the Secretary of University College, Dundee, these being the two constituent colleges of the University of St. Andrews.

Finally, it should be mentioned that, in connexion with all the Scottish universities there are valuable bursaries and scholarships, some information as to which will be found in the article on Medical Schools.

Owing to the war, special final examinations may be held for such students as have fulfilled the requirements of the curriculum of the General Medical Council.

The Scottish Corporations.

THERE are three medical corporations in Scotland—the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. Their licences can be separately obtained only by persons who are already in possession of a recognized qualification—in surgery in the case of the College of Physicians, and in medicine in the case of the College of Surgeons and the Faculty of Physicians and Surgeons of Glasgow. All others must submit to the examinations held by the Conjoint Board which the three corporations have combined to form. Details concerning this Board and its component colleges follow. The conditions on which their higher qualifications are granted will be found set forth separately in connexion with each corporation.

THE CONJOINT BOARD IN SCOTLAND.

THIS body has charge of all questions connected with candidates for the Conjoint Licences of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. Those finally approved by it are entitled to registration and to the initials denoting the Licences of the three bodies concerned—namely, L.R.C.P. Edin., L.R.O.S. Edin., and L.R.F.P.S. Glasg. The Board requires all candidates to comply with the regulations of the General Medical Council. It has an arts examination of its own, but is prepared to accept in its place any of the other educational tests approved by the General Medical Council.

PROFESSIONAL CURRICULUM.

Subsequent to registration as a medical student, the candidate must pass not less than five years in medical study, each comprising a winter and a summer session. The Board does not exact that candidates shall pursue their study at any particular place, and is prepared to accept certificates of having attended the necessary courses from any recognized medical school.

Its examinations are four in number, each of them being held six times every year—four times in Edinburgh and twice in Glasgow; and it is open to candidates to present themselves for examination at either place. The first examination deals with physics, chemistry, and elementary biology; the second with anatomy and physiology, including histology; the third with pathology and materia medica, including pharmacy; and the final with (1) medicine, including therapeutics, medical anatomy, and clinical medicine; (2) surgery, including surgical anatomy, clinical surgery, and diseases and injuries of the eyes; (3) midwifery and diseases of women and of newborn children; and, if it has not been passed previously, (4) medical jurisprudence and hygiene. Candidates may also be examined on diseases of children, diseases of the ear and throat, insanity, vaccination, etc.

These examinations must be passed in due order, and before admission to any of them the candidate must supply certificates showing that he has completed the due periods of study of their subjects. He can present himself in any single subject of the first three examinations. As regards the final examination, a candidate can present himself in medical jurisprudence and hygiene at any time after completion of the third examination and of his study of these subjects; but in medicine, surgery, and midwifery he cannot present himself until the completion of five years' study, and he must take them all simultaneously.

A candidate who takes up several subjects of an examination or the whole of the subjects at one time, but fails in some of them, is credited at the next examination with those subjects in which he has been approved.

Part or entire exemption from the three first examinations may be granted to those who have already passed before other bodies examinations deemed by the Board equivalent to its own; but all candidates for the conjoint licence must sit for the final examination, and at no examination can a candidate present himself within three months of his rejection by some other licensing body.

FEES.

It is estimated that the total cost of lectures and fees for the conjoint licence is about £152. The separate examination fees are as follows: First, Second, and Third Professional, £5 each; Final, £15. On re-entry for any of the first three examinations £3, and on re-entry for the Final, £5. If the re-entry is only in one or two subjects, the fees are smaller.

Information concerning this Board should be sought either from Mr. D. L. Eadie, 50, George Square, Edinburgh, or from Mr. Walter Hurst, Faculty Hall, 242, St. Vincent Street, Glasgow.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THIS College has two grades—its Licence and its Fellowship. Licentiates may be of either sex, but for the Fellowship women are not eligible. As an original qualification the Licence is only granted after fulfilment of the regulations of the Conjoint Board, but as an additional qualification it can be obtained by those already possessed of a registrable qualification in medicine. In this case the candidate has to pass a written, oral, and clinical examination in surgery and surgical anatomy, and may be asked to operate on the dead body. The fee is £15 15s., of which £10 10s. is returned to unsuccessful candidates. On due cause being shown, a special examination may be granted, the fee being £20, of which £10 is returned to a candidate if he is not approved.

Candidates for the Fellowship must be not less than 25 years of age, and have been in practice subsequent to registration for at least two years, and must hold either a surgical degree from a university recognized for that purpose by the College, or an approved diploma obtained as the result of an examination which includes surgery as well as medicine. Candidates are examined in surgery, including clinical and operative surgery, surgical anatomy, and one other subject which they may choose from among the following: Ophthalmology, laryngology including aural and nasal surgery, dental surgery, advanced midwifery with obstetric surgery, gynaecology, surgical pathology and operative surgery, and advanced anatomy. The examination is written, oral, and clinical or practical. A candidate who desires to be examined must give one month's notice, his application for admission being supported by two Fellows of the College, one of whom must be resident in Edinburgh, or, in default, by testimonials obtained specially for the purpose.

No changes in the curriculum or examinations have been made in consequence of the war.

Licentiates of the College pay £35, and others £45. For further information application should be made to the Clerk of the College, Mr. D. L. Eadie, 50, George Square, Edinburgh.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THIS College has three grades—Licentiate, Membership, and Fellowship; to the two latter women are not admissible. The regulations applying to candidates for the Licentiate have already been generally indicated. If desirous of receiving it apart from those of the other two corporations, they must be holders of a surgical qualification recognized by the College, and must pass an examination corresponding to the medical part of the Final Examination of the Conjoint Board, and conditioned in the same way, and also an examination in materia medica. The fee for examination is 15 guineas, a special examination being obtainable on due cause being shown, and on payment of 5 guineas extra. Ordinary examinations take

place monthly on the first Wednesday, except in September and October. A candidate for the Membership must be either a Licentiate of a Royal College of Physicians or a graduate in medicine of a British or Irish university, and in either case not less than 24 years of age. He is examined in medicine and therapeutics, and in one further subject at his choice. This may be either (a) one of the departments of medicine specially professed; (b) psychology; (c) general pathology and morbid anatomy; (d) medical jurisprudence; (e) public health; (f) midwifery; (g) gynaecology; (h) diseases of children; or (i) tropical medicine. Licentiates of the College pay £21, others £36 15s. The examination is held quarterly, and application for admission to it must be made a month previous to its date. For the Fellowship, the candidate must have been a member of the College for at least three years, and, if accepted, pays fees amounting altogether to a little less than £65. Any further details required can be obtained on application to the Secretary of the College.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

This body possesses two classes—Licentiates and Fellows. The regulations applying to the former correspond with those respecting candidates for the Licence of the Royal College of Surgeons of Edinburgh. Candidates for the single Licence are examined in surgery (including clinical surgery and surgical anatomy). The fee is £15 15s., and examinations are held quarterly. Candidates for the Fellowship must be qualified medical men of not less than two years' standing and 24 years of age. Candidates approved at this examination are then eligible for election as Fellows. Special regulations are in force for medical practitioners serving in the present war. The Faculty can also elect four Fellows annually without previously submitting them to examination, provided they "have highly distinguished themselves in medical science or practice." They must be of not less than ten years' standing and 40 years of age. Further information can be obtained from Mr. A. Duncan, B.A., LL.D., Faculty Hall, St. Vincent Street, Glasgow.

The Irish Universities.

THERE are three universities in Ireland, and each of them has a medical faculty. These are the University of Dublin, usually known as Trinity College, Dublin, the Queen's University of Belfast, and the National University of Ireland. The two former teach students, examine them, and grant or withhold degrees accordingly; while the third is by way of being an academic body only, inasmuch as its practical work is divided up among three constituent colleges, situated, one at Cork, another at Galway, and the third in Dublin. The regulations of all these universities in respect of medical degrees are given in the following sections; while specific information as to the arrangements for the education of medical students made at each of them will be found in the section relating to Irish Medical Schools.

UNIVERSITY OF DUBLIN: TRINITY COLLEGE.

This university grants two degrees in medicine (M.B. and M.D.), two in surgery (B.Ch. and M.Ch.), two in midwifery (B.A.O. and M.A.O.), and diplomas in the same subjects and in public health. It also confers two degrees in dentistry. The degrees are granted to those who, besides having passed the Professional Examination, have graduated in arts.

PROFESSIONAL EXAMINATIONS.

A candidate for the Final Examination for the M.B., B.Ch. and B.A.O. degrees must be a matriculated student of at least five years' standing; and though he need not have taken his degree in arts before admission to the Professional Examination, he cannot take his medical degrees until he has been admitted B.A. At least three years of the five years' medical curriculum must be pursued at the School of Physic of the university. The examinations which students must pass are the Preliminary Scientific, the Intermediate Medical, and the Final. Before admis-

sion to any of these examinations students must be duly signed up as regards study in the subjects involved.

Preliminary Scientific.—This covers (a) chemistry, (b) physics, (c) botany and zoology; the three divisions may be taken together or at different times.

Intermediate Medical.—This is divided into two parts: (a) Anatomy, physiology, organic chemistry, and histology; (b) applied anatomy and applied physiology. The two parts may be taken separately or together.

Final Examination.—Part I: Hygiene and medical jurisprudence, pathology, materia medica and therapeutics. Part II: (a) Midwifery, gynaecology (clinical, paper, and viva voce); (b) medicine, clinical medicine, and mental diseases; (c) surgery in all branches, including clinical ophthalmology. The three sections of Part II may be taken separately or together. In either case the full curriculum must have been completed, and the final cannot be taken before the end of the fifth year.

M.D.—The candidate must have passed all the qualifying examinations in medicine, surgery, and midwifery, and have taken, or have been qualified to take, the degree of B.A. three years previously. He must read a thesis before the Regius Professor of Physic.

M.Ch.—The candidate must be a B.Ch. of not less than three years' standing, and have been engaged in practice for two years. Graduates of ten years' standing may be given a special examination.

M.A.O.—The candidate must have passed the qualifying examination in medicine, surgery, and midwifery. The examination is specially directed to obstetrics and practical gynaecology.

For the university diplomas mentioned above the candidate must have completed two years in arts and five in medical studies. The examination and courses required are the same as for the degrees.

Further information regarding courses of instruction, etc., may be obtained from the Registrar of the School of Physic, Trinity College, Dublin.

QUEEN'S UNIVERSITY, BELFAST.

The degrees granted by the Medical Faculty of this university are as follows: Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), Master of Obstetrics (M.A.O.). The university also confers a diploma in public health. The first three degrees mentioned serve as a qualification for admission to the *Medical Register*, and are not granted separately. In addition to matriculating and passing his professional examinations, a candidate for these degrees must have passed three of the regulation five years as a student at the Belfast School of Medicine.

PROFESSIONAL EXAMINATIONS.

The examinations for the M.B., B.Ch., B.A.O. are four in number. The first deals with: (1) Inorganic, organic, and practical chemistry, (2) experimental and practical physics, (3) botany and practical botany, (4) zoology and practical zoology. It is divided into two parts, of which botany and zoology form one. The Second Examination covers anatomy and physiology, and may be taken at the end of the second year of the student's career. The Third Examination includes: (1) Pathology, (2) materia medica, pharmacology and therapeutics, (3) medical jurisprudence, and (4) hygiene. To be valid a certificate in regard to the study of the subjects of this examination must show that the work has been done after the First Examination has been passed.

The Final Examination includes: (1) Medicine, (2) surgery, (3) midwifery, (4) ophthalmology and otology. The student may pass in all subjects at once at the end of his fifth year, or he may divide the examination into two parts—namely, (1) systematic, (2) clinical, practical, and oral. The first part may be taken at the end of the fourth year, but for the second part the candidate may not present himself until the end of his fifth year. No certificate in regard to the study of the subjects of this examination will be valid unless the work was done subsequent to passing in all the subjects of the Second Examination.

THE HIGHER DEGREES.

Candidates for the degree of Doctor of Medicine must be graduates in medicine of at least three years' standing,

unless they hold also a degree of the university in arts or science. In that case a standing of two academic years will suffice. Moreover, candidates must be able to show that the interval has been passed in the pursuit of such courses of study or practical work as may be prescribed. The degree may be conferred either (a) after a formal examination, or (b) in recognition of the merits of a thesis or of some piece of original study or research carried out by the candidate, followed by an oral or other examination in its subject. When an ordinary examination is imposed it will include (1) a written paper on the principles and practice of medicine, (2) a commentary on a selected clinical case, (3) a clinical and viva voce examination, and (4) a written paper and clinical or practical and viva voce examination on a subject chosen from the following list: (1) Human anatomy, including embryology, (2) physiology, (3) pathology, (4) pharmacology and therapeutics, (5) sanitary science and public health, (6) forensic medicine and toxicology, (7) mental diseases. The regulations for the degrees of M.Ch. and M.A.O. are of the same general nature.

NATIONAL UNIVERSITY OF IRELAND.

The National University of Ireland carries on most of its educational work through three constituent colleges—one in Dublin, one in Cork, and one in Galway. Each of these provides a full medical curriculum, and all candidates for the medical degrees of the university must pass three of their five years of study at one or other of them. These years do not count except after matriculation or recognition as a student of the Medical Faculty obtained in some other fashion. The candidates at each constituent college are examined thereat by the university, and a common standard of education is secured by all courses of instruction and the regulations concerning them having to be approved by the Senate after considering report thereon from the Board of Studies of the University. In addition to the ordinary degrees in medicine and surgery, the university grants those of Bachelor and Master of Obstetrics, Bachelor and Doctor of Science in Public Health, and Bachelor and Master in Dental Surgery, as well as diplomas in Public Health, in Mental Diseases, and in Tropical Medicine.

PROFESSIONAL EXAMINATIONS.

There are four examinations. The first, which should be passed at the end of the first year, includes Part A (chemistry and physics) and Part B (botany and zoology), which parts candidates may take separately or together. At the end of the second year they should pass in anatomy and physiology; and at the end of the third year in pathology, *materia medica* and therapeutics, hygiene and public health, forensic medicine, and toxicology. The final examination is divided into three parts, each of which may be taken separately—namely, (a) Medicine, including mental diseases; (b) surgery, including ophthalmology and otology; (c) midwifery and gynaecology.

The higher degrees are obtainable either by examination or on presentation of an approved work, but in each case not less than three years must have elapsed since the candidate acquired the corresponding degree of Bachelor. Further information as to the constituent colleges will be found in the section relating to Irish Medical Schools.

The Irish Corporations.

THERE are three licensing bodies other than the Medical Faculties of the Universities, and, just as in London, there are two Royal Colleges of Physicians and Surgeons and an Apothecaries' Hall. The similarity is still more complete, for in Ireland also the two colleges have formed an examining Conjoint Board, as in London, which is responsible for the recommendation of candidates to the two bodies for their respective licences. The Apothecaries' Hall gives its Licence separately.

THE CONJOINT BOARD IN IRELAND.

This body requires of candidates the passage either of its own preliminary examination in the subjects of general education, or proof that the candidate has passed one of the tests accepted by the General Medical Council.

PROFESSIONAL EXAMINATIONS.

There are four professional examinations, the first of which cannot be passed earlier than the end of the first winter session, nor the fourth before the conclusion of full five years of medical study, and before being admitted to any of them the candidate must show that he has studied the different subjects in practice and theory for the requisite periods, certificates to this effect being accepted from the authorities of most of the recognized medical schools at home and abroad. The first and second examinations deal respectively with (a) chemistry and physics, and (b) biology; and (a) anatomy, and (b) physiology and histology. All parts of these examinations, as also of the following one, which deals with (a) pathology, (b) *materia medica*, pharmacy, and therapeutics, (c) public health and forensic medicine, may be taken separately.

Final Examination.—This is divided into three divisions, which cannot be completed until at least four years have passed in medical studies other than those for the first examination, and five years, at least, since the beginning of the curriculum. The divisions are (a) medicine, including fevers, mental diseases, and diseases of children; (b) surgery, including ophthalmic and operative surgery; (c) midwifery, including diseases of women and newborn children, and the theory and practice of vaccination. Candidates are recommended to present themselves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the divisions (a), (b), or (c), provided he has completed his curriculum as far as concerns the division in which he presents himself.

Fees.—Preliminary Examination, £2 2s.; re-examination, £1 1s. First Professional Examination, £15 15s.; Second, £10 10s.; Third, £9 9s.; Final, £6 6s.; re-examination fee is £2 2s. for each division.

Further information can be obtained from Mr. Alfred Miller, Secretary of the Committee of Management, Royal College of Surgeons, 123, St. Stephen's Green, Dublin.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

Those whose names already appear on the *Medical Register* can obtain the separate Licence in Medicine of this College, and its Licence in Midwifery. In either case an examination has to be passed in the subjects indicated, questions on midwifery, hygiene, and jurisprudence being included in the examination for the Licence in Medicine. For the Licence in Midwifery practitioners of over five years' standing are exempted from examination by printed questions. The other grades of the College are Members and Fellows. The former are admitted after an examination which is open to all university graduates in medicine and Licentiates in medicine of Royal Colleges of Physicians, and deals with the general subjects of medicine. Fellows are selected, by vote, from among the Members of the College, irrespective of sex.

Fees.—For the Licence in Medicine, 15 guineas; for the Licence in Midwifery, 5 guineas; or 16 guineas for both if they are taken within an interval of a month. Special examinations cost in each case 5 guineas extra. For the Membership, 20 guineas to a Licentiate of the College; 35 guineas to others; a special examination costing 10 guineas extra. The Fellowship £35, in addition to stamp duty, £25. Information as to special examinations and other points can be obtained from the Registrar, the Royal College of Physicians, Kildare Street, Dublin.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

This body, besides granting a Licence in Surgery, admits those possessed of registrable surgical qualifications to its Fellowship under certain conditions. Its Licence is usually granted conjointly with that of the College of Physicians, but it is given separately to holders of a registrable qualification in medicine, provided that the College is satisfied that adequate courses of study have been pursued, and provided its own provisional examination

is passed. This examination is held on its behalf by the Conjoint Board, and is identical with the ordinary surgical portion of the examinations imposed by that body.

The Fellowship.—Candidates for the Fellowship must pass two examinations, of which the first is in anatomy (including dissections), physiology, and histology; and the second in surgery (including surgical anatomy) and pathology. Both examinations are partly written, partly practical, and partly *viva voce*; while the final examination includes the performance of operations. All subjects of either examination must be passed at one time, and to neither can a candidate be admitted who has been rejected in any of its subjects by any other licensing body within three months. Candidates are not admitted to the Primary Examination except on evidence that they have already passed an examination in anatomy, physiology, and histology, held by some university or other body whose degrees or licences entitle the holder to admission to the Register; if, however, the candidate is a person whose name is on the Colonial or foreign medical Register, at the discretion of the Council. Candidates for the Final Examination must be over 25 years of age, produce a certificate of general good conduct signed by two or more Fellows of the College, and, if successful, must make a declaration before admission to the effect that they do not conduct dispensing practices, and will not do so as long as they are Fellows.

Fees.—Candidates for the Licence pay 5 guineas for examination, which sum, if they pass, is counted as part of the fee payable on admission to the Licence, this being 25 guineas. Candidates for the Fellowship pay 5 guineas for each examination, the total of 10 guineas being reckoned as part of the fee payable on admission to the Fellowship. That fee is 25 guineas in the case of those who are already Licentiate, and 40 guineas in the case of others.

APOTHECARIES' HALL OF IRELAND.

A DIPLOMA is granted by this Hall which entitles the holder to be registered as a practitioner of medicine, surgery, and midwifery, and confers also the privileges of an apothecary. Two periods of dissection, each not less than six months, must be included, and twenty-seven months of hospital attendance, or its equivalent. Three professional examinations have to be passed; they are held three times a year. The Primary Examination deals with biology, physics, and chemistry, practical and theoretical; the Intermediate Examination is in practical anatomy and physiology, and histology and materia medica. A candidate who has passed tests in any of the subjects of these examinations before another licensing body is exempt from further examination in such subjects. The Intermediate Examination, Part II, consists of pathology, medical jurisprudence, and hygiene. The Final Examination deals with medicine, surgery, midwifery, and pharmacy. The Hall's own examination in all these subjects must be passed. Women candidates are eligible.

Fees.—Primary Examination, £4 4s.; Intermediate Examination, £8 8s.; Final Examination, £12 12s.; Final alone, when the others have been passed elsewhere, £15. Application for other information should be made to the Registrar, 40, Mary Street, Dublin.

MEDICAL SCHOOLS AND COLLEGES.

LONDON.

APART from post-graduate and other special schools, the medical schools of London number as many as fourteen, including in the count two institutions which provide education only in the preliminary and intermediate subjects, under the title of "university centres."

Little guidance can be given in these columns as to choice of one school rather than another, for such choice must depend largely on personal factors. In a general way, however, it may be said that while to the student of to-day it may, perhaps, be almost a matter of indifference to what school he belongs, there is often in after-life a certain advantage in having been an alumnus of one of the more celebrated schools. On the other hand, at the smaller schools more opportunities, perhaps, present

themselves to the average man for obtaining student appointments, and especially the coveted posts of house-physician and house-surgeon.

Information as to the fees at the different schools, and the scholarships, prizes, and junior appointments which they offer will be found in the following pages, and should be carefully studied by those who have no personal reason for preferring one school to others. The courses which they provide are fundamentally the same, and in all of them the arrangements made are such as to meet the requirements of students of every class—of those who are aiming at the diplomas of the Conjoint Board or the Apothecaries' Society, not less than of those who have London or other university degrees in view. At all, too, as has been said, special facilities are offered to men who have commenced their professional education at the older universities, Oxford and Cambridge. Apart from these facts, the only point to which attention can usefully be directed is that on personal inquiry and investigation reason may perhaps be found for regarding the teaching accommodation and general arrangements for students at some schools as superior to those at others.

CHARING CROSS HOSPITAL.

THIS school, with its hospital, is situated in the very centre of London, and is accessible from all parts by train, tram, tube, or 'bus, a convenience to students which at once solves the difficulty of where to reside. Indeed, it is quite possible to live twenty miles away in the heart of the country and still attend the teaching in its entirety. Its courses of instruction are specially designed to meet the requirements of the University of London, the Conjoint Board, and the final studies of other universities. The hospital contains 300 beds. Over 3,000 cases pass through its wards each year, and some 24,000 out-patients and casualties are treated. There are special departments for mental diseases, midwifery, diseases of women, of children, of the skin, eye, ear, throat, nose, and teeth, for tuberculosis, orthopaedic cases, x-ray work, and for electrical examination and treatment.

Appointments.—Demonstratorships and assistant demonstratorships are open to students of the school. Medical, surgical, and obstetric registrars to the hospital are appointed annually. Six house-physicians, six house-surgeons, and two resident obstetric officers are appointed each year.

Primary and Intermediate Studies.—By an agreement with the University of London the school sends its primary and intermediate students to receive their lectures and practical work at King's College, which is situated within four minutes' walk. This arrangement has proved most successful. It enables students to obtain the best university education in their earlier studies from a large professorial and teaching staff, whilst allowing them to take advantage of their own school for social and collegiate purposes.

Final Studies.—The final studies are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for the qualifying examinations. Departments are also available for the other final subjects of bacteriology, clinical pathology, materia medica, toxicology, public health, operative surgery, and for research work.

Public Health Laboratories.—An exceptionally fine series of laboratories in the school has been taken over by the University of London King's College, to which a full professorial and teaching staff has been transferred. The course of instruction for the Diploma in Public Health is given in these laboratories.

The Museum contains over 4,000 specimens, including a notable collection of over 800 gynaecological specimens—"The Outhbert Lockyer Collection."

Students' Club.—The social comfort and convenience of students are met by library, reading, and smoking rooms, refreshment room, etc. The club, which is under the control of a committee of students, provides various athletic recreations and includes the Medical Society.

Women Students.—Women students are accepted by the school and hospital upon the same terms and conditions as men, and after qualification are eligible for resident hospital appointments. A separate common room and a

female attendant are provided, but beyond this no further distinction is made. This system of co-education, under which men and women are placed on terms of complete equality throughout the whole of the curriculum, has been found to work successfully and to their mutual advantage.

Fees.—These are arranged upon the simplest and most comprehensive plan. An entrance fee of 10 guineas and 8 guineas is payable by full-course and final-course students respectively, and an annual fee of 26 guineas covers all other expenditure, with the exception of 7 guineas for vaccination, dispensing, and fever hospital attendance, which must be taken outside the hospital. Membership of the Students' Club is included in these fees.

Post-Graduate Work.—Special facilities are offered for post-graduates desiring to do research work in the school or hospital or to attend the regular courses of instruction. The fees are low and inclusive.

Further information may be obtained on application to the Dean, W. J. Fenton, M.D., F.R.C.P., Medical School, Charing Cross Hospital, London, W.C.2.

GUY'S.

The hospital contains 643 beds in constant occupation. Thirty-three beds are set apart for diseases of the eye and 40 for the most urgent and interesting medical cases, which form the subjects of the weekly clinical lectures. There is a special ward of 32 beds for the reception of cases of diseases of women and for cases of difficult labour. Beds are also allotted to the throat and ear departments, the orthopaedic department, the department for the treatment of diseases of the genito-urinary system, and the children's department; there are as well some special beds for the treatment of syphilis.

The medical college fronts the east gate of the hospital, providing accommodation for 60 resident students. This contains a dining-hall, reading rooms, a library of general literature, and a gymnasium for the use of the residents and of the members of the Clubs Union. The athletic ground at Honor Oak Park is reached from the hospital in twenty minutes. The Gordon Museum of Pathology, the Wills Library, the newly built Departments of Chemistry, Physics, Pathology, and Pharmacology, and the school buildings in general, afford unrivalled opportunities for a liberal education and for research. Special classes are held for the First and Second Examinations for Medical Degrees of the University of London and for the first F.R.C.S.Eng. Special teaching is provided to meet the requirements of the universities of London, Oxford, and Cambridge in general pathology and pharmacology.

Appointments.—All appointments are given to students without extra payment, and according to the merits of the candidates, as determined by a committee of the medical staff. Sixteen out-patient officers, eight house-physicians, twenty assistant house-surgeons, eight house-surgeons, two ophthalmic house-surgeons, and nine resident obstetric assistants are appointed annually. The house-physicians and house-surgeons, obstetric residents, and ophthalmic house-surgeons hold office for six months each, and receive free board and lodging in the college. Every student is provided with rooms and commons in the hospital during the period of his "take in" as dresser. In addition to the clerkships and dresserships in the medical and surgical wards, students are appointed to the posts of clinical assistant, dresser, or clerk in the special departments of ophthalmology, laryngology, gynaecology, diseases of children, diseases of the nervous system, dermatology, otology, electricity, anaesthetics, and dentistry. More than 150 additional appointments have been added to the list of those annually open to students of the hospital, the majority of them being in the special departments.

Scholarships, Prizes, etc.—The following entrance scholarships are awarded annually in the month of September: A. Junior Scholarships in Arts, Classics, Mathematics, and Modern Languages, and Science, of the value of £120, £100, and £50, open to candidates under 21 years of age. B. Senior or University Scholarships of the value of £75 and £35, open to candidates under 25 years of age, who have completed their study of Anatomy and Physiology. Subjects, any two of the following: Anatomy, Physiology, Pharmacology, General Pathology, Organic Chemistry. Junior prizes for general proficiency, £20, £15, £10; Hilton prize for Dissection, £5; Michael Harris prize for Anatomy, £10; Sands-Cox Scholarship for Physiology, £15 for three years; Wooldridge Memorial prize for Physiology, £10; Beaneys prize for Pathology, £34; Treasurer's gold medal in Medicine, Treasurer's

gold medal in Surgery, and the Golding-Bird gold medal and scholarship for Bacteriology (£20) are awarded annually after competitive examination. The Gull Studentship in Pathology, and the Beaneys Scholarship in Materia Medica, of the annual value of £150 and £31 10s. respectively, are awarded without examination to enable research to be carried on in these subjects. An Arthur Durham Travelling Scholarship of £100 is awarded triennially. The Douglas Research Studentship in Pathology, value £300 per annum, is awarded without examination.

Various modifications have been rendered necessary by the war. In agreement with the practice of the universities, an allowance will be made for military service performed by candidates.

Fees.—An annual composition fee is paid by all students until a registrable qualification is obtained. Further information may be obtained from the Dean of the Medical School.

KING'S COLLEGE HOSPITAL.

The medical school carried on in connexion with this institution, at Denmark Hill, deals with the advanced or final subjects of the medical curriculum. The arrangements for education in these subjects are complete. The new and up-to-date hospital contains over 600 beds, many of which are given up to the 4th London General Hospital (T.F.). There are special departments for diseases of women and children, nervous diseases, ophthalmology, otology, laryngology, dermatology, dental surgery, etc.; pathological and vaccine departments are also included.

Appointments.—Sixteen resident medical and surgical officers are appointed yearly, as well as dressers and clerks in the wards, out-patient departments, *post-mortem* room, and special departments. Each of the special departments has several clinical assistants. There are three registrars and three tutors, all of whom receive salaries. The Clubs and Societies Union combines athletics, music, and other societies connected with the school, and provides also a common room.

Fees.—The composition fee is 70 guineas if paid in one sum, or 72 guineas in two instalments (one of 40 guineas at entrance, and the other of 32 guineas at the commencement of the second year). Entrance fee ten guineas.

The prospectus of the school can be obtained on application to the Dean, H. Willoughby Lyle, M.D., B.S.Lond., F.R.C.S., or to the Secretary, S. C. Ranner, M.A.Cantab., King's College Hospital, Denmark Hill, S.E.5.

THE LONDON.

This hospital, with its medical college and dental school, are situated in the Mile End Road, E.1. The hospital contains 922 beds, and, during 1916, 17,637 patients passed through the wards and 130,831 patients received treatment in the out-patient departments; these numbers include 7,814 accident cases. The number of major operations which were performed amounted to 6,160.

From the beginning of the war to the close of 1916 3,947 military patients were admitted, while the naval patients (who were first admitted at the end of September, 1915) totalled 384.

The building of the wards for the treatment of syphilis has now been completed. During 1916, 620 patients were admitted for treatment.

All the departments are modern and adapted for the teaching of all subjects in the curriculum. A residential hostel on hospital ground is provided for the convenience of students who wish to live near the wards and casualty departments. The athletic ground is at Highams Park, and is open to all members of the Clubs Union.

Appointments.—The salaried appointments open to students are those of medical registrar (3), surgical registrar (3), obstetric registrar, registrar in the ear, nose, and throat department (2), medical, surgical, and obstetric tutors; senior dressers to out-patients; clinical assistants in the medical, surgical, ophthalmic, aural, light and skin, orthopaedic, and electrical departments. There are 2 resident accoucheurs, 6 resident house-physicians, and 9 resident house-surgeons, 7 receiving-room officers, 2 emergency officers, 1 assistant director of Pathological Institute, and 3 pathological assistants, also paid and unpaid clinical assistants in the various special departments. In addition there are numerous assistant-

ships, clerkships, and dresserships in the various departments.

Scholarships and Prizes.—The following is a list of scholarships and prizes:—At Entrance: Price Scholarship in Science, £100; in Anatomy and Physiology, £52 10s.; Entrance Scholarship in Science, £50; Epsom Scholarship, "Free Medical Education"; Buxton Scholarship in Arts, £31 10s. After Entrance: Anatomy and Physiology Prize, £25; Letheby Prizes, £25; Prizes in Clinical Medicine, Surgery, and Obstetrics, £20 each; Duckworth Nelson Prize, £10; Hutchinson Prize, £40; Sutton Prize, £20; Sir Andrew Clark Prize, £25; Anderson Prizes, £30; Dressers' Prizes, £40; Practical Anatomy Prizes, £10; Wynne Baxter Prize, £5 5s.; Arnold Thompson Prize, £5; Harold Fink Prize in Dental Surgery, £5 5s.; Prize in Dental Microscopy, £5. The London Hospital Medical College and the Eliza Ann Alston Medical Research Funds amount to over £23,000.

Fees.—Entrance fee, 10, 15, or 30 guineas, according to examinations passed; annual fee 30 guineas. Full information may be obtained from the Dean at the London Hospital Medical College, Mile End, E.1.

THE MIDDLESEX.

The school and hospital are in Mortimer Street, W., close to Oxford Circus, Goodge Street, and Great Portland Street stations. There is a residential college for a limited number of students overlooking the hospital garden, a gymnasium within the precincts of the hospital, and an athletic ground within easy distance at Park Royal. The hospital contains 449 beds, including a wing containing 92 beds for patients suffering from cancer, and special cancer investigation laboratories, which offer unrivalled opportunities for the study of this disease, both in its clinical and pathological aspects. In connexion with the investigation laboratories there are several valuable scholarships awarded.

There are special wards for maternity and gynaecological cases, and for diseases of children and of the skin and eye.

The Bland-Sutton Institute of Pathology is under the charge of a director. The institute includes a pathological and anatomical museum, a lecture theatre, large pathological and public health laboratories, and smaller rooms for original investigation. Bacteriological, chemical, and microscopical examinations of material from the wards, operating theatres, and out-patient departments are carried out in the laboratories. Senior students are eligible for clerkships in the laboratories of the institute, and every facility is given for original investigation.

In the electro-therapeutical department special attention is given to the treatment of lupus and cancer by the *x* ray, and opportunities are afforded to students wishing to become acquainted with the use of the apparatus employed in this method of treatment. An electro-cardiographic department has also been established.

Appointments.—Twenty-two resident appointments are open annually for competition among students of the hospital. The officers reside and board in the residential college free of expense. Two casualty medical and two casualty surgical officers, and two resident officers to the special departments, are appointed annually. Eight house-surgeons are appointed every year at intervals of two months, after examination; six house-physicians are also appointed annually at similar intervals. An obstetric and gynaecological house-surgeon is appointed every six months. In the out-patient departments the appointments are: clerk and dresser to the physicians and surgeons to out-patients; clerk in the departments for diseases of the skin and nervous diseases; dresser to the department for diseases of women, to the ophthalmic surgeon, to the throat and ear department, and to the dental surgeon. Extern midwifery clerks and *post-mortem* clerks are also appointed. The appointments are so arranged that every student may, during his course, hold all the out-patient and in-patient clerkships and dresserships. Students must have held an out-patient clerkship and dressership before being eligible to hold in-patient clerkships or dresserships. Non-resident qualified clinical assistants are appointed in the Medical, Surgical, Skin, Neurological, Ophthalmic, Throat and Ear, Odontological, Children's, and Electro-therapeutical Out-patient departments.

Scholarships.—Three Entrance Scholarships, value £100, £50, and £25 respectively, are open to students commencing their medical studies in April or October, 1915. An annual Entrance

Scholarship, of the value of £50, is open to students of the universities of the United Kingdom who have completed the curriculum for, or passed the examinations in, anatomy and physiology. The examination for these scholarships will take place on September 17th, 18th, and 19th. Application for admission must be made on or before September 8th. Students joining the school in the previous April are eligible. The Freer Lucas Scholarship is annually awarded on the nomination of the head master to a pupil of Epsom College who has passed the first examination for medical degrees (Preliminary Scientific Examination). There is also a scholarship, value £50, awarded annually to students from New Zealand. In addition to the Entrance Scholarships, there are numerous other valuable scholarships, prizes, and exhibitions open to students of the hospital, including the Brodrip Scholarships, value £60 and £40; Lyell Gold Medal and Scholarship, value £55 5s.; Freeman Scholarship, value £30; John Murray Gold Medal and Scholarship, value £25; Hetley Clinical Prize, value £25; Leopold Hudson Prize, value 11 guineas; and the Second Year's Exhibition, value 10 guineas.*

Fees.—The composition fee for students taking the University of London degree is 145 guineas, or by five equal annual instalments of £32 11s. For those who have passed the first examination for medical degrees the fee is 120 guineas, or by four equal annual instalments of £34 2s. 6d. Students taking the Conjoint Board diplomas pay 135 guineas, or by five equal annual instalments of £30 9s. Students who have passed the First Professional Examination pay 115 guineas, or by four equal annual instalments of £32 16s. 3d. For members of universities and others who have completed their anatomical and physiological studies the fee is 70 guineas, or three equal annual instalments of £26 5s.

Further information may be obtained on application to the Dean.

ST. BARTHOLOMEW'S.

This institution fills one side of Smithfield and Giltspur Street, sharing with the Post Office buildings a large island of ground separated practically from all other buildings; it is on the edge of the City, and easily reached from all parts of London. The hospital contains 750 beds. Extensive new buildings, opened in July, 1907, occupy part of the ground acquired from the old Bluecoat School, and these materially enhance the attractions of the hospital as a place of medical study. The medical school buildings, including the library and the chemical, physical, biological, and physiological laboratories, and anatomical department have now at their side a very large building, which includes club rooms for the Students' Union, a writing room, luncheon and dining halls, new quarters for the resident staff, and an out-patient department and accommodation for special departments of such large size as to be unsurpassed by any hospital in the kingdom. During the year 1909 a second block of new buildings was completed. These form the pathological department, and include, in addition to a new and extensive *post-mortem* room, large and well-equipped laboratories for clinical pathology, pathological histology, bacteriology, and chemical pathology, altogether forming the most complete pathological department in the country. Within the precincts of the hospital also there is a residential college for a large number of students. The Students' Union owns, moreover, grounds of some 10 acres in extent for recreative purposes at Winchmore Hill, which is easily accessible from the hospital.

Special classes are held for students preparing for the Preliminary Scientific and other examinations for the M.B., M.D. of the Universities of London, Oxford, and Cambridge, and for the higher surgical degrees at the same universities, including the M.Ch.Oxon., M.C.Cantab., M.S.Lond., and F.R.C.S.Eng. Special laboratory instruction for the D.P.H. of Cambridge, Oxford, Durham, and London is also given.

Appointments.—Clinical clerks to the physicians and to the physician-accoucheur, and dressers to the surgeons and in the casualty department, are chosen from the students; clerks and dressers are also selected from the students to attend in the out-patient rooms, in the special departments (Ophthalmic, Orthopaedic, Gynaecological, Laryngological, Aural, Dermatological, Electrical, and Dental), and in the *post-mortem* room. Chief assistants and clinical assistants are selected from qualified men appointed yearly to help in the general medical, surgical,

* Certain of these scholarships have been modified for the period of the war, particulars of which can be obtained on application.

and in the special departments. Ten house-physicians and ten house-surgeons are appointed annually. During their first six months of office they act as "Junior" house-physicians and house-surgeons, and receive a salary of £25 a year. During their second six months they become "Senior" house-physicians and house-surgeons, and are provided with rooms by the hospital authorities, and receive a salary of £80 a year. A resident midwifery assistant, an ophthalmic house-surgeon, and a house-surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and receive a salary of £80 a year. Two resident assistant anaesthetists are appointed annually, and receive salaries of £120 and £100 a year respectively. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year.

Scholarships.—Five entrance scholarships are annually awarded after an examination held in September. The subjects of examination and conditions of eligibility for these scholarships are: (1) Two scholarships, value £75 each, in not fewer than two and not more than three of the following subjects—Chemistry, Physics, Botany, Zoology, Physiology, and Anatomy, limited to students under 25 years of age who have not entered on the medical or surgical practice of any London medical school. One scholarship, value £150, in not fewer than three of the following subjects—Chemistry, Physics, Botany, Zoology, and Physiology, limited to students under 21 years of age who have not entered on the medical or surgical practice of any London medical school. (3) The entrance scholarship in Arts, of the value of £100, will be given in Latin and mathematics, with one other language—Greek, French, or German. (4) The Jeffreys Exhibition in Mathematics, Latin, and one other language—Greek, French, or German—and of the value of £50. The value of the scholarships and prizes is over £1,000 annually.

Further information and a handbook can be obtained on application to the Dean of the Medical School, St. Bartholomew's Hospital, E.C.1.

ST. GEORGE'S.

THIS school is at Hyde Park Corner, and is carried on in connexion with St. George's Hospital, an institution having a service of 436 beds, of which 100 are at the convalescent hospital founded by Atkinson Morley at Wimbledon. It provides for the instruction of its students in the preliminary and intermediate subjects of the curriculum at the teaching centres of London University established at King's College and University College. As a temporary measure for the duration of the war a small and strictly limited number of women students have been admitted to the clinical course in the school. The school at Hyde Park Corner is devoted entirely to the teaching of clinical subjects, great attention being paid by the members of the staff to individual teaching. A number of special courses are given, in which the requirements of university and all other examinations receive careful attention.

The St. George's Hospital Club consists of an amalgamation club, with smoking and luncheon rooms on the hospital premises, and other students' clubs, with an athletic ground at Wimbledon. Students have the advantage of a well-filled library of medical and scientific books. A register of accredited apartments, and a list of medical men and others willing to receive St. George's men as boarders, may be seen on application to the Dean.

Appointments.—Dresserships to the surgeons and clinical clerkships to the physicians are open without fee to all students of the hospital. There is a large number of resident appointments, which may be held for six, twelve, or eighteen months, and are open without fee to every perpetual student of the hospital, and are made strictly in accordance with the merits of the candidates. Besides this, after the student has held a house appointment, the following are, among others, open to him: Medical registrarship at £200 per annum; surgical registrarship at £200 per annum; assistant curatorship of the museum at £100 per annum; obstetric assistantship, resident, at £50 per annum; the post of resident anaesthetist at £100 per annum; the post of senior anaesthetist at £50 per annum; the posts (2) of junior anaesthetists, each at £30 per annum.

Scholarships.—Two university entrance scholarships in anatomy and physiology (70 guineas and £50) are awarded at the commencement of each winter session. The William Brown Exhibition of the value of £112 per annum (tenable for

two years) is awarded by examination to a perpetual pupil of the hospital every second year. The William Brown Exhibition of £42 (tenable for three years) is awarded by examination to a perpetual pupil of the hospital every third year. Other prizes to the value of £200 are awarded annually to the students of the hospital.

Fees.—First year (preliminary science or first conjoint), £26 5s., or £21, according to course. Second and third years, £63 in two equal instalments. For the course of clinical study, in the fourth and subsequent years, entrance fee, £10 10s.; annual composition fee, £31 10s. No entrance fee is payable by St. George's students who have studied at King's and University Colleges.

Further information may be obtained from the Dean of the Medical School.

ST. MARY'S.

THIS school and its hospital are situated in Praed Street, in the neighbourhood of the residential districts of Paddington, Bayswater, and North Kensington, and are thus especially convenient to students who wish to reside in the immediate vicinity. A register of approved lodgings is kept in the office of the Medical School.

The athletic ground at Park Royal, Acton, is easily accessible from the Medical School. It is seven acres in area, and provides ample accommodation for the various athletic clubs; the pavilion is large and well equipped.

The hospital contains 305 beds, of which 31 are devoted to treatment by therapeutic inoculation.

The Medical School provides complete courses in the preliminary and intermediate subjects of the curriculum which are recognized by the University of London as approved courses for internal students. Students may join in October, January, or April.

The departments of biology, chemistry, anatomy, physiology, and pathology are under the direction of full-time lecturers, and special courses are provided twice yearly for the Primary F.R.C.S. In addition, special tuition is provided for the Intermediate and Final Examinations of the universities of Oxford, Cambridge, and London, and for the Final F.R.C.S.

All clinical appointments in the hospital are free to students of the school, and the resident medical officers are chosen by competitive examination. Six house-physicians, six house-surgeons, four obstetric officers, and two resident medical officers to the inoculation wards are appointed each year, and receive board and residence in the hospital. A large number of salaried appointments are open annually to qualified students, including those of medical registrar, surgical registrar, casualty physician, casualty house-surgeon, resident assistant anaesthetist, assistant curator, together with several demonstratorships. In the inoculation department there are nine assistantships, the salaries of which amount to £1,600 per annum.

Scholarships.—There are Entrance Scholarships in Natural Science; one of £100, one of £50, one of £25, and two University Scholarships of £52 10s. awarded annually by competitive examination in September.

Fees.—The composition fee for students is £140 if paid in one sum, or £145 if paid in four instalments. University students who have completed their examinations in anatomy and physiology are admitted on payment of a composition fee of 65 guineas (£68 5s.) paid in one sum, or 70 guineas (£73 10s.) if paid in two annual instalments. A system of annual fees is also in operation for students who prefer it. Separate courses of lectures, laboratory work, or hospital practice may be taken.

The School Calendar and full information can be obtained from the Secretary, St. Mary's Hospital Medical School, Paddington, W.

ST. THOMAS'S.

THIS school and hospital are situated in Lambeth, the joint buildings on the Thames facing the Houses of Parliament, and forming one of the well-known architectural features of London.

The school buildings, which are separated from the hospital by a quadrangle, comprise lecture theatres, laboratories, and class-rooms well adapted for the modern teaching of large bodies of students in the subjects of the medical curriculum. A splendid library and reading room and a complete museum are open to all students from 9 a.m. to 5 p.m., on Saturdays to 2 p.m. The Students'

Club premises contain a dining room and smoking and reading room supplied with daily and illustrated weekly papers, and a gymnasium. Good meals are obtainable at a moderate tariff. The Terrace affords facilities for exercise and recreation. A cloak-room with lockers, and a lavatory with bath-rooms, are in the main school building. Students are thus able to spend the whole day at the school. The sports ground of more than nine acres in extent is at Chiswick. It can be reached in forty minutes from the hospital; it is admirably adapted for football, cricket, lawn tennis, and athletic sports.

The hospital proper contains 664 beds, and temporary huts erected in the quadrangles afford accommodation for 350 additional patients. In addition to the ordinary provisions of a great hospital there are connected with the out-patient department physicians' and surgeons' rooms provided with ample sitting accommodation, so that large numbers of students are enabled to follow closely the practice and teaching of the out-patient staff. There is a full complement of special departments, and connected with the hospital a special tuberculosis department gives opportunity for instruction of students. There is a clinical theatre, centrally situated, so as to facilitate the illustration of lectures by patients from the wards and out-patient room; it is arranged also for lantern demonstrations. The maternity ward, containing 20 beds, gives students full facilities for maternity training, under supervision, within the precincts of the hospital. This obviates any necessity for supplementary instruction elsewhere, and fully prepares the student for the extern maternity practice of the hospital district. The revised regulations of the examining bodies can thus be fully complied with.

Appointments.—All hospital appointments are open to students without charge. A resident assistant physician and a resident assistant surgeon are appointed annually at a salary of £150 each, with board and lodging. Two hospital registrars, at an annual salary of £50 each, are appointed yearly. The tenure of these offices may be renewed for a term not exceeding two years. An obstetric tutor and registrar is appointed each year at an annual salary of £50. Eight resident casualty officers and anaesthetists are appointed every six months. Four house-physicians, four house-surgeons, two obstetric house-physicians, two ophthalmic house-surgeons, and eight clinical assistants in the special departments are appointed every three months, and hold office for six months if recommended for re-election. Two research assistants (bacteriological and chemical) are paid £200 per annum each. Clinical clerkships and dresserships to the in-patient and out-patient departments are available to the number of 400 each year.

Scholarships.—There are five entrance scholarships: Two in Arts, giving one year's free tuition; one of £150 and one of £60, in Chemistry, Physics, and Biology, for students who have not received instruction in Anatomy or Physiology; one of £50 in any two of the following subjects: Anatomy, Physiology, or Chemistry, for students who have completed their examinations in Anatomy and Physiology, for a medical degree in any of the universities of the United Kingdom, and have not entered as students in any London medical school. Valuable scholarships, prizes, and medals are open for competition throughout the whole career of a student, including a Fellowship of £100 given by the Salters' Company for research in Pharmacology, and the Louis Jenner Research Scholarship of the annual value of £50 for Pathological research.

Fees.—The entrance fee for second year's students is 20 guineas; for third year's students 10 guineas. The annual composition fee is 30 guineas. For Preliminary Science students the fee is 15 guineas. The fees cover all tutorial classes given by the school teachers, and there are no extra charges made for materials required in practical courses. Special courses of instruction are given for various examinations, and a register of lodgings is kept at the school. A list of medical practitioners, clergymen, and others who receive students is also available. Further information may be obtained from the Secretary of the School, St. Thomas's Hospital, Albert Embankment, S.E.1.

UNIVERSITY COLLEGE HOSPITAL.

The school, which forms part of the Corporation of University College Hospital, is in immediate proximity to the hospital in University Street and opposite University College. It comprises departments of medicine and clinical medicine, surgery and clinical surgery, midwifery

and gynaecology, pathology including morbid anatomy, clinical pathology and bacteriology, cardiography, forensic medicine, mental physiology and mental diseases, dental surgery, practical pharmacy, and other departments for the study of special diseases, such as those of the eye, skin, ear, and throat, and for instruction in anaesthetics, electro-therapeutics, and skiagraphy. The Hospital and School have acquired the National Dental Hospital and College as their Dental Departments, thus providing every facility for the study of dental subjects.

The school thus provides the final course of study for the degrees of the universities of London, Oxford, Cambridge, and Durham, and for the diplomas of the Royal Colleges of Physicians and Surgeons in Medicine and Dental Surgery, and the Licence of the Society of Apothecaries. Special bacteriological classes are also held in preparation for the various diplomas of public health. Each department is also equipped for more advanced work, and provides facilities for research.

A student may enter the medical school at the commencement of his career, in which case he will pursue his preliminary and intermediate studies at the University of London, University College, and his final studies in the school. He may also enter the school for the final studies after having completed his preliminary and intermediate studies at any recognized university or school.

Scholarships.—The following scholarships and prizes are open to competition: Two Entrance Exhibitions of 80 guineas each, awarded after a competitive examination in anatomy and physiology; the Graham Scholarship in pathology of a sum not exceeding £200 per annum; the Atkinson Morley Scholarship of £45 a year for three years, awarded after examination in the theory and practice of surgery; the Atchison Scholarship of £55 a year for two years for general proficiency in medical studies; the Magrath Clinical Scholarship, value about £100; the Filliter Exhibition in pathology of £30; the Percival Alleyn Prize for the advancement of surgery by research, value about £60; the Graham Gold Medal for research work; four Fellowes Medals in clinical medicine; Liston Medals in clinical surgery; the Bruce Medal in pathology and surgery; two Tuke Medals in pathology, and the Erichsen Prize for practical surgery.

Appointments.—All the appointments at the hospital are reserved for students of the school, the dresserships and clerkships being open, of course, to those who have still to qualify. The qualified appointments, in addition to a number of posts as house-physicians and house-surgeons and obstetric assistants, include the appointments of resident medical officer, surgical registrars, obstetric registrar, casualty medical officers, casualty surgical officers, assistant in ear, nose, and throat departments, assistant in ophthalmic department, registrar in anaesthetic department, and deputy anaesthetists.

Fees.—The fee for the full course of final studies at the school is 80 guineas if paid in one sum, or 82 guineas if paid in two instalments.

Particulars of general and special courses can be obtained on application to the Dean of the Medical School.

WESTMINSTER.

This school, with its hospital, situated in Broad Sanctuary, opposite Westminster Abbey, provides for the education of its students in the preliminary and intermediate subjects of the University of London at King's College. The rest of the work is done in the school buildings near the hospital, which contains upwards of 200 beds, and affords most ample facilities for instruction in all branches of medicine and surgery.

Appointments.—A medical and surgical registrar are appointed annually, each with a salary of £50. Two house-physicians, three house-surgeons, one assistant house-physician, one assistant house-surgeon, and a resident obstetric assistant are appointed after examination, and are provided with rooms and commons, except the assistant house-physician and the assistant house-surgeon, who are provided with commons only. The assistant house-physician after three months' service becomes house-physician for a further period of six months, and the assistant house-surgeon, after two months' service, becomes house-surgeon for a further period of six months. Clinical assistants to the assistant physicians and assistant surgeons, and to the officers in charge or special departments, are appointed from among qualified students. Every student must perform the duties of out-patient dresser for four months, and afterwards

hold the office of in-patient dresser for four months. He is also required to serve two terms of four months each as medical clinical clerk to in-patient physician and one term as gynaecological clinical clerk. Two pathological clerks are appointed every four months to assist in the post-mortem room. No student is eligible as an in-patient dresser or clinical clerk until he has passed the Second Examination of the Conjoint Board, or an equivalent examination. Clerks and dressers in the special departments of hospital practice are periodically appointed. So far as vacancies permit, students of other hospitals are admitted to in-patients' dresserships or clerkships.

Scholarships.—The following scholarships are offered for competition during the year 1917-18: In the summer session two natural science scholarships, £60 and £30, and one in Arts, £60. In the winter session two scholarships in anatomy and physiology, £50 each. In the spring two scholarships in anatomy and physiology, £50 each.

Fees.—The annual composition fee is 26 guineas, and an entrance fee of 10 guineas is payable by every student, including scholars. These fees include subscriptions for membership of the Clubs Union.

Further information can be obtained on application to the Dean at the Westminster Hospital Medical School, Caxton Street, Westminster, S.W.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

THIS school is carried on at 8, Hunter Street, Brunswick Square, W.C.1, in connexion with the Royal Free Hospital. An agreement has also been made under which students of the school receive clinical instruction at St. Mary's Hospital, Paddington. It is, like all the other London schools which have so far been mentioned, one of the constituent schools of the Medical Faculty of London University. The school buildings have recently been enlarged. The laboratories are extensive and well lighted, and are fully equipped for the examination courses of the University of London. Research laboratories are attached to all departments.

A large, well-equipped library, common-room, union-room, and refectory are provided for the use of students. There is also some residence accommodation for students in the school buildings.

The Royal Free Hospital, Gray's Inn Road, W.C.1, has 184 beds, all of which are available for clinical instruction. A new block contains the Maternity Department, with a lying-in ward of 8 beds, new and enlarged students' quarters, a new Out-patients' Department, with special operating theatre, and departments for massage, electrical and x-ray work, dentistry, and casualty. There are also separate departments for gynaecology and obstetrics and diseases of the eye, ear, and skin. Instruction is given in anaesthetics, bacteriology, etc., in addition to the ordinary clinical lectures and demonstrations and tutorial classes. Students attending at St. Mary's Hospital (305 beds) are admitted to the full clinical course and educational facilities of the hospital. Students attend the practice of one of the fever hospitals of the Metropolitan Asylums Board, and receive special instruction in lunacy at Bethlem Hospital; they are also admitted to the practice of a number of special hospitals.

The work of the school includes preparation for the M.B., B.S. Lond., and the diplomas of the Royal Colleges of England (including the Primary Fellowship examination), also for the medical school and general hospital course for dental students.

Appointments.—Qualified students of the school can obtain appointments as house-physicians and house-surgeons, obstetric assistants, surgical and medical registrars, pathologists, anaesthetists, medical electrician, skiagrapher, curator of museum, and clinical assistants and demonstrators in various subjects.

Scholarships.—The Isabel Thorne Entrance Scholarship value £30, the St. Dunstan's Medical Exhibition value £60 a year for three years, which may be extended to five years, and the Mabel Sharman-Crawford Scholarship, value £20 a year for four years, are offered for competition in each year. The Mrs. George M. Smith Scholarship, of the value of £50 a year for three years, which may be extended to five years, and the Sarah Holborn Scholarship, of the value of £20 a year for three years, which may be extended to five years, are awarded in alternate years. The Bostock Scholarship, value £60 a year for two or four years, is awarded by the Reid Trustees on the result of an examination held in May by the University of London. The holder of the

scholarship must enter the London School of Medicine for Women. The Agnes Guthrie Bursary for Dental Students, value £60, is awarded each year. The Ellen Walker Bursary of £25 for two years is awarded each year to a student beginning her fourth year of study. The John Byron Bursary of £20 a year for two years, the Helen Frideaux Prize of £40, the Mabel Webb Research Scholarship of £30 for two years, the Fanny Butler Scholarship of £14 10s. a year for four years, together with many other scholarships and prizes, are offered on sundry conditions. The Dr. Edith Pechey-Phipson Post-Graduate Scholarship of £40 is awarded annually. Various missionary societies also offer scholarships on certain conditions, and assist ladies who wish to go to India and other countries as medical missionaries.

Fees.—Courses for the University of London, diplomas of Royal Colleges of England, and other qualifications: First medical examination, £28; course for second and third, £141; course after the second medical examination, £91. These sums include library and laboratory fees.

The Students' Union exists to promote corporate action of the students on matters of common interest, and to promote and maintain athletic and other clubs. All students are required to become members of the Union.

Further information can be obtained from the Warden and Secretary.

KING'S COLLEGE.

SINCE the incorporation of King's College in the University of London, the instruction given to medical students is carried out there in the classes of the Faculty of Science (Medical Division), and deals only with the subjects of the preliminary and intermediate parts of the curriculum. King's College Hospital (see p. 325) is now a separate institution, and the studies for the final examinations only are carried out there.

A special class for the Matriculation Examination is also held.

There is a large athletic ground at Wormwood Scrubbs, managed by the Students' Union Society.

Scholarships.—The entrance scholarships are: 1. Three Warneford Scholarships, each £25 for four years; subjects—mathematics, classics, divinity. 2. One Sambrooke Exhibition of £25 for two years, open; subjects of examination—mathematics, elementary physics, inorganic chemistry, botany, and biology. The holders of the preceding awards must proceed to King's College Hospital. 3. *Rabbeith Scholarship, value £20, in July, for the best student of the first year. 4. *Second year's scholarship, value £20, for the best student of the second year.

Fees.—Information as to fees can be obtained from the Dean of the Medical Division of the Faculty of Science at the College (Professor W. D. Halliburton, M.D., F.R.C.P., LL.D., F.R.S.).

Women Students.—King's College is now open to women students for the Preliminary and Intermediate portions of the medical curriculum. Application for admission should be made to the Dean.

Information as to scholarships and subjects of examinations can be obtained from the Secretary of the College.

UNIVERSITY COLLEGE.

THIS institution, one of the principal component parts of the University of London, possesses a Faculty of Medical Sciences whose work covers all the subjects included in the group commonly known as the preliminary medical sciences—namely, physics, chemistry, botany, and zoology; and also the intermediate medical sciences—namely, anatomy, physiology, and pharmacology. These courses in intermediate medical sciences will, as from October, 1917, be open to women students on the same terms as to men. The preliminary medical science courses have for many years been open to women students. The Department of Hygiene and Public Health prepares for the diplomas in public health of the Royal Colleges and of the various universities. Research work is undertaken in all the above-named departments, as well as in pathological chemistry, the work of which is entirely post-graduate. It undertakes the education of students in all the subjects mentioned, leaving them free to complete their education in the strictly professional subjects—medicine, surgery, and the like—at any one of the recognized schools of advanced medical studies. The work is somewhat differently arranged, accordingly as whether the student has in view the degrees of the University of London or the diplomas of the Royal Colleges. In either case the

* Suspended during the war.

whole work to be done is divided into courses devised to meet the requirements of different examinations, and students can join the College for any of them. The general arrangements for the benefit of students include membership of the Union Society, with its gymnasium and athletic ground. There is also a collegiate residence for about forty men students at Ealing.

Scholarships.—The scholarships and exhibitions obtainable include the Bucknill Scholarship, value 135 guineas, in chemistry, physics, botany, and zoology (the successful student must complete his work at University College Hospital Medical School), and two entrance exhibitions on the same subject, each of the value of 55 guineas.

Fees.—The fees for the courses covering the work of the First Examination for medical degrees of the University of London, and in both parts of the Second Examination, amount to 84 guineas. The fees for the courses covering the corresponding examinations held by the Conjoint Board in England come together to 79 guineas. These fees may be divided into payments for the different courses which it may be desired to take out, but do not cover tuition for more than a stated period.

A handbook specially relating to this faculty may be obtained on application to the Provost of University College.

COOKE'S SCHOOL OF ANATOMY.

THIS school is prepared to admit to its supplementary work all who may wish to join the same, but in regard to its curriculum work it does not receive more than half a dozen students in the course of the year; these have special advantages, both as regards anatomy and physiology. The operations of surgery are performed on the dead body. Special classes in surgery are constantly held.

The school, which is open all the year round, possesses a good collection of anatomical models, physiological and chemical apparatus, and gentlemen preparing for the higher examinations (F.R.C.S. Eng., M.B. Cambridge, Oxford, London, etc.) receive special instruction in the more difficult subjects. Other information may be obtained from Mr. Knight, 46, Mecklenburgh Square, W.C. 1.

THE PROVINCES.

THERE are in England and Wales, not counting London, ten medical schools, each, with one exception, supplying instruction in the full medical curriculum. Accounts of them here follow. In several cases there is appended information concerning other hospitals than those directly connected with the school in question; such hospitals, officially and unofficially, play a part in the education which the students of the school receive, and in any case serve as places of additional or post-graduate study.

OXFORD AND CAMBRIDGE.

BOTH at Oxford and Cambridge there are medical schools which furnish unsurpassed opportunities for obtaining a good knowledge of the preliminary sciences and of anatomy, physiology, and pathology. The laboratories are excellently equipped, and the teaching staffs most distinguished. Both schools provide a full medical curriculum, and there is no essential reason why the student should not complete his career at either of them, but this is not commonly done. The local hospitals are comparatively small, so the authorities encourage the students, as soon as they have completed the earlier examinations, to join some London school, and thus spend the time of their preparation for the final examination in a city where the opportunities for gaining clinical knowledge are greater and more varied.

BIRMINGHAM.

THE school in this city is carried on by the Medical Faculty of the University of Birmingham, its students having an adequate number of good laboratories, classrooms, and other necessities devoted to their use by the university. The clinical work is done at the General and Queen's Hospitals, which are amalgamated for this purpose. Together they have upwards of 500 beds for medical, surgical, and special cases, and with an array of special departments of all kinds, including one for lying-in women. Clinical instruction is given in the wards and out-patient and special departments daily, and

formal clinical lectures delivered weekly throughout the winter and summer sessions. Special tutorial classes are also held alike for the degrees of Birmingham and some other universities and for the diplomas of corporations.

Appointments.—The large number of appointments open to past or other students includes the following:—At the General Hospital: one resident medical officer, salary £100 a year; one resident surgical officer, salary £100 a year; one resident pathologist, salary £50 a year; two non-resident casualty assistant physicians, salary £50 a year; three non-resident surgical casualty officers, salary £50 a year; two non-resident anaesthetists, salary £50 a year; four house-surgeons, office tenable for nine months, £50 a year; one house-surgeon to the gynaecological and one to the ophthalmic and aural departments, each tenable for six months, £50 a year; three house-physicians, post tenable for six months, £50 a year; one resident medical officer at the Jaffray Branch Hospital, salary £150 a year; one resident assistant at the Jaffray Branch Hospital, tenable for three months. At the Queen's Hospital: three house-physicians and three house-surgeons (posts vacant in January and April); one obstetric and ophthalmic house-surgeon (posts vacant in April and October). These appointments are tenable for six months. Salaries at the rate of £90 per annum, with board, lodging, and washing. One resident dresser, tenable for three months; candidates must previously have attended their third-year lectures, etc., and need not be qualified. Honorarium, £13 13s. on completion of duties. At the Maternity Hospital: one house-surgeon, salary £50 a year. At the City Workhouse and Workhouse Infirmary: five resident medical officers. At the Birmingham General and Branch Dispensaries: twelve resident surgeons. At the Birmingham Lunatic Asylums: five assistant medical officers. At the City Fever Hospitals: three assistant medical officers. At the Children's Hospital: one resident surgical officer, one resident medical officer. At the Birmingham and Midland Eye Hospital: four resident surgeons. At the Orthopaedic and Spinal Hospital: two clinical assistants (non-resident). At the Ear and Throat Hospital: one house-surgeon, £70 a year; four clinical assistants (non-resident). There are also four non-resident Poor Law appointments in the gift of the Board of Guardians.

Scholarships.—There are numerous money and other awards for students of sufficient merit, among them being the following: The Walter Myers Travelling Studentship of £150; the Sands-Cox Scholarship of £42 (an entrance scholarship in the Faculty of Medicine, awarded on either matriculation or First M.B. marks); four Queen's Scholarships of £10 10s. each, awarded annually at the second, third, fourth, and final university examinations respectively; one or more Sydenham Scholarships, allotted on entrance to students who are the sons of deceased medical men. The Ingleby Scholarship of £10 for proficiency in midwifery and diseases of women. There is also an entrance scholarship of £37 10s. for students proceeding to a degree in dental surgery. University Clinical Board Prizes are awarded annually as follows: Senior Medical Prize, Gold Medal; Senior Surgical Prize, Gold Medal; Midwifery Prize, Gold Medal; Junior Medical Prize, Silver Medal; Junior Surgical Prize, Silver Medal.

Fees.—The composition fee for university classes is £85. This covers all the work required for the degrees of Birmingham and some other universities, and for the ordinary qualifications of licensing corporations, but not the additional courses required for the Fellowship of the Royal College of Surgeons of England, the diploma and degrees of the university in State medicine, and some other special work. The total cost for the five years' curriculum, including hospital and examination fees, is estimated at £158 2s. 6d. Other information should be sought from the Dean of the Medical Faculty.

BRISTOL.

THE school is carried on by the Faculty of Medicine of the university, and provides full instruction for all its degrees and diplomas. The allied hospitals (Bristol Royal Infirmary and Bristol General Hospital) have between them about 600 beds and extensive out-patient departments, special clinics for diseases of women and children, and those of the eye, throat, and ear, in addition to arrangements for dental work and large outdoor maternity departments. At each of these institutions there are well-arranged pathological departments, comprising large pathological museums, post-mortem rooms, and laboratories for morbid anatomy.

There are also laboratories for work in clinical pathology, bacteriology, and cytology, in which special instruction is given in these subjects. Departments are provided and well equipped for x-ray work both in diagnosis and treatment, the various forms of electrical treatment, including high-frequency currents, electric baths, Finsen light treatment, and massage.

The students of the school have also the advantage of attending the practice of the Royal Hospital for Sick Children and Women, containing 108 beds, and that of the Bristol Eye Hospital, with 40 beds. Excellent facilities are thus afforded to students for obtaining a wide and thorough acquaintance with all branches of medical and surgical work. Each student has the opportunity of personally studying a large number of cases and acquiring practical skill in diagnosis and treatment. All classes are open to women.

Appointments.—(1) Undergraduate: Clinical clerkships, dresserships, also ophthalmic, obstetric, and pathological clerkships are tenable at the Bristol Royal Infirmary and the Bristol General Hospital. In these institutions the dressers reside in rotation free of charge. (2) Post-graduate—At the Bristol Royal Infirmary: Four house-surgeons, £100 each per annum; four house-physicians, £100; resident obstetric and ophthalmic house-surgeon, £100; throat, nose, and ear house-surgeon, £100; dental house-surgeon, £100. All these appointments are made for twelve months. From the resident officers a senior resident officer is appointed at an additional salary of £30. At the Bristol General Hospital: Senior house-surgeon, £200 per annum; casualty house-surgeon, £100 per annum, if another resident appointment has been previously held; two house-physicians, £80 per annum; house-surgeon, £80 per annum, obstetric house-surgeon, £80 per annum; dental house-surgeon, £200 per annum. All these appointments are for six months, except those of senior house-surgeon and dental house-surgeon, which are for two years.

Scholarships.—The following are among the scholarships and other awards open to students of the school: Two Martin Memorial Pathological Scholarships of £10 each; the Tibbits Memorial Prize, value 9 guineas, for proficiency in practical surgery; the Committee's Gold and Silver Medals for fifth-year students for general proficiency; the Augustin Prichard Prize, value 7 guineas, for proficiency in anatomy; the Henry Clark Prize, value 11 guineas, for general proficiency; the Crosby Leonard Prize, value 7 guineas, for proficiency in surgery; the Suple Surgical Prize, a gold medal and 7 guineas; the Suple Medical Prize, a gold medal and 7 guineas; the Henry Marshall Prize, value £12, for dressers; the H. M. Clarke Scholarship, value £15, for proficiency in surgery; the Sanders Scholarship, value £22 10s., for general proficiency.

Fees.—The fee for all the courses required for the medical curriculum, including hospital practice, is 135 guineas if paid in one sum. It amounts to 150 guineas if paid by annual instalments.

CARDIFF.

The school in this city is carried on by the University College of South Wales and Monmouthshire, and devotes itself at present principally to training students during the first three or four years of the medical curriculum, all classes being open to women students. The courses of instruction given are recognized by all licensing bodies in Great Britain, and after passing the tests corresponding to the first three years of the curriculum, the student can complete his course, for whatever degree he is aiming at, in London or elsewhere. Besides this, there is an arrangement with the Management Committee of the infirmary by which students at the school can take advantage of the opportunities for acquiring experience afforded in the wards of this large, well-ordered hospital. Hence many students, especially from Wales and Monmouthshire, find it convenient to avail themselves of the advantages of being able to pursue the earlier part of their medical curriculum near home. They can also obtain instruction in vaccination and in the administration of anaesthetics and with a little additional work can qualify for the B.Sc. degree of the University of Wales. This degree includes the subjects which comprise the first three years of a medical student's curriculum, and it (or the B.A.) is a compulsory degree for those students who propose to sit for the M.B., Ch.B. of the University of Wales. There is also a department of public health, in which all the work for diplomas in State medicine, whether for the University of Wales or other Examining Boards, can be done. A

Chair of Pathology and Bacteriology has been established. It is hoped that before long a complete Welsh National School of Medicine will be established at Cardiff, owing to the munificent offer of Sir William James Thomas to erect and present to the college a school of preventive medicine and medical school buildings, in addition to the Physiological Laboratory he has already provided.

Post-graduate vacation courses are carried on in association with the Cardiff Infirmary.

Scholarships.—There is a considerable number of scholarships connected with the college, and open to students of the School of Medicine, information as to which can be obtained on application.

Fees.—The composition fee for the three years' courses required for students proceeding to the M.B.Lond. is £63; that for the two years' courses for students proceeding to a diploma of the licensing corporations being £41 10s. The composition fee for D.P.H. classes is £30. Further information may be obtained on application to the Dean of the Faculty of Medicine.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

THIS, the Medical School of the Faculty of Medicine of the University of Durham, is in the neighbouring city, Newcastle-on-Tyne. Its classes and lectures are arranged to meet the requirements of the university in all the degrees which the latter grants, and also those of the other examining bodies. The students do their work in the preliminary sciences at Armstrong College, also part of the university, and their clinical work in the new Royal Victoria Infirmary, an institution with over 400 beds and special accommodation for the benefit of students. In a new wing of the school itself there are the departments of bacteriology and physiology. There are also in this wing a gymnasium and a set of rooms for the use of the Students' Union.

Appointments.—Assistant demonstrators of anatomy and prosectors for the professor of anatomy, assistant physiologists, pathological assistants, assistants to the dental surgeon, and assistants in the eye department, throat and ear department, and department for skin diseases, are elected annually. Four times in the year clinical clerks and dressers are appointed for three months.

Scholarships.—A University of Durham Scholarship, value £100, for proficiency in arts, open annually at the beginning of the winter session to intending students. The Pear Scholarship, value £150, for proficiency in arts (when vacant). The Dickinson Memorial Scholarship, interest of £400, with a gold medal, for medicine, surgery, midwifery, and pathology, open to perpetual students in their fifth year. The Tulloch Scholarship, interest of £400 annually, for elementary anatomy, biology, chemistry, and physics, for students at the end of their first year. The Charlton Memorial Scholarship, interest of £700 annually, open to full students entered for the class of medicine, at the end of their fourth or fifth winter. The Gibb Scholarship, interest of £500 annually, for pathology, at the end of summer session. Gibson Prize, interest of £240, for midwifery. Outtersen Wood Prize, interest of £250, for psychological medicine. The Goyder Memorial Scholarship, proceeds of £325; subjects: Clinical medicine and clinical surgery. Luke Armstrong Memorial Scholarship, proceeds of £580, for best essay in some subject in comparative pathology. The Stephen Scott Scholarship in Surgery, interest on £1,000 annually. The Heath Scholarship in Surgery, interest on £4,000, awarded every other year. First award in 1896.

Fees.—The composition fee for lectures at the college is 80 guineas. Composition fee for hospital practice 35 guineas, plus £2 2s. yearly for three years payable to the Committee of the Royal Victoria Infirmary. Other information should be sought from the Secretary of the School at Newcastle.

Other Hospitals.—The Hospital for Sick Children and the Infirmary for Diseases of the Eye throw open their various departments to students.

LEEDS.

THE School of Medicine—which is open to both male and female students—in this city forms the teaching centre of the Medical Faculty of the University of Leeds, and is situated in immediate proximity to the General Infirmary, where students sufficiently advanced receive their clinical instruction. The buildings were opened in 1894, and contain excellent dissecting rooms, several well arranged laboratories for physiology, pathology, and bacteriology, three lecture theatres, and several similar class-rooms.

In addition, there are a library and reading room and two museums, one being devoted to pathology and the other to anatomy. The comfort of the students is secured by common rooms and a refectory in which they can take meals. It is estimated by the authorities that the approximate cost of medical education to a student in this university is £202, *plus*, of course, the expenses of living during the five years covered by the curriculum. The General Infirmary has 532 beds, and includes gynaecological and ophthalmic wards and a large out-patient department. The Ida and Robert Arthington Semi-convalescent Hospitals, Cookridge, attached to the infirmary, has 88 beds. The West Riding Lunatic Asylum at Wakefield is also open for the study of mental diseases. Students can, in addition, attend the practice of the Leeds Public Dispensary (where the practical instruction in dental subjects is also given), the City Fever Hospitals (100 beds), the Hospital for Women and Children, and the Leeds Maternity Hospital.

Appointments.—One senior anaesthetist, £50; seven assistants, £25 each; medical and surgical tutor, at £125 each per annum; one resident medical and one surgical officer, each at £150 per annum; one casualty officer, at £125 per annum; one resident ophthalmic officer, at £100 per annum; one resident aural officer, at £100 per annum; one resident obstetric officer, at £50 (attached to the gynaecological ward and an extensive external maternity department); one ophthalmic house-surgeon, at £50 per annum; three house-physicians, each holding office for six months, and four house-surgeons, holding office for six months. Surgical dressers are appointed every six months; physicians' clerks, ophthalmic and aural dressers, gynaecological ward clerks, gynaecological out-patient clerks, maternity clerks, assistant physicians' clerk, dermatological clerk, and assistant surgeons' dressers, dressers in the casualty room, *post-mortem* clerks, and laboratory assistants every three months. A clinical pathologist (£300 per annum), together with an assistant clinical pathologist (£150), has charge of the pathological laboratory. A resident medical officer (honorary, £30) is also appointed every six months for the Ida Semi-convalescent Hospital. Appointments are also open to students at the Leeds Public Dispensary (one senior and four junior resident medical officers, with salaries commencing at £80), at the Hospital for Women (two house-surgeons, at £50 per annum, and two anaesthetists, £20), and at the West Riding Asylums.

Scholarships.—The university awards annually a scholarship in the form of a free admission to the lectures and classes given in the university, which are covered by the composition fee. The infirmary also awards a scholarship on the results of the first examination, of the value of 40 guineas, in the form of a free admission to the clinical teaching of the infirmary.

Fees.—The fee for a complete course for the First M.B. is £27 11s.; the composition fee for the course for the second and third examinations is £73 2s. 6d. (for students who have passed the second examination, £48 16s. 6d.), and for the clinical work at the infirmary, £42.

Further information can be obtained from the Dean and Clinical Subdean, School of Medicine, Leeds.

LIVERPOOL.

The Medical School of this city is part of the university, and, owing to the enlightened liberality of several men of wealth, is exceptionally well provided with special laboratories, as well as with ordinary spacious and well-equipped class rooms and laboratories for the instruction of students proceeding to medical degrees and diplomas in special and ordinary subjects. All the laboratories and other rooms are situated close to one another and intercommunicate, together forming large blocks of buildings. The work of students throughout all stages of their career is arranged upon very satisfactory lines, and the teaching hospitals, of which an account is given below, have amalgamated to form the clinical school of the university.

Appointments.—The nature of the appointments open to past and other students at this school will be gathered from the account which follows of the hospitals forming its clinical department.

Scholarships.—The awards made each year to successful students total over £1,000. They include the following: Two Holt Fellowships, one in Pathology, the other in Physiology; a Robert Gee Fellowship in Anatomy; an Alexander Fellowship for Research in Pathology and Bacteriology; a John W. Garrett International Fellowship in Bacteriology; a Johnston

Colonial Fellowship in Biochemistry; an Ethel Boyce Fellowship in Gynaecology; and a Thelwall Thomas Fellowship in Surgical Pathology, all of the value of £100; a University Scholarship of £25 awarded on the results of the Second M.B. Examinations; a Scholarship in Mechanical Dentistry of £20; two Lyon Jones Scholarships, of the annual value of £21 each for two years, one for the junior and the other for senior students; the Derby Exhibition of £15; the Clinical School Exhibition of £15; the Owen T. Williams Prize; the Torr Gold Medal in Anatomy; the George Holt Medal in Physiology; the Kanthack Medal in Pathology; the Robert Gee Prize of £5 5s. in Children's Diseases; two Robert Gee Entrance Scholarships, each of the value of £25 per annum for two years; Orthodontia Prizes, Senior £3 3s., Junior £1 1s.; one Thomas H. Bickerton Prize in Anatomy; Dental Operating Prizes, Senior £4 4s., Junior £2 2s.; Ash's Prize in Dental Surgery, value £2 2s.; and other Entrance Scholarships.

Fees.—Information as to the fees paid for the courses of instruction provided by the schools should be sought from the Dean of the Medical Faculty.

The Clinical School.

As many as nine hospitals have combined to form the clinical school of the university, these being: The Royal Infirmary, the David Lewis Northern Hospital, the Royal Southern Hospital, the Stanley Hospital, the Infirmary for Children, the Hospital for Women, the Eye and Ear Infirmary, St. Paul's Eye Hospital, and St. George's Hospital for Diseases of the Skin. Between them they provide about 1,140 beds.

MANCHESTER.

The staff of the Medical School in this city constitutes the Medical Faculty of the Victoria University, all the arrangements for the instruction of students, both in their earlier and their later studies, being of an elaborate nature. The clinical work of the undergraduates is done chiefly in connexion with the Royal Infirmary, an institution which itself contains about 592 beds, and has associated with it a large convalescent home and the Royal Lunatic Asylum at Cheadle. Instruction in practical gynaecology and midwifery is given at the Royal Infirmary and the St. Mary's Hospitals.

Appointments.—The following are among the appointments open to past and present students of this school in connexion with its arrangements for clinical tuition: A surgical registrar, at £75 per annum; a pathological registrar, at £100 per annum; a medical registrar, at £75 per annum; a surgical tutor, at £30 per annum; a director of the clinical laboratory, at £250 per annum; and one assistant director at £75; three assistant medical officers and three assistant surgical officers, each at £35 per annum; one assistant surgical officer, aural department, at £35 per annum; five anaesthetists, at £50 per annum each; one medical officer for skiagraphy and electricity, £100 per annum; one medical officer for home patients, one year, £150 per annum; one resident medical officer, one year, £150 per annum; ditto, at Cheadle, one year, £150 per annum; one resident surgical officer, one year, £150 per annum; two resident medical officers for Central Branch, £100 per annum; one accident room house-surgeon, six months, £100 per annum; one assistant medical officer at the Convalescent Hospital at Cheadle, appointed every six months, at a salary of £80 per annum; eight senior and eight junior house-surgeons and ten house-physicians, appointed during the year for a term of six months. Resident officers are appointed to the Gynaecological, the Eye, and the Ear and Throat departments every six months. Four or more clinical clerks are attached to each physician and assistant physician, and four or more dressers to each surgeon and assistant surgeon, to the Gynaecological surgeon and assistant Gynaecological surgeon, to the Ophthalmic surgeon, and to the surgeon for the Ear and Throat department, and four or more clerks to the Pathologist, two clerks to the Director of the Clinical Laboratory, and a number of clerks, not exceeding six, are appointed to assist the medical officer for home patients. Accident-room dressers are appointed every three months, three senior dressers and twelve or more junior dressers.

Entrance and other Scholarships.—The following are among the scholarships obtainable by students of the school: Robert and Seaton Scholarships in Arts (in alternate years), £40 per annum, tenable for two years. Two Dalton (entrance) Scholarships in Mathematics, tenable for two years, value £40, one being awarded annually, except in such years as a Cartwright Scholarship is awarded. Cartwright Scholarship, £34

per annum, tenable for three years. Three Hulme Scholarships, tenable for three years, of £35, one being awarded annually for proficiency in subjects of general education. Two James Gaskill Scholarships of £35, tenable for two years, one being awarded annually for proficiency in the branches of Mechanics and Chemistry. A Dora Muir Scholarship, £30 per annum, tenable for three years, and open to the competition of women students only. This is awarded triennially. Sir J. P. Kay-Shuttleworth Scholarship, £30 per annum, tenable for three years, open to the competition of scholars from Sedburgh School, Giggleswick School, and Burnley Grammar School. Subjects: Mathematics, Chemistry, and Mechanics. Dreschfeld Memorial Scholarship, value £30, tenable for one year and awarded triennially on the result of the Entrance Examination. A Theodores Modern Languages Exhibition, £20, awarded annually. Two Dauntsey Medical Scholarships, value £45 and £35, tenable for one year, for candidates who have not commenced the second year of study leading to a medical qualification. Subjects: Zoology, Botany, and Chemistry. Two Entrance Scholarships in Medicine, value £100, awarded annually for proficiency in Arts or Science respectively. Two Research Fellowships in Public Health of £50 each, awarded annually. Tom Jones Exhibition in Anatomy, £25, offered annually. Robert Platt Physiological Exhibitions: Two, about £15 each, offered annually. A Robert Platt Physiological Scholarship of £50, tenable for two years. A Robert Platt Zoological and Botanical Scholarship, £50. A Leech Fellowship of £100 for original research after graduation. A Graduate Scholarship in Medicine, value £25, tenable for one year, awarded annually for proficiency shown at Final M.B. Examination. A Dumville Surgical Prize, value £15, awarded annually at graduation. The Tom Jones Memorial Surgical Scholarship, value £100, tenable for one year, awarded usually triennially. The Turner Medical Scholarship, value £20, awarded annually for proficiency in certain subjects of the Final M.B., Ch.B. Examination. The John Henry Agnew Scholarship of £30, awarded annually for proficiency in the Diseases of Children. The Bradley Memorial Scholarship in Clinical Surgery of £20. The Ashby Memorial Scholarship, tenable for one year (£100), for research in the Diseases of Children; offered triennially. Sidney Renshaw Exhibition in Physiology: One, offered annually. The details and regulations of the Dickinson Scholarships—(1) for Anatomy, (2) for Pathology, (3) Research Scholarship in Surgery, and (4) Travelling Scholarship in Medicine—will be announced later. The Sam Gamble Scholarships—the trustees are prepared to award four scholarships of not less than £40 per annum, tenable for not more than four years, to women students who have passed the First M.B. Examination. The conditions under which these scholarships are awarded can be obtained from the Registrar.

Fees.—The composition fee for the university course in medicine is 70 guineas, payable in three instalments of 30, 20, and 20 guineas, but this sum does not include the fee to cover the work required for the First M.B. Examination. This is £25, payable in one sum. A prospectus and further information about the school and scholarships may be obtained on application to the Registrar.

Clinical Work.—The Royal Eye Hospital, the Manchester Northern Hospital for Women and Children, the well-known Hospitals for Children at Pendlebury, and St. Mary's Hospital for Diseases of Women and Children all make arrangements for the instruction of students.

SHEFFIELD.

In this city the Medical School is one of the departments of the University, being conducted and controlled by its Medical Faculty, and occupying practically the entire north wing of the quadrangle of the university buildings overlooking Weston Park. The laboratories and lecture rooms connected with the subjects of the first and second examinations—namely, chemistry, physics, biology, anatomy, and physiology—are, both as regards structural arrangements and scientific equipment, on the most modern and complete lines. No expense has been spared in the matter of apparatus for teaching or research work, and the facilities for practical study in these subjects are as excellent as all the other arrangements of the school.

For students of pathology and bacteriology there are laboratories replete with everything necessary for the most advanced work, and a large pathological museum, which is open daily. In addition, there is a museum devoted to *materia medica* specimens, and a large library and reading room. There are a number of recreation, athletic, and other societies, all under the management of an annually elected students' representative council, and large and comfortable common rooms both for men and women students. In the university buildings there is a refectory open to all students of the school, and a university journal, *Floreamus*, edited by a joint committee of the staff and

students, is published each term. The ordinary clinical work of the school is done at the Royal Infirmary and Royal Hospital, which have amalgamated for the purpose of clinical instruction, and provide over 500 beds for the treatment of medical, surgical, and special cases, including diseases of the eye.

In addition, the Royal Infirmary has special departments for the treatment of diseases of the skin and ear, with beds assigned to them; whilst at the Royal Hospital there are special out-patient departments for diseases of the throat, ear, skin, orthopaedics, and mental diseases. The medical and surgical staffs attend daily, and give clinical instruction in the wards and out-patient rooms. Clinical lectures in medicine and surgery are given weekly. Instruction in the practical administration of anaesthetics is given at either institution by the anaesthetists, and the *post-mortem* examinations at both institutions are in charge of the Professor of Pathology, and afford ample material for study of this subject. Students also have the advantage of being able to attend the practice of the Jessop Hospital for Diseases of Women and the Hospital for Sick Children, while special courses on fever are given at the City Fever Hospital, and on mental diseases at the South Yorkshire Asylum.

Appointments.—The following appointments are open to all students who have passed their examinations in anatomy and physiology: (1) Casualty dresserships, (2) surgical dresserships, (3) medical clerkships, (4) pathological clerkships, (5) ophthalmic clerkships, (6) clerk to the skin department, etc. Except in the case of casualty dressers, these appointments are made for three months, commencing on the first day of October, January, April, and July. The casualty dresserships last two months, beginning on the first of any month. All students are required to hold them, and to have attended the tutorial classes for casualty dressers, before being eligible for any other of the above appointments.

Scholarships.—Entrance Medical Scholarship, value about £130, open to both sexes. Four Edgar Allen Scholarships of £100 a year for three years may be held by students taking the degree course in Medicine. Two Town Trustees' Scholarships, each of the value of £50, tenable for three years, for boys or girls under the age of 19 years who have been educated in a Sheffield secondary school for a period not less than two years immediately preceding the examination. Four Town Trustees' Scholarships, value £50, for boys or girls under 19 years of age, educated in any school in Sheffield, secondary or otherwise. Town Trustees' Fellowship, value £75, tenable for one year. Mechanics' Institute Fellowship, value £50 (with remission of fees), tenable for one year, and renewable for a second year. The Frederick Clifford Scholarship, value about £50, tenable for two years. Kaye Scholarship, for proficiency in anatomy and physiology, value £22 10s. Gold and bronze medals are also awarded for proficiency in various subjects.

Fees.—The composition fee of £80, payable in three instalments, covers attendance on all the courses of lectures and practical classes, except pharmacy, required for a degree course in the university, or for the ordinary qualifications in medicine and surgery of the Examining Boards. It does not include hospital practice, the fee for which is £49 17s. 6d., payable in three instalments.

SCOTLAND.

As will be gathered from the following paragraphs, the facilities for acquiring a medical education in Scotland are very ample, whether the student be proceeding to a university degree or to a diploma. To the descriptions of its different medical centres is in some cases added an account of hospitals which either play an official part in the education given to students as yet unqualified or offer valuable opportunities for post-graduation work.

ABERDEEN.

The school is conducted by the Faculty of Medicine. This comprises twelve chairs, from which instruction is given in all the main branches of medical science—namely, botany, zoology, physics, chemistry, anatomy, physiology, *materia medica*, pathology, forensic medicine, surgery, medicine, and midwifery. Courses of instruction in public health and in tropical medicine are conducted by lecturers appointed by the University Court. Special opportunities for practical instruction are afforded in the laboratories and museums attached to the departments.

Clinical instruction is obtained in the Royal Infirmary

(accommodating 270 patients), the Royal Lunatic Asylum (900 patients), the Sick Children's Hospital (85 patients), the City Fever Hospital (250 patients), the General Dispensary, Maternity, and Vaccine Institution (10,000 out-patients annually), and the Ophthalmic Institution (3,000 patients annually). Courses of practical instruction are given in diseases of children at the Sick Children's Hospital; in fevers at the City Fever Hospital; in insanity at the Royal Asylum; in diseases of ear, nose, and throat at the Infirmary and Dispensary; in diseases of the eye at the Infirmary and Eye Institution; in diseases of the skin at the Royal Infirmary.

Bursaries.—Scholarships and Fellowships, to the number of fifty and of the annual value of £1,180, may be held by students of medicine in this university. They range from £8 to £100 per annum, and are tenable in most cases for two or three years.

Fees.—The fee for each university course is, as a general rule, £4 4s.; and for a second attendance, £3 3s. An inclusive fee of 90 guineas is now payable, covering the necessary instruction within the university. Matriculation fee, both sessions, £1 1s.; summer session alone, 10s. 6d. Royal Infirmary, perpetual fee, £10; or, first year, £5 10s.; second year £5. The winter session begins on October 11th.

EDINBURGH.

THERE are three Schools of Medicine: the School of the University, the School of Medicine of the Royal Colleges, Edinburgh, and the Edinburgh School of Medicine for Women.

THE UNIVERSITY SCHOOL.—This school, in addition to other resources of the university, has the following means of affording practical instruction: Royal Botanic Garden, Herbarium, and Museum; Zoological Laboratory and Museum of Science and Art; Physical Laboratory; Chemical Laboratories; Dissecting Room, Bone Room, and Anatomical Museum; Physiological Laboratory; Medical Jurisprudence Laboratories; John Usher Institute of Public Health; Materia Medica Museum and Laboratory; *Post-mortem* Department of the Royal Infirmary and University Pathological and Bacteriological Laboratory; Tutorial Classes of Practice of Physic, of Clinical Medicine, and Clinical Surgery, Surgery, and Midwifery; and the practice of certain other hospitals.

Fees.—The sessional fee for zoology, botany, chemistry, anatomy lectures, physiology, pathology, materia medica, medical jurisprudence, surgery, medicine, midwifery and gynaecology is £4 4s. each. Second course £3 3s. Third free. A perpetual ticket taken at the beginning of the first year is £6 6s. Physics, practical chemistry, advanced practical physiology, practical pathology, practical anatomy (winter), operative surgery, obstetric operations, practical materia medica, including pharmacy, pathological bacteriology, experimental pharmacology, vertebrate morphology and comparative embryology, are £3 3s. Clinical surgery, £2 2s. per term. Clinical medicine, first term, £3 13s. 6d.; subsequent terms, £2 2s. No perpetual ticket in these subjects. Practical botany (besides garden fee of 5s.), elementary practical zoology, practical physiology (experimental), practical physiology (histological), practical botany (advanced), practical zoology (advanced), practical anatomy (summer), anthropology, anatomy, demonstrations, diseases of children, diseases of the eye, diseases of the larynx, ear, and nose; diseases of tropical climates, clinical instruction on diseases of the skin, regional anatomy, physiological, chemistry, invertebrate zoology, organic chemistry, mental diseases, £2 2s. Applied anatomy (medical and surgical), £1 1s. Vaccination, £1 1s.

Scholarships.—There are many funds for the assistance of students by means of bursaries, scholarships, exhibitions, and money awards from the beginning to the end of their undergraduate career. In addition there are funds which help those who have taken a first degree in medicine and surgery to continue at work as research students. The value of these awards, and the conditions attaching to them, are so varied that those interested should consult the prospectus of the school itself. No other university is in a better, even if in as good, a position to smooth the financial path of earnest students.

THE SCHOOL OF MEDICINE OF THE ROYAL COLLEGES.—This school is composed of lecturers licensed by the Royal College of Physicians and the Royal College of Surgeons, and also recognized by the university through their *licentia docendi*; for the sake of convenience they lecture in separate buildings near to the Royal Infirmary, but form a single corporate body governed by a board consisting of five members elected by the Royal College of Physicians, of five members elected by the Royal College of Surgeons, and of five members elected by the lecturers in the school. This board, with the assistance of the standing committees of the school, supervises the whole management, and especially the maintenance of the efficiency and discipline of the school. The different buildings at present utilized for the purposes of lecturing are the following: (1) Surgeons' Hall, Nicolson Street; (2) New School, Bristo Street; (3) Nicolson Square; (4) Marshall Street; and other places. The teaching is similar to that of the Scottish universities, and the students receive similar certificates at the close of each session. The courses on the special subjects not included in the curriculum of the Examining Boards are also conducted by teachers specially qualified in each branch, and have for the last quarter of a century formed a special feature of the school. The fees payable for class and other instruction, and including the sums payable on admission to the examination of the Conjoint Board for the triple qualification, amount to about £120. The Calendar, giving full information regarding classes and fees, can be obtained gratis on application to Major D. G. Marshall, I.M.S., Dean of the School, 11, Bristo Place, Edinburgh.

WOMEN STUDENTS IN EDINBURGH.—Until the close of the summer session of 1916 women students intending to proceed to graduation in the University of Edinburgh, as well as those entering for the triple qualification of the Royal Colleges of Edinburgh and Glasgow, received their training in the Edinburgh School of Medicine for Women. Now women students study under the same conditions as men, and may obtain either the university degree or the diploma of the Royal Colleges. In the university systematic lectures are given to them by the professors in the ordinary classes, which are therefore mixed; but in two subjects, namely, midwifery and gynaecology and materia medica, the women are lectured to separately from the men. All the practical classes are taught to men and women separately save in a few advanced classes. The women students also have the same privileges as in the past have been given to the men of attending a certain proportion of the extramural classes taught by the lecturers of the School of Medicine of the Royal Colleges.

GLASGOW.

THERE are five medical schools in this city: The two schools of the university, one of which (Queen Margaret College) is for women students; St. Mungo's College (the school of the Royal Infirmary), Anderson's College, and the Western Medical School.

THE UNIVERSITY SCHOOL FOR MEN.—The whole course of study required for graduation (M.B., Ch.B.) at the University of Glasgow can be taken here. Besides ample provision for lectures there is practical and clinical work at the hospitals, and practical courses are conducted in the laboratories of the following departments: Surgery, Pathology, Public Health, Pharmacology, Physiology, Anatomy, Chemistry, Zoology, Physics, and Botany; the Botanic Garden and the Hunterian Museum (Zoology and Pathology) are also open to students. New buildings and equipments have been provided for botany, for practical anatomy, for operative surgery, as well as for pathology; the very large additions made a few years ago to the Chemical Laboratory rendered it one of the most extensive in Scotland. The class-rooms and laboratories for the departments of Physics, Physiology, Pharmacology and Materia Medica, and Medical Jurisprudence and Public Health, are also of recent erection, and are elaborately equipped. Four additional chairs of Medicine, Surgery, Obstetrics, and Pathology have been recently established, the Professors being specially attached to the Royal Infirmary; and a number of University Lectureships in Clinical Medicine, Clinical Surgery, Venereal Diseases, Laryngology, Dermatology, Otolaryngology, and Psychological

Medicine have been founded there. The university, in short, has made great and successful efforts to extend and improve the accommodation of the medical departments, to strengthen the teaching staff, and to encourage post-graduate and research work. Three very extensive general hospitals in the city afford exceptional opportunities for clinical instruction—namely, the Western Infirmary (600 beds), near the university, to which the Regius Professors are attached; the Royal Infirmary (630 beds); and the Victoria Infirmary (260 beds); while the Royal Asylum (460 beds), the Royal Hospital for Sick Children (200 beds), the Royal Maternity and Women's Hospital (108 beds), the Glasgow Eye Infirmary (100 beds), the Ophthalmic Institution (35 beds), the fever hospitals at Belvidere (680 beds) and Ruchill (540 beds), and other institutions afford facilities for the practical study of special branches. In each year, since the beginning of the war, special qualifying examinations in Medicine, Surgery, and Midwifery have been held, in order that candidates who had completed their full curriculum might be enabled to graduate without delay. Practically all the successful candidates have received commissions in the R.A.M.C.

Bursaries.—Bursaries confined to the Medical Faculty amount in annual value to about £1,000, while bursaries in any faculty amounting to about the same annual sum, may be held by students of medicine, a number of both sets being open to women. Several valuable scholarships may be held by medical students who have graduated in Arts. Some of the bursaries are described below.

Fees.—The matriculation fee for each year is £1 1s. In most cases the fee for each university class is £4 4s., but in some cases it is £3 3s. For hospital attendance students pay an entrance fee of £10 10s. at the Western Infirmary, with an additional fee of £3 3s. for each winter and £2 2s. for each summer clinical course; at the Royal Infirmary the fees are somewhat similar. The university fee for the four professional examinations is £23 2s. (£6 6s. each for the first and second examinations, and £5 5s. each for the third and fourth). For the whole curriculum the fees for matriculation, class attendance, hospital attendance, and professional examinations amount to £150.

For further information apply to the Registrar, Glasgow University.

Bursaries.—The following bursaries are open to undergraduates of both sexes: The Gibson Bursary, annual value £36, tenable for four years. This is open to medical students who are preparing for service as medical missionaries in connexion with the Church of Scotland, and will be awarded to the eligible candidate who has gained the highest number of marks in the First Professional Examination. One Logan Bursary, annual value £16, tenable for four years; appointment by the Senate. The Mackintosh Mental Science Bursary in medicine, of the value of £31, is awarded annually to the student (of either sex) attending the class of insanity who stands first in an examination in that subject, the bursar to continue the practical study of the subject to the satisfaction of the Faculty of Medicine. The Gardiner Bursary, annual value £14, tenable for two years, will be awarded after the autumn professional examination to the candidate who has passed in physiology at the Second Professional Examination, and whose aggregate of marks in that subject and in chemistry and physics of the First Professional Examination is the highest. The following are tenable in any faculty: Two Pratt Bursaries (each £20 and tenable for four years); and two Taylor Bursaries (each £10 and tenable for four years). Andrew and Bethia Stewart Bursaries (£50 each, tenable for three years); candidates must have taken the M.A. degree of Glasgow. There is a special examination. Nine Glasgow Highland Society's Bursaries, for students of Highland descent, of the annual value of £25, and tenable for five years; two vacant each year. The Carnegie Trust for the Universities of Scotland is empowered to pay the whole or part of the university ordinary class fees of students of Scottish birth or extraction, under conditions given in the *University Calendar*. The Dobbie Smith Gold Medal is awarded for the best essay on a prescribed subject within the science of botany. The Brunton Memorial Prize of £10 is awarded annually to the most distinguished graduate in medicine of the year. The University Commissioners issued an ordinance to make regulations for the admission of women to certain bursaries, scholarships, and fellowships. Scholarships and Fellowships are offered by the Carnegie Trust in science and medicine for post-graduate study. There are also four McCunn Medical Research Scholarships (£100 for one year) for graduates in medicine of the Scottish universities.

QUEEN MARGARET COLLEGE.—In this, the Women's Medical School of the University of Glasgow, the courses of study, degrees, regulations, fees, etc., are the same as for men. Women students have their own buildings, with

class-rooms, reading-room, library, etc. They are taught in some classes apart from male students, in others together with them, but in either case have all the rights and privileges of university students. Their clinical studies are taken in the Royal Infirmary, where wards containing 520 beds are available for their use, and in its dispensary; also in the Royal Hospital for Sick Children, the Glasgow Ear Hospital, the Royal Asylum, Gartnavel; the Ophthalmic Institution, the City of Glasgow Fever Hospitals, Belvidere and Ruchill; and the Glasgow Royal Maternity and Women's Hospital.

Scholarship.—The Arthur Scholarship, annual value, £20, tenable for three years. Open to competition by medical students of first year at the First Professional Examination in October each year. This scholarship is the gift of Mrs. Arthur, of Barshaw, and is restricted to women medical students.

Board for Students.—A house of residence for women students, Queen Margaret Hall, is situated near the college. The cost of board and residence is from 19s. to 27s. per week, according to accommodation. Full information can be obtained from the Mistress, Queen Margaret College, or from the Lady Superintendent, Queen Margaret Hall, Bute Gardens, Glasgow.

ST. MUNGO'S COLLEGE.—This is the Medical School of the Royal Infirmary, which is the largest in Glasgow. The infirmary is situated in Cathedral Square, Castle Street, and has car communication with every part of the city. St. Mungo's College is in the infirmary grounds.

The infirmary has (including the ophthalmic department) over 660 beds, the average number occupied in 1916 being over 600. There are special beds and wards for diseases of women, of the throat, nose, and ear, venereal diseases, burns, and septic cases. In the out-patient department the attendances in 1916 numbered over 180,000. In addition to the large medical and surgical departments, there are departments for special diseases—namely, diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. There is also a fully equipped electrical pavilion, and year by year the latest and most approved apparatus for diagnosis and treatment is added.

Appointments.—Five house-physicians and ten house-surgeons, who must be fully qualified, are appointed every six months, and board in the hospital free of charge. Clerks and dressers are appointed by the physicians and surgeons. As many cases of acute diseases and accidents of a varied character are received, these appointments are very valuable.

Fees.—The average class fee is £2 2s. The fees for all the lectures, practical classes, and hospital attendance necessary for candidates for the diplomas of the English or Scottish Colleges of Physicians and Surgeons amount to about £70. The classes are open to male and female students.

THE ANDERSON COLLEGE OF MEDICINE.—This school provides education in all subjects of the curriculum both for medical and dental students. The school buildings are situated in Dumbarton Road, immediately to the west of the entrance of the Western Infirmary, within two minutes' walk of that institution and four minutes' walk of the university. The hospital practice and clinical lectures are provided in the Western or Royal Infirmary; pathology in the Western or Royal Infirmary; vaccination and dispensary practice in the Western or Royal Infirmary Dispensary. These classes are recognized by all the licensing corporations in the United Kingdom, and also by the Universities of London, Durham, Glasgow, and Edinburgh (the latter two under certain conditions which are stated in the school Calendar). The courses (lectures and laboratory) in public health are also recognized by the Scottish Licensing Board, Queen's University of Belfast, the Irish Colleges, and the University of Cambridge.

Fees.—The fees for the lectures and practical work required by ordinary students range between 1 and 5 guineas a session. In the Public Health Department the fee for a six months' course is £12 12s. The Carnegie Trust pays the fees of students at Anderson's College on conditions regarding which particulars may be obtained from the Secretary, Carnegie Trust Offices, Edinburgh.

A Calendar will be sent on receipt of a post-card by the Secretary to the Medical Faculty, the Anderson College

of Medicine, Glasgow, W., who will forward any further information which may be desired.

GLASGOW WESTERN MEDICAL SCHOOL.—This school has been closed until after the war.

ST. ANDREWS AND DUNDEE.

THE medical departments in these two teaching centres cater specially for students proceeding to the degrees of the University of St. Andrews, but admit other students as well. In the former city the United College provides education in all subjects of the first two years. In Dundee, University College provides for the needs of students from the beginning to the end of the five years' curriculum. Its buildings are modern, and contain fully equipped laboratories. The clinical work of the school is facilitated by various institutions. The class fees are 4 guineas for systematic classes, and 3 guineas for practical classes. The hospital ticket is £1 ls. for three months, £3 3s. a year, or perpetual £10 in one sum or £10 10s. in instalments. Added up, the fees for the curriculum, exclusive of the examination fees, amount to £136 10s. In connexion with both institutions there are bursaries and scholarships of considerable value, which are awarded after competitive examination. Information as to these can be obtained from the Secretary of the University of St. Andrews. Information regarding the clinical facilities may be obtained from Professor Kynoch, Dean of the Medical Faculty, Medical School, Dundee.

Clinical Work.

Good opportunities for clinical work are afforded by the Dundee Royal Infirmary, the instruction given thereat being recognized for purposes of graduation by all the Scottish universities, the University of London, the university of Cambridge, the National University of Ireland, and by the Royal Colleges of England and Scotland.

IRELAND.

THERE is a choice of six schools for those prosecuting their medical studies in Ireland, and for clinical instruction the choice is equally satisfactory and varied, though the hospitals themselves are comparatively small. Some account of the schools follows.

DUBLIN.

The School of Physic.

This school is in Trinity College, Dublin, and is carried on under the joint auspices of the University of Dublin and of the Royal College of Physicians in Ireland; the King's professors of institutes of medicine (physiology), practice of medicine, materia medica, and midwifery being appointed by the latter. Clinical instruction is given at Sir Patrick Dun's Hospital, and some twelve other metropolitan hospitals and asylums are recognized by the Board. The courses of instruction are open to all medical students whether or not they belong to the university. A three weeks' post-graduate course is given each autumn, and covers all departments of medicine and surgery. Information concerning the post-graduate course can be obtained from Dr. Alfred Parsons, 27, Lower Fitzwilliam Street, Dublin.

A special Final Examination will be held on September 11th, 1917, for students who have at least five years' credit for attendance in the school and who are volunteering for active service in connexion with the war.

The Schools of Surgery.

These are schools carried on in Dublin under the supervision and control of the Council of the Royal College of Surgeons. They are formed of the college's own school, combined with two famous old medical schools—Carmichael and Ledwich; they are attached to the college by charter. The buildings contain spacious dissecting rooms, one set apart for lady students, and special pathological, bacteriological, public health, chemical, and pharmaceutical laboratories. Advantage can be taken of the lectures and instruction afforded by students otherwise unconnected with the college.

Prizes.—Among the prizes annually awarded are: The Barker Anatomical Prize (£25 5s.) the Carmichael Scholarship (£15);

the Mayne Scholarship (£8); the Gold Medal in Surgery, and the Stoney Memorial Gold Medal in Anatomy; class prizes of £2 and £1, accompanied by silver medals, will also be given in each subject.

The next session begins October 15th. A prospectus can be obtained post free on application to Mr. Alfred Miller, Registrar, Royal College of Surgeons, Dublin.

University College.

This is one of the constituent colleges of the National University of Ireland, and at present conducts its work at buildings on St. Stephen's Green, at those formerly occupied by the Cecilia Street School of Medicine, and at the University Buildings in Earlsfort Terrace. All the buildings of its permanent home are not yet ready. The section of the new college buildings at Earlsfort Terrace for the departments of physics and chemistry, and new laboratories for pathology are now in use. It possesses a good library, and the arrangements for the teaching of medical students from beginning to end of the curriculum are adequate. The teaching staff is numerous, and through it the college is connected with many of the hospitals of the city. Students, however, are allowed to pursue their studies at any of the hospitals recognized for the purpose by the university.

Clinical Work.

There are numerous well-arranged hospitals in and around the city, and almost all of these are recognized for teaching purposes by the Conjoint Board of Ireland, the University of Dublin, the National University of Ireland, and by like bodies elsewhere in the United Kingdom. Among them are the Mater Misericordiae Hospital, with 345 beds; Dr. Steevens's Hospital at Kingsbridge, with 200; Meath Hospital and County Dublin Infirmary, with 160; Mercer's Hospital, close to Trinity College, with 120; the Royal City of Dublin Hospital, with 124; the Adelaide Hospital, with 140; the Royal Victoria Eye and Ear Hospital, with 100 beds; Sir Patrick Dun's, which has a direct connexion with the School of Physic, and the combined institutions formed by the Hardwicke Fever Hospital, the Richmond Surgical Hospital, and the Whitworth Medical Hospital, with an aggregate of 230 beds. As for that known as the Rotunda Hospital, this practically consists of two distinct hospitals, and is believed to be the largest combined maternity and gynaecological hospital in the United Kingdom. It receives nearly 3,000 patients every year, and, apart from ordinary out-patient work of a gynaecological order, annually attends approximately 2,000 women at their own homes during their confinement. It possesses residential quarters for students, and, taken as a whole, offers exceptional opportunities for study both to ordinary students and to post-graduates of any nationality.

BELFAST.

THE Medical School is part of the Faculty of Medicine of Queen's University, Belfast, and provides a complete medical curriculum for all purposes. The laboratories in connexion with the departments of biology, chemistry, physiology, pathology, anatomy, physics, and materia medica are all excellent, and there is a Students' Union which gives students the advantage of dining rooms, reading rooms, a library, and various recreation rooms. Women are eligible as students. Clinical instruction is given at the Royal Victoria Hospital, which was rebuilt a few years ago and has 300 beds, and the Mater Infirmorum Hospital, which has 150 beds. Other hospitals open to the students of the university are: The Maternity Hospital the Ulster Hospital for Women and Children, the Hospital for Sick Children, the Ophthalmic Hospital; the Benu Ulster Eye, Ear, and Throat Hospital; the Union Infirmary and Fever Hospital; the Fever Hospital, Purdysburn; the District Lunatic Asylum, the Samaritan Hospital, Forster Green Hospital for Diseases of the Chest, and the Belfast Hospital for Skin Diseases.

Scholarships.—(1) Twelve, of the value of £40 each, are assigned as Entrance Scholarships in the Faculties of Arts, Science, and Medicine, tenable for one year; (2) sixteen Professional Scholarships, value from £15 to £40 each; (3) one Hutchinson Stewart Scholarship, £12, in mental diseases; (4) one Mackay Wilson Travelling Scholarship, £100, awarded triennially; (5) Isabella Tod Memorial Scholarship, tenable for three years, awarded triennially to a woman student; (6) Magrath Clinical Scholarship, awarded annually, value about £112; (7) numerous

sessional prizes. There is also a post-graduate research fund, open to all graduates of not more than three years' standing. Gold medals are awarded at the M.D. examination.

Fees.—The cost of the curriculum intended for students proceeding to the degrees of the Queen's University of Belfast is, approximately, £120. This includes examination fees and a perpetual ticket for attendance at the Royal Victoria Hospital or the Mater Infirmorum Hospital, but not fees for the special hospitals. The course for the Conjoint Board costs about the same amount. The Calendar containing full information can be obtained on application to the Secretary, Queen's University, Belfast, price 1s.

UNIVERSITY COLLEGE, CORK.

THIS institution, formerly known as Queen's College, Cork, is one of the constituent colleges of the new National University. It holds examinations for all the faculties of that university, in addition to continuing the work which it has hitherto performed—namely, that of providing education adapted to the needs of medical students at all stages of their career. Its first aim is to fit students for the degrees of the new university, but students proceeding for the examinations of the Conjoint Boards of England, Scotland, or Ireland, the Society of Apothecaries of London, or the Apothecaries' Hall of Ireland, or London University, can arrange the courses of lectures which they attend, and the order in which they attend them, to meet the requirements of those bodies. Certificates of attendance at the college courses are also accepted by the University of Cambridge. Clinical instruction is given at the North and South Infirmaries (each 100 beds) and at the Cork Union Hospital (1,200 beds). Students can also attend the Mercy Hospital (60 beds), the County and City of Cork Lying-in Hospital, the Maternity, the Hospital for Diseases of Women and Children, the Fever Hospital, the Ophthalmic and Aural Hospital, and the Eglington Lunatic Asylum. The session extends from October to June.

A Dental School has been started within the last four years, in which the degree of Bachelor of Dental Surgery of the National University of Ireland is granted. There is a large, well-equipped Dental Hospital in connexion with the School.

Scholarships.—Over £4,000 are available annually for scholarships in the college. Particulars as to each of them can be obtained on application to the Registrar.

Fees.—The fees for the lectures and hospital attendances required by the National University of Ireland course, including examination fees, come to about £120. Further information can be found in the college regulations, or obtained on application to the Registrar.

UNIVERSITY COLLEGE, GALWAY.

THIS institution is one of the constituent colleges of the National University of Ireland, and includes Faculties of Arts, Celtic, Science, Law, Engineering, Commerce, and Medicine. Candidates for degrees in medicine must reside for three years. For the remaining two years certificates from any recognized medical school are accepted. The college buildings are well lighted and well ventilated, and contain dissecting rooms, an anatomical theatre, and laboratories for the study of physiology, chemistry, physics, and other departments of medical science. For pathology and chemistry new laboratories are now provided. It has good grounds surrounding it, and there are many arrangements, such as a library and an athletic union, for the benefit of those belonging to the Medical Faculty, as well as for students in other departments of the college. The clinical teaching, which is recognized as qualifying not only for the degrees of the National Universities, but for those of London University and the diplomas of the various colleges in the three kingdoms, is carried on at the Galway County Hospital, the Galway Union Hospital, and the Galway Fever Hospital. The former is a general hospital, and at the two latter students have ample opportunities of studying zymotic and chronic diseases. The Union Hospital has a special ward for diseases of children. Each year the Governing Body offers about £1,500, and the County Councils of Connaught offer about £3,500, in scholarships. These scholarships are tenable in any Faculty. Additional information regarding these scholarships can be obtained on application to the Registrar, and to the Secretaries of the Connaught County Councils.

CLINICAL HOSPITALS IN ENGLAND.

THERE are a great many hospitals in the United Kingdom which, though not connected with any medical school, open their doors either to those who have yet to become qualified, to those who are doing post-graduation work, or to both. The facilities they offer for gaining practical clinical experience are very great, and should not be overlooked. Their honorary staffs commonly make a point of giving such instruction as opportunity offers, and at those which are situated in the larger towns there are often appointments as clinical assistants to be obtained. In addition, they all have to offer, at shorter or longer intervals, appointments for resident medical officers, house-physicians, and house-surgeons. These are usually paid offices, which may be held for periods varying from six months to a year. Some of those situated in the great medical centres in the provinces, and in Scotland and Ireland, have already been mentioned in speaking of the medical schools in these localities, but it should be added that there are many other provincial hospitals where admirable work is done, and at which much valuable experience can be gained by both senior and junior students, and by those already admitted to the *Medical Register*. Cases in point are the Royal Infirmary, Bradford; the Royal Sussex County Hospital, Brighton; the Royal United Hospital, Bath; the Kent and Canterbury Hospital; Derbyshire Royal Infirmary; the Royal Albert Hospital and Eye Infirmary, Devonport; the Royal Devon and Exeter Hospital; the West of England Eye Infirmary, Exeter; the Gloucestershire Royal Infirmary and Eye Institution; the Royal Infirmary, Leicester; the County Hospital, Lincoln; the General Hospital, Northampton; the Norfolk and Norwich Hospital; the General Hospital, Nottingham; the Royal Portsmouth Hospital; the Royal South Hants and Southampton Hospital; the Staffordshire General Infirmary, Stafford; the North Staffordshire Infirmary at Hartshill; the Royal Hants County Hospital, Winchester; the Wolverhampton and Staffordshire General Hospital; and the County Hospital, York. As for hospitals in the metropolis, so many of these play the part of clinical schools that it is worth while to classify them.

General Hospitals.—These include the Dreadnought Hospital at Greenwich, and its annexe at the Albert Dock, which form the head quarters of the London School of Clinical Medicine and the London School of Tropical Medicine; the West London Hospital and the Prince of Wales's General Hospital, Tottenham, both of these being described in the article on post-graduate work; the Great Northern Central Hospital, Holloway Road, an institution containing 185 beds; and the Temperance Hospital in Hampstead Road.

Children's Hospitals.—There are at least seven of these, the leader among them being the Hospital for Sick Children, Great Ormond Street, which has 240 beds. There are also the East London Hospital for Children, Shadwell, with 124 cots; the Queen's Hospital for Children, Bethnal Green, with 134; the Victoria Hospital for Children, Chelsea, with 104; the Belgrave Hospital for Children, which has a considerable out-patient department, but in-patient accommodation for only 40 children; the Paddington Green Children's Hospital, an institution of about the same size; and the Evelina Hospital for Sick Children, Southwark Bridge Road, with 76 beds.

Hospitals for Women.—These include Queen Charlotte's Lying-in Hospital, which specializes in the teaching of midwifery; the Samaritan Hospital for Women, Marylebone Road, to which qualified practitioners are admitted as clinical assistants to both the in-patient and out-patient departments. Demonstrations are given daily in both departments, the fees—payable in advance—being £3 3s. for three months. Full particulars may be obtained on application to the secretary at the hospital. In addition may be mentioned the Hospital for Women, Soho Square; the Chelsea Hospital for Women, Arthur Street, Chelsea; and the New Hospital for Women in Easton Road, the latter being in the nature of a general hospital so far as concerns the class of case treated.

Eye Hospitals.—The largest of these is the Moorfields Eye Hospital, City Road, with 138 beds and a very large out-patient department; others are the Royal Westminster Ophthalmic Hospital, near Charing Cross, the Royal Eye

Hospital, Southwark, each with about 40 beds; and the Central London Ophthalmic Hospital, Judd Street, W.C.1, with 28.

Fever Hospitals.—The Metropolitan Asylums Board has under its control a good many institutions for the treatment of the more serious zymotic disorders, and makes special arrangements for the instruction of students in this subject, and grants certificates at the end of the courses. Detailed information should be sought from the Clerk to the Board, Victoria Embankment.

Chest Hospitals.—The largest of these is the Brompton Hospital for Consumption, which has 333 beds and a large sanatorium at Frimley with 150 beds. There is also the City of London Hospital for Diseases of the Chest, Victoria Park, with 175 beds, and the Royal Hospital for Diseases of the Chest, City Road, which has recently reorganized its various departments with the object of better fitting itself to act as a tuberculosis school.

Nose, Throat, and Ear Hospitals.—The institutions which confine their work to disorders of the throat, nose, and ear all make special arrangements for the benefit of senior and post-graduate students. They are the Metropolitan Ear, Nose, and Throat Hospital, Fitzroy Square; the Royal Ear Hospital, Dean Street; the Central London Throat and Ear Hospital, Gray's Inn Road; and the Hospital for Diseases of the Throat, Golden Square—the latter, which possesses 75 beds, being the largest of the four institutions.

Miscellaneous Special Hospitals.—Among these are the Bethlehem Royal Hospital, Southwark, which confines its work to the treatment of mental diseases; St. Peter's Hospital for Stone and Urinary Diseases, Henrietta Street, Covent Garden; St. Mark's Hospital, City Road, which devotes itself to the treatment of diseases of the rectum, including cancer and fistula; St. John's Hospital for Diseases of the Skin, in Leicester Square; the Hospital for Diseases of the Skin, Stamford Street, Blackfriars; and the National Hospital for the Paralysed and Epileptic, Queen Square, W.C.1, an institution possessing 200 beds and a world-wide reputation.

Detailed information as to the teaching arrangements of all these institutions may be obtained on application to their secretaries.

MEDICAL EDUCATION OF WOMEN.

WOMEN are admitted to the medical examinations of the following qualifying bodies: All the universities of Great Britain, with the exception of Oxford and Cambridge; the Royal College of Physicians, London, and the Royal College of Surgeons, England; the Society of Apothecaries of London; the Conjoint Colleges of Scotland and of Ireland.

The regulations of each differ considerably, so that it is necessary for a student to decide, before beginning her course, which degree or diploma she will aim at obtaining. The ordinary regulations of the General Medical Council (see page 311) must be observed, and women can pursue their education either at certain schools only open to women, or at ordinary schools where they do their work more or less in common with men students.

The schools which admit women only are the London (Royal Free Hospital) School of Medicine for Women, which is one of the constituent schools of the Medical Faculty of the University of London, and Queen Margaret College, Glasgow (see page 335). Women are also admitted to the schools of medicine conducted in connexion with King's College, London; the Universities of Dublin, Dundee, Durham, Liverpool, Manchester, Birmingham, Leeds, Sheffield, Bristol, and Aberdeen; St. Mungo's College, Glasgow, the Schools of Surgery of the Royal College of Surgeons in Ireland and of the National University of Ireland in Dublin, Cork, and Galway. The arrangements for women medical students in Edinburgh are indicated on page 334. Women can also attend classes for the first three years of the medical curriculum at University College, Cardiff.

Year by year the openings for women who adopt a medical career have increased, and the field open to their energies is now wide. Women hold many appointments as resident medical officers in general hospitals and in hospitals for women and children all over the country, and

in a large number of sanatoriums, infirmaries, fever hospitals, and asylums. Many medical women are also engaged in public health and school inspection work.

As regards the London School of Medicine for Women, particulars will be found at p. 329 in the article on London Medical Schools.

DEGREES FOR PRACTITIONERS.

At one time it was almost the universal custom for medical students educated in London not to seek a university degree, and as that custom still prevails to a considerable extent, a very large proportion of medical men in actual practice in England possess diplomas to practise but not degrees in medicine. This is a fact which they sometimes find reason to regret, and to such practitioners the following paragraphs may be of interest. It should be noted that the M.D. degree of the University of Brussels is not registrable when it has been obtained subsequently to June, 1886, but this fact does not lessen its value to those who see any utility in possessing a degree as well as a registrable diploma.

UNIVERSITY OF LONDON.

Registered medical practitioners who have passed the First Examination for medical degrees and the Second Examination for medical degrees, Part I, may proceed to the Second Examination for medical degrees, Part II, and M.B., B.S. Examinations without observing the intervals prescribed by the regulations, on producing certificates that they have gone through the required course of study at a school of the university; subject to the proviso that no degree of the university can in any circumstances be granted by examination to any one in less than three years after passing the Matriculation Examination or after admission by the university of the candidate's right to exemption therefrom.

UNIVERSITY OF DURHAM.

The degree of M.D. is granted by the University of Durham to registered practitioners of not less than fifteen years' standing, who have been qualified and in practice for that period, upon the following conditions without residence: The candidate must be 40 years of age, and must produce a certificate of moral character from three registered medical practitioners. Should he not have passed an examination in arts previously to the professional examination in virtue of which his name was placed on the Register, he is examined in classics and mathematics; if otherwise he is required to translate into English passages from any one of the following Latin authors: Caesar, *De Bello Gallico* (first three books), Virgil, *Æneid* (first three books), or Celsus (first three books).

Professional Examination.—The candidate must pass an examination in the following subjects: (i) Principles and practice of medicine, including psychological medicine, hygiene, and therapeutics; (ii) principles and practice of surgery; (iii) midwifery and diseases of women and children; (iv) pathology, medical and surgical; (v) anatomy, medical and surgical; (vi) medical jurisprudence and toxicology. The examination is conducted by means of printed papers, clinically, and *viva voce*, at the College of Medicine, Northumberland Road, Newcastle, and in the Royal Victoria Infirmary, Newcastle. The classical portion of the examination may be taken separately from the professional on payment of a portion (£10 10s.) of the full fee.

Foreign and Colonial Practitioners.—Natives of India or the British Colonies are placed on the same footing as natives of Great Britain. Natives of India must produce evidence from an Indian university that they have passed within one year an examination in Latin.

Fees.—The inclusive fee is 50 guineas; if a candidate fail to pass, 20 guineas are retained, but if he present himself again, 40 guineas only are required.

Dates, etc.—The examinations are held twice a year, towards the end of March and of June. Notice, accompanied by the fee and certificates, must be sent to Professor Howden, Secretary of the University of Durham College of Medicine, Newcastle-on-Tyne, at least twenty-eight days before the commencement of the examination.

UNIVERSITY OF BRUSSELS.

This university grants its M.D. to such foreign candidates as are already duly qualified in medicine and surgery in their own countries, provided they pass the three examinations imposed. Information can be obtained either from the Secretary of the University, 14, Rue des Sols, Brussels, or from Dr. Arthur Haydon, Honorary Secretary of the Brussels Medical Graduates' Association, 11, Welbeck Street, Cavendish Square. The examinations for the degrees are still going on at the University of Brussels, but for internal students only at present during the German occupation. This is due to the mobilization of the examining staff with the Belgian army.

POST-GRADUATION STUDY.

THE value, and in some circumstances even the necessity, of post-graduation study is now so generally recognized that there is no occasion to dilate upon it here. The need for some means of acquiring direct knowledge of the technique of the new branches which are constantly springing up is indeed so generally felt among otherwise experienced practitioners that several institutions designed solely for their benefit have been at work now for some years. Of these institutions some account follows. Beyond this it need merely be said that in normal times most medical centres hold one or more courses for qualified men during the year; that most of the institutions mentioned in the section on Clinical Hospitals make special arrangements for the benefit of qualified men desirous of studying work of the kind undertaken within their wards; and that valuable adjuncts to post-graduation study exist in the shape of the Library of the British Medical Association—one specially rich in recent works—of the libraries of the several universities, and in those of the Royal College of Surgeons of England and of the Royal College of Physicians in London and in Edinburgh.

WEST LONDON POST-GRADUATE COLLEGE.

The work of this institution is carried on at the West London Hospital, the first in London to devote its clinical material solely to the instruction of qualified medical men. The college started in 1895, and the present building was opened in 1901; it is provided with lecture, reading, writing, and class rooms, and accommodation of all sorts for the convenience of post-graduate students. In the five years before the war the yearly entry has averaged over 220. The work of the college is eminently suitable for men taking up war work.

As for ward work, the students accompany the senior staff on their visits to the wards at 2.30 p.m. daily, and also go round with the resident medical officers in the morning. Out-patient work begins at 2.15 p.m. This department is large, and affords ample facilities for post-graduates to see and examine patients. There are the usual special departments dealing with diseases of the eye, ear, throat, nose, skin, orthopaedics, x-ray work, electro-therapeutics, gynaecology, and mental diseases of children. Post-graduates are appointed to act as clinical assistants for three or six months. There is no charge to members of the college. Practical classes are held in medicine, general practical surgery, gastro-intestinal surgery, surgical diseases of children, analysis of blood and urine, cystoscopy, venereal disease, tropical diseases, retinoscopy, ophthalmic operative surgery, and, when material is available, in operative surgery. The size of the classes is limited so as to ensure that each student shall have full opportunities of gaining experience in methods of examination and treatment.

A special clinic for the treatment of diseases of the skin and genito-urinary organs (male and female) is held every evening (Saturdays included) at 5.30 p.m. Post-graduates are admitted to the work of the clinic free, and certificates of satisfactory attendance and work are given.

Operations take place at 2 p.m. daily, the surgeons often availing themselves of the assistance of the post-graduates, and in any case making arrangements so that they can readily see what is going on. The anaesthetists give instruction in the administration of different anaesthetics, including spinal analgesia, on the operating days, students being allowed to administer them under supervision, while special classes are held in each session.

The pathological laboratory is in charge of a pathologist who attends every day. In bacteriology and microscopy special instruction is given on three mornings a week, the students working at other times under the general guidance of the pathologist.

Demonstrations are given every day in the morning by the assistant physicians, assistant surgeons, and by the medical and surgical registrars in practical medicine and surgery. Lectures of a practical kind are given daily (except Saturday and Sunday) at 5 p.m. During the war, however, class demonstrations and lectures are discontinued.

The fees are as follows: Hospital practice, including all ordinary demonstrations and lectures, £1 1s. for one week, £3 3s. for one month, £4 4s. for six weeks, £6 6s. for three months, £10 10s. for six months, £15 15s. for one year, and £30 for a life ticket. Every year in August there is a special vacation class lasting four weeks, for which the fee is £3 3s. Three months' instruction in the administration of anaesthetics costs £5 5s. Subscriptions for any course can be taken out from any date. The certificates of the school are recognized by the Admiralty, the War Office, the Colonial Office, the India Office, and the University of London (for higher degrees).

A prospectus concerning the school can be obtained on application to the Dean.

LONDON SCHOOL OF CLINICAL MEDICINE (POST-GRADUATE),
DREADNOUGHT HOSPITAL, GREENWICH, S.E.10.

The school buildings, lecture rooms, operative surgery class-rooms, pathological laboratories, museum, library, etc., are in the Seamen's Hospital at Greenwich. The whole hospital of 250 beds, with its out-patient department, is open to students from 10 a.m. till 5 p.m.

At present the regular courses are in abeyance in consequence of the war, but a certain amount of pathology and operative surgery is still done. In normal times medical, surgical, and special department in-patient clinics are held every afternoon except Saturday by the senior members of the staff, whilst out-patients are demonstrated daily in the forenoon in the medical, surgical, and special departments by the assistant physicians and surgeons. Practical classes are arranged each session in the following subjects: The practice of medicine, diseases of the nervous system, medical diseases of women, medical diseases of children, diseases of the skin, practice of surgery, operative surgery, diseases of the eye; diseases of throat, nose, and ear; surgical diseases of women, midwifery and gynaecology, surgical diseases of children, pathology, clinical pathology, bacteriology, surgical and medical pathology, hygiene and public health; anaesthetics, skiagraphy, and mental diseases.

Two sessions of five months (October-February) and four months (April-July), are held in each year. The session's work is arranged so as to enable individual students to join the demonstrations, etc., at any time during the session.

Affiliated to the London School of Clinical Medicine for the purposes of extension of the variety of clinical material and teaching are the Royal Waterloo Hospital for Children and Women, the Miller General Hospital, Greenwich, and the Bethlem Royal Hospital for Mental Diseases. These hospitals are directly linked to the Dreadnought both by rail and by tram. The supply of material affords exceptional facilities for practical instruction in operative surgery and in pathology. There is also a wide field for the study of venereal diseases, on which special clinics are given, and there is a department with open-air wards for the treatment of tuberculosis. Every variety of disease may be studied in the wards and out-patient rooms of the Dreadnought Hospital and at the affiliated hospitals. The certificates of the school are recognized by the University of London (for the higher degree), the Admiralty and the War Office, the India Office, and the Colonial Office.

Appointments.—There are a medical superintendent, surgical and medical registrars, two house-physicians, and two house-surgeons at the Dreadnought Hospital, Greenwich. The pay of these officers varies from £50 to £150.

Full prospectuses, lists of special lectures, and other particulars can be obtained on application to the Dean at the School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.

The head quarters of this post-graduate school are situated at the Prince of Wales's General Hospital, which is in the midst of a densely populated North London district containing about a quarter of a million inhabitants. It contains 125 beds, and its precise situation is South Tottenham, N., where it is within a few minutes' walk of South Tottenham Station on the Midland Railway, Seven Sisters Station on the Great Eastern Railway, and Tottenham Hale on the Great Eastern main line. It is also readily accessible from Finsbury Park and Hackney by electric tram passing the hospital door, and by corresponding means may be reached easily from Dalston, Edmonton, and other parts of North London.

The college is recognized by the Admiralty and the India Office for the purposes of study leave, and by the University of London as a place for advanced study for the M.D. and M.S. degrees; the course of practical teaching of bacteriology is approved by the University of Cambridge for its D.P.H. diploma, and there are ample arrangements for the convenience of men who are thus working, or who, being in active practice, are desirous of getting themselves into touch with modern methods. There is provided for their use a reading and writing room, and they can obtain afternoon tea and receive telephonic messages; similarly there is a reference and lending library for their benefit, and a museum and pathological laboratory in which they can work. The hospital as a whole affords excellent facilities to qualified medical practitioners who wish to take part for a time in the work of an active general hospital, or to obtain special instruction in the several branches of medicine and surgery, since it is open to them to study diseases of the eye, ear, throat, nose, skin, fevers, children's diseases, psychological medicine, dental surgery, radiography, the application of electricity in disease, and the administration of anaesthetics. Throughout the sessions in which the year's work is divided, clinics, lectures, and demonstrations are given by members of the teaching staff in the lecture room, in the wards, in the various out-patient departments, and in certain affiliated institutions. Operations are performed every afternoon of the week except Saturday. Special classes are arranged in modern methods of the investigation and treatment of diseases of the lungs and heart, gynaecology, diseases of children; diseases of the throat, nose, and ear; diagnosis of diseases of the nervous system, ophthalmoscopy and refraction, diseases of the skin, abdominal surgery, surgical anatomy, surgery of the urogenital tract, skiagraphy, anaesthetics, bacteriology, clinical pathology, vaccine therapy, pathological chemistry, and medical electricity. In all these classes the numbers are carefully limited, so as to give every member full opportunity for work.

As for fees, these are as follows: One guinea for a three months' course of study in any one department, which may be begun at any time; a fee of 3 guineas admits to the whole practice of the hospital for a similar term (one month, 2 guineas), and a perpetual ticket for the practice of the hospital may be obtained on payment of a fee of 10 guineas.

Additional information about the college and its work can be obtained on application to the Dean of the Post-Graduate College, at the hospital, or at 19A, Cavendish Square, London, W.1. It should, however, be stated that, owing to the war, the number of lectures and set demonstrations has of necessity been reduced.

TROPICAL MEDICINE.

THERE are Schools of Tropical Medicine in London and Liverpool, and several examining bodies have instituted diplomas or degrees in the subject. The Colonial Office now expects all nominees for the Colonial Medical Service to pass through one or other of the two schools mentioned before their appointments are confirmed, and commercial firms engaged in tropical enterprise commonly demand from medical applicants for employment corresponding evidence of special knowledge. Information with regard to these schools and diplomas and degrees follows.

DIPLOMAS AND DEGREES.

LONDON UNIVERSITY.—Tropical medicine is one of the six branches in which the M.D. degree may be obtained,

the regulations relating to the curriculum and examination corresponding to those applying to the other branches.

LONDON CONJOINT BOARD.—This body grants a diploma in tropical medicine to candidates after an examination usually held in the months of April and July. Ordinary candidates must present evidence of having attended, subsequently to obtaining a registrable qualification in medicine, surgery, and midwifery, (1) practical instruction in bacteriology, parasitology, medical zoology, and haematology, in a laboratory recognized for this purpose during not less than six months; (2) instruction in hygiene applicable to tropical countries; (3) the clinical practice of a hospital recognized for the study of tropical diseases during not less than six months. These conditions may be modified in the case of candidates who have had practical experience in tropical countries deemed likely to have furnished them with the same kind of training. The fee for admission to the examination is £9 9s. No further examination will be held until the termination of the war.

UNIVERSITY OF EDINBURGH.—This university grants a diploma in tropical medicine and hygiene after an examination which is usually held twice a year. It is open to those who are graduates of the university in medicine and surgery, and to registered practitioners who have had experience of tropical diseases in a tropical country, who may be approved by the Senatus on the recommendation of the Faculty of Medicine. In addition to this the candidates must show that they have attended approved courses of instruction in practical bacteriology (including the pathogenic micro-organisms of tropical diseases), in diseases of tropical climates (including the zoological characters and life-history of disease-carrying insects), in tropical hygiene, and in clinical study of tropical diseases. They must possess, too, certificates of efficiency in the conduct of *post-mortem* examinations. The examination is in the four subjects indicated, the fee being £4 4s.

UNIVERSITY OF LIVERPOOL.—A diploma in tropical medicine is given by this university to students who have been through the courses provided by the Liverpool School of Tropical Medicine, and have passed the examination held twice yearly by the university examiners. The examination lasts three days, and consists (1) of three papers dealing with tropical medicine, tropical pathology, and tropical sanitation and entomology respectively; (2) of a clinical examination; and (3) of an oral examination. Further information can be obtained from the Dean of the Faculty of Medicine, University of Liverpool.

UNIVERSITY OF CAMBRIDGE.—This university grants a diploma in tropical medicine and hygiene to any person whose name has been on the *Medical Register* for not less than a year provided that he passes the examination of the university in this subject. Previous to admission to the examination he must produce approved evidence that he has studied pathology (including parasitology and bacteriology in relation to tropical diseases), clinical medicine, and surgery, at a hospital for tropical diseases, and hygiene and methods of sanitation applicable to tropical climates.

The examination deals with the following subjects:

1. The methods of pathological and bacteriological investigation. The examination of the blood. The characters, diagnosis, and life-history of animal and vegetable parasites. The examination, chemical and microscopic, of poisonous or contaminated foods and waters.
2. The origin, pathology, propagation, distribution, prevention, symptoms, diagnosis, and treatment of the epidemic, endemic, and other diseases of tropical climates, including malaria, blackwater fever, trypanosomiasis, relapsing fever, dengue, yellow fever, plague, tetanus, beri-beri, dysentery and hepatic abscess, cholera, enteric fever, Malta fever, and specific diarrhoeal affections of the tropics; diseases due to cestode and other worms; filariasis, bilharzial disease; specific boils, sores, and other cutaneous affections; mycetoma, ophthalmic affections of the tropics, affections caused by poisonous plants and animals, and by poisoned weapons; sunstroke.
3. The general effects on health in the tropics of seasons and climate, soil, water, and food. Personal hygiene, acclimatization. Principles of general hygiene, with special reference to food supplies and water supplies, sites, dwellings, drainage, and the disposal of refuse. The sanitation of native quarters, camps, plantations, factories, hospitals, asylums, gaols, pilgrim and coolie ships. Principles and methods of disinfection.

Examinations are held in January and August each year, and last four days. The fee for the examination and

diploma is 9 guineas on admission or readmission. Application for further information should be made to Dr. G. S. Graham-Smith, Pathological Laboratory, Cambridge.

SCHOOLS.

LONDON SCHOOL OF TROPICAL MEDICINE.—This school is under the auspices of the Seamen's Hospital Society. Its buildings, laboratories, museum, library, etc., are within the grounds of the Branch Hospital, Royal Victoria and Albert Dock (Station, Connaught Road, Great Eastern Railway), and excellent opportunities are afforded to students and others who may be desirous of studying diseases incidental to tropical climates before entering the services or going abroad. In the hospitals of the society are to be found cases of tropical disease such as may be met with in actual practice in the tropics. There are three courses in the year, each lasting three months, beginning October 1st, January 15th, and May 1st respectively. The course is so arranged as to equip men for the Cambridge and English Conjoint Board diplomas in tropical medicine. A prospectus and other information can be obtained on application to the Dean, London School of Tropical Medicine, India Office, Whitehall, London.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.—This school is affiliated with the University of Liverpool and the Royal Infirmary of Liverpool. Two full courses of instruction are given every year, commencing on January 6th and September 15th, lasting for the term of about thirteen weeks, and followed by the examination for the diploma of tropical medicine given by the University of Liverpool. Each course consists:

(1) Of a systematic series of lectures on tropical medicine and sanitation delivered by the Professor of Tropical Medicine at the university; (2) of systematic lectures and demonstrations on tropical pathology, parasitology, and bacteriology by the Professor of Parasitology and the Lecturer on Parasitology at the university; (3) of similar instruction on medical entomology by the Professor of Medical Entomology and the Lecturer on Entomology at the university; and (4) of clinical lectures and demonstrations delivered at the Royal Infirmary by the professor.

The instruction given occupies six hours a day for five days a week during the term. Teaching under headings (2) and (3) above is delivered in the laboratory of the school at the university, which contains accommodation for thirty students, with all necessary appurtenances, including a well-equipped museum, a class library, and access to the general departmental library. Teaching under heading (4) is given in the tropical ward and the attached clinical laboratories of the Royal Infirmary and the Royal Southern Hospitals on two or three afternoons a week.

In addition to the full courses, an advanced course of practical instruction in tropical pathology and medical entomology, lasting one month, is given every year in June; it is of such a kind as to be very useful to medical men returning from the tropics on short leave. A special course of instruction in entomology, etc., is also given three times a year to officers of the East and West African Colonial Services.

Students of the school who do not care to undertake the examination held by the university at the end of each term for its diplomas in tropical medicine are given a certificate for attendance if the latter has been satisfactory.

It is proposed to institute at an early date a course of instruction in tropical sanitation. Full particulars will be issued as soon as possible.

The new laboratories of the school adjoining the university, which are now completed, have been taken over temporarily by the War Office authorities as a hospital.

Since it was instituted the school has dispatched to the tropics thirty-three scientific expeditions, many of the workers having been taken from among its students. The work done by them has been published in twenty-one special memoirs, with many plates and figures, besides textbooks and numerous articles in the scientific press, also in the "Annals of Tropical Medicine and Parasitology" of the school.

Fees.—The fee for the full course of instruction is £13 13s., with an extra charge of 10s. 6d. for the use of a microscope if required. The fee for the Diploma Examination is £5 5s., and that for the Advanced Course is

£4 4s. Further information about the school may be obtained on application to the Secretary, 10B, Exchange Buildings, Liverpool.

PSYCHOLOGICAL MEDICINE.

THE study of mental diseases has long been a necessary part of the ordinary medical curriculum, and mental psychology is one of the branches of medicine which candidates for the M.D. degree of the University of London can take up. In addition diplomas in psychiatry or psychological medicine can be obtained from the universities of Cambridge, Edinburgh, Leeds, and Manchester. The Medico-Psychological Association of Great Britain and Ireland also grants certificates of proficiency after examination and encourage study of psychology and connected subjects by the offer of prizes for competition.

Those who take up psychological medicine as a career work as medical officers either of private mental hospitals, or of county or other public institutions of the same order. In all cases they are resident officers, those in the lower ranks always receiving board and lodging in addition to their salary. As a whole, they fall into three ranks—junior assistant medical officers, senior assistant medical officers, and medical superintendents. The salaries of those belonging to the junior rank have hitherto been in the neighbourhood of £150 a year, and those of senior assistants about £300 a year, but have recently shown some tendency to rise. Medical superintendents, whose pay commonly ranges between £500 and £1,500 a year, are always provided with a house in the grounds of their asylum, and usually draw various allowances.

However, asylum work as a career is by no means growing in favour, and is unlikely to do so until all the public asylums throughout the country have been linked up in such fashion that their officers can be regarded as members of one common service. At present it is quite possible for a man who does excellent work to remain in the lower rank all his life, and this fact, coupled with the desirability of minimizing as far as possible other existing drawbacks to asylum life, has led to the starting of a movement for reform; and in this the British Medical Association is co-operating.

PUBLIC HEALTH SERVICES.

THE Public Health Service, to use the term in a strict sense, consists of medical officers of health appointed by local public health authorities and holding office under varying conditions of tenure. In addition, there are county medical officers appointed by the county councils. The latter are not, strictly speaking, public health authorities; the duties of their medical officers are somewhat similar to those of other medical officers of health, but include few executive functions. In many of the county boroughs and counties, assistant medical officers of health or assistant county medical officers are appointed, and such appointments may afford stepping stones for promotion to higher offices. The service is, however, not unified throughout the country, and there is no regular system of promotion; appointments are to be obtained only by application to some particular local authority which has advertised a vacancy.

Also ungraded are two other services which have been brought into existence by recent legislation, and whose members are charged with duties which bring them into more or less direct relation with public health authorities or county councils and their officers. The members of the one are called school medical officers, and those of the other tuberculosis officers. Appointments as school medical officer are made by education authorities, while appointments as tuberculosis officer are made in fulfilment of the duties imposed directly on the county councils and the county borough councils, and indirectly on the Insurance Committees by the scheme for the treatment and prevention of tuberculosis which was worked out by the Local Government Board for England in consultation with the Insurance Commissioners.

The Local Government Board for England, it may be noted, employs a staff of medical inspectors in connexion with the performance of its duty as the controlling depart-

ment of the Government in matters of public health, and the same is true of the corresponding boards in Scotland and Ireland. The medical men forming these staffs are, however, appointed to their position directly by the head of the Local Government Board in each country, and the posts are not open to public competition.

MEDICAL OFFICERS OF HEALTH.

The office of medical officer of health in a county borough—a designation which now includes nearly all the larger towns—is in practice a permanent appointment so long as the incumbent desires to retain it, and is the same by law in administrative counties and metropolitan boroughs. The position of a medical officer of health to an urban or a rural district, or to a combination of districts which have joined together to obtain the services of a whole-time medical officer of health, is much less satisfactory, for his appointment is terminable at the will of the public health authority served by him. This fact tends to militate against the efficiency of the service, and consequently the British Medical Association, in co-operation with some other bodies, has long been endeavouring to induce Parliament to establish security of tenure of office and superannuation for medical officers of health. In view of statements recently made by the Government, security of tenure, at any rate, seems likely soon to be granted. A medical officer of health to a district or combination of districts having 50,000 inhabitants must hold a diploma in public health. The first step which must be taken by any medical man who desires to follow the career of medical officer of health must be therefore to obtain such a diploma.

SCHOOL MEDICAL OFFICERS.

School medical officers are appointed by local education authorities under schemes of medical inspection of school children which must be approved by the Board of Education. Primarily their duty is to detect among the children attending the public elementary schools any physical or mental defect which may retard the education of such children, and to inform their parents of its existence. But practically their duties vary considerably in different areas. This is because most approved schemes of inspection include systems of work which aim at facilitating the task of parents in obtaining for their children the necessary treatment, at checking the results of the latter, and at keeping each defective child under skilled observation both at home and at school until it has passed altogether out of the education authority's hands. The general object of all schemes alike is to make the inspection imposed by law of benefit not merely to the individual child, but to the community at large, by preventing conditions which lead to the existence of a large proportion of inefficient citizens among the adult population. In short, the work is so far related to that of a medical officer of health that in most areas the senior school medical officer fills both appointments, his work, when necessary, being supplemented by that of whole or part-time assistants. Whole-time assistants are commonly paid salaries ranging between £250 and £300 a year, the chief attraction of the posts being that they may lead on to appointment as medical officer of health of some large area where the combined salary of medical officer of health and school medical officer will represent a fair income. In view of this consideration, if for no other reason, it is desirable for a prospective whole-time school medical officer to obtain a diploma in public health.

TUBERCULOSIS OFFICERS.

The prescribed duties of tuberculosis officers are to act as advisers to Insurance Committees in connexion with the operation of the sanatorium clauses of the National Insurance Act and to take charge of the work of the tuberculosis dispensary, which is the main unit of the Departmental Committee's scheme. A tuberculosis officer is a whole-time officer; he should have special training in tuberculosis work, and be of suitable age and attainments to command general confidence. At present the number of appointments is small, and the salary generally attached to them is in the neighbourhood of £500 a year.

SANITARY SCIENCE.

In June, 1917, the University of Cambridge issued regulations for the Examinations in Sanitary Science,

conducted by the State Medical Syndicate of the University. Two examinations will be held during the year 1918—one in April and one in October. Any person possessing a registered qualification in medicine, surgery, and midwifery may be a candidate, provided that he has satisfied certain demands laid down in the regulations. The examination will consist of two parts, the first having reference to the general principles of sanitary science, the second to State medicine and the applications of pathology and sanitary science. All applications for information respecting these examinations should be addressed to Mr. J. E. Purvis, M.A., The Chemical Laboratory, Pembroke Street, Cambridge.

DIPLOMAS IN PUBLIC HEALTH.

Most of the universities and licensing corporations now grant diplomas in public health to candidates who pass the examinations imposed by them. Since all such tests must conform to the requirements of the General Medical Council, there is considerable similarity in their nature, though they differ not a little in their reputed difficulty. All of them aim at excluding any candidate who does not appear to have a thorough knowledge of his work in theory and in practice, for the regulations of the General Medical Council demand that the granting of a diploma in Sanitary Science, State Medicine, or Public Health shall be proof of the "possession of a distinctly high proficiency, scientific and practical, in all the branches of study which concern the public health." The tests, in short, are supposed to constitute an honour and not a mere pass examination. As regards the special tuition required, it is now easy to obtain this in practically every centre of medical education, and at almost every medical school of any importance. It is desirable to note in this connexion that the chemical and bacteriological examinations for many of the health diplomas are so practical, and the time allowed so short, that unless a candidate—even though familiar with the duties of M.O.H.—has a considerable amount of the manipulative dexterity only to be acquired by ample work in a laboratory, he would not be likely to satisfy the examiners.

The regulations of the General Medical Council require that every candidate (subsequent to obtaining a registrable qualification in medicine and surgery) shall have passed through a stated curriculum in the subjects of sanitary science. This must last not less than nine calendar months, and include four months' study in a laboratory in which chemistry, bacteriology, and the pathology of diseases of animals transmissible to man are taught, six months' practice study of the duties involved by public health administration, and attendance at least twice weekly for three months on the practice of a hospital for infectious diseases, at which instruction is given in methods of administration. These rules do not apply to practitioners registered or entitled to be registered before January 1st, 1890, while that regarding six months' practical study of public health administration is waived in the case of a candidate who has himself been in charge of a sanitary district with a population of not less than 15,000 for a period of not less than three years. The study in question must be passed under the personal supervision of a medical officer possessing certain definite facilities for affording it, these being carefully described in the regulations. The period may be reduced to three months in the case of a candidate who has undergone a corresponding period of study in the public health department of a recognized medical school, or who has been resident medical officer at a hospital for infectious diseases with accommodation for 100 patients for not less than three months. The laboratory study must include at least 240 hours' work, not more than half being devoted to practical chemistry. The examinations imposed by the diploma-granting bodies must extend over not less than four days, one at least being devoted to practical work in the laboratory, and one to practical examination in, and reporting on, subjects within the duties of a medical officer of health, including those of a school medical officer.

The steps which examining bodies take to ascertain the candidate's fitness for a diploma are in all cases much the same, though the order in which the subjects are taken is not always identical. Every candidate, therefore, should when he has settled what diploma or degree in State medicine he wishes to obtain, seek the schedule relating

to it from the authority concerned. A certain number of the universities grant degrees in the subject as well as diplomas, but only the latter constitute a legal qualification in State medicine.

THE PUBLIC SERVICES.

THE ROYAL NAVY, THE ARMY, AND THE INDIAN MEDICAL SERVICE.

THE medical departments of the Royal Navy, the Army, and the Indian Government normally employ between them some three thousand medical men, and fill vacancies in the ranks of the services thus formed by offering commissions for competition once or more often each year. All candidates must be between the ages of 21 and 28 years, and besides possessing registrable qualifications to practise medicine and surgery in Great Britain and Ireland must be adjudged by the Medical Boards appointed for the purpose to be physically fit for service before permission is accorded them to compete at the entrance examinations. Special attention is given to a candidate's power of vision; a moderate degree of myopia is not considered a disqualification, provided that it can be corrected by glasses so as to secure adequate vision for the performance of operations, and that no organic disease of the eye exists. Testimony has also to be furnished, or is sought by the authority concerned, with regard to the candidate's moral and general character, and the Secretary of State in each service reserves the right to refuse permission to compete to any candidate he pleases.

In the case of a candidate for the Indian Medical Service, the certificates submitted must include one showing that he has studied in an ophthalmic department for not less than three months, the work including refraction, and candidates for the other two services who have qualified in the Officers' Training Corps, or who have been employed on active service, receive an allowance of marks. In all three services the prospect of a medical officer attaining to the highest administrative grades depends to a large extent on the regulations with regard to compulsory retirement at the age of 55 (if below a certain grade at that age), so there is a distinct advantage in entering them at the earliest possible age.

In peace and apart from climatic conditions the lives of officers in these three services are of a less trying nature than those of civilian practitioners, and in the Royal Army Medical Corps, and still more in the Indian Medical Service, the opportunities for professional work of the highest kind are exceptionally great. In regard to emoluments, the pay in no rank is high, but in all it is sufficiently good to make the possession of private means not absolutely necessary. An officer in the Indian Medical Service, for instance, can retire after seventeen years' service on £300 a year, and after thirty on £700 a year with large additions should he have been employed in certain positions. In the other two services twenty years is the lowest pensionable length of service (the minimum is £365 a year, the maximum £1,125); but from either of them an officer whose record is good can retire while still under 30 years of age, with a gratuity of £1,000. In the Indian Medical Service, after working for three years in a military capacity, officers are allowed as a rule to transfer, if they please, to the civil department. Therein they do work not essentially dissimilar from that performed by civilian practitioners in other warm climates, but retain their military titles and are promoted from one grade to another as their service lengthens. It should be added that for several years previous to the war competition for admission to the Navy was very slight, while that for admission to the Indian Medical Service had greatly fallen. The reason is that the attractions of both services set forth above are to some extent counterbalanced by removable causes of discontent among their members. The nature of these has been indicated from time to time in the BRITISH MEDICAL JOURNAL.

Candidates for all three services have to fill in printed forms before the question of permitting them to compete is considered, and copies of these, together with detailed information as to what each service has to offer, can be

obtained on application to the Director-General of the Royal Navy, the Secretary of the War Office, and the Military Secretary of the India Office, respectively.

PRISON MEDICAL SERVICE.

CANDIDATES for the medical staff are approved by the Secretary of State for the Home Office on the recommendation of the Prison Commissioners. The Chairman of the Board is Sir Evelyn Ruggles-Brise, K.C.B. Application for employment may be made to the Board on a special form, which can be obtained from the Secretary, Prison Commission, Home Office, London, S.W.1.

In the smaller prisons the medical officer is usually a local practitioner, but in the larger the members of the medical staff are required to devote their whole time to the service.

In the case of those required to give their whole time to the service the appointment in the first instance is to the post of deputy medical officer, and from the seniors of this rank the medical officers are selected as vacancies occur. The deputy medical officers are paid £225 yearly, rising to £400, with unfurnished quarters. The whole-time medical officers are paid £450, rising to £550, with unfurnished quarters. There are twenty deputy medical officers, and nine whole-time and thirty-eight part-time medical officers. The number of vacancies is never large.

APPOINTMENTS UNDER THE COLONIAL OFFICE.

MEDICAL appointments are from time to time filled up by the Colonial Office in various Crown and other Colonies, and vacancies in the West African Medical Staff are of fairly frequent occurrence. As a rule, officers are required on appointment to undergo a three months' course of instruction at the London or Liverpool School of Tropical Medicine, and to obtain a certificate of proficiency before taking up their appointment. In addition to the ordinary medical appointments, vacancies also occasionally occur for which specialists are required—for example, to take charge of a lunatic asylum.

The nominal value of the appointments varies very considerably; but, as a general rule, it will be found on close examination that the rates of pay correspond in real value pretty closely when questions of climate, opportunities for private practice, the cost of living, and the actual work demanded are taken into consideration. The posts to which the lower salaries are attached commonly involve work which can be regarded as merely an adjunct to ordinary private practice, while high pay means either few opportunities for practice, an undesirable climate, or work of a special character demanding high administrative ability. Taken as a whole, all these appointments may be put down as offering their occupant the opportunity of gaining his livelihood, and possibly saving a little money, in a fashion which will test his abilities to the full. Pamphlets relating to the various appointments in its gift are published by the Colonial Office, and copies can be obtained on application by letter to the Assistant Private Secretary, the Colonial Office, Downing Street, S.W.1.

It may be added that, apart from the Government appointments mentioned, a large number of men find employment as medical officers of mining and other companies carrying on their operations in various parts of the tropics. Much caution should be exercised in accepting these appointments, and those to whom they are offered would find it worth while to read what was said on the subject in our issues for May 25th and August 24th, 1912.

Considerable increases have been made since 1914 in the salaries and allowances attaching to posts in the different grades of the West African Medical Staff. These improvements will, it is hoped, render these posts more attractive to the young and well-qualified medical men for whom they are intended. As a result of the war, however, the Colonial Office has found it very difficult to obtain the services of medical men for any of the Colonies and Protectorates to which medical officers are appointed from this country.

MEDICAL MISSIONARIES.

To medical men suitably endowed the mission field seems to offer increasing opportunities for interesting work. Just before the war, over 450 medical practitioners holding British degrees or diplomas were employed in different parts of the world by missionary societies, and the latter seem to stand in constant need of men and women to fill vacancies as they occur, and also to enable them to take advantage of fresh openings. It is not usually expected or desired that a medical missionary should take a position such as would otherwise be occupied by an ordained clergyman or minister. But it is essential that he should be prepared to take his share of definite missionary work in any hospital in which he may be placed. As for scientific and other qualifications for the work, a medical missionary, apart from being physically capable of sustaining what may prove to be a trying life, should be a thoroughly well trained physician and surgeon. It is very desirable that he should have held a resident appointment at a general hospital and have a good knowledge more particularly of practical surgery, tropical medicine, and the treatment of eye diseases. Societies from whom useful information can be obtained are the London Medical Missionary Association, 49, Highbury New Park, N.5.; the Edinburgh Medical Missionary Association, 56, George Square, Edinburgh; and the Society for Promoting Christian Knowledge, Northumberland Avenue, W.C.2.

MEDICAL PRACTICE IN BRITISH COLONIES AND FOREIGN COUNTRIES.

MEDICAL Acts have now been passed in almost all places forming part of the British Empire beyond the seas, and registers of duly qualified practitioners are consequently maintained. To these registers medical men educated in the United Kingdom are always admissible merely on payment of a fee, provided they produce evidence that they are of good repute and eligible for registration in the United Kingdom. The only exception to this statement that need be made relates to the Dominion of Canada. Until quite recently each of its provinces acted in medical connexions as an independent State, but in 1913 a Medical Act which established a State examination and a common register for the whole country came partly into operation. It could not come into complete operation until each province had amended its existing Medical Act so as to come into line with the new Act. This step is understood to have now been taken by all of them; but it is not clear how far the reciprocity with the United Kingdom previously accorded by all but Ontario and the three Western provinces has been affected. Consequently, any medical man proposing to practise in Canada should first communicate with the Registrar of the Medical Council of Canada, 180, Cooper Street, Ottawa, stating what degrees or diplomas he holds and the length of the curriculum he has undergone, and asking for information as to the precise steps he must take in order to obtain admission to the Dominion Register.

Italy, Egypt, and the Principality of Monaco are the only foreign States which accord a right to practise in virtue of British degrees and diplomas, though the authorities in Spain occasionally issue a temporary permit in favour of British practitioners, and those of Holland and Greece sometimes exempt British practitioners from portions of the examinations imposed on ordinary candidates for registration. In all other Continental countries a British medical man desiring to exercise his profession therein must pass practically the same examinations as those imposed on natives of the country. The same observation applies to all foreign States in the South American continent, while each of the United States of North America has its own laws and regulations; some of them admit any holder of a degree or diploma to their Register, but the majority require a candidate for registration to submit to an examination.

Dental Surgery.

THE profession of dentistry in this country is on the same footing as that of medicine; that is to say, only those who have complied with certain stipulations laid down by the

General Medical Council have a legal right to practise dental surgery. This, unfortunately, by no means implies that the practice of dentistry is confined to legally qualified practitioners, for the Dental Acts offer even less protection to dental surgeons than do the Medical Acts to doctors. An ordinary medical man is within his legal rights if he practises dental surgery, but since owing to his lack of the necessary technical training he could not do so with success, dental surgery is in effect legally practised solely by men of two classes—those who hold a qualification both in dental surgery and in medicine and those who hold a qualification in dental surgery alone or have otherwise obtained admission to the *Dentists Register*. The early stages of the education of dental and medical students cover the same subjects, and it is both possible and advisable to combine the two educations.

In any case a prospective dental surgeon must obtain registration as a dental student (see p. 311) and thereafter pursue a curriculum which lasts a minimum of four years.

During the last two years, which must be spent at a medical school and hospital, concurrently with attendance at the dental hospital, in addition to studying anatomy and physiology, surgery and pathology, he will include in his work the more specific subjects—namely, dental anatomy and physiology, dental histology, dental surgery and pathology, and practical dental surgery, for all of which he must be "signed up" before entrance to the Final Examination for the Licence.

Recognized dental schools are numerous: in London there are those connected with the Royal Dental Hospital, Leicester Square; the National Dental Hospital, Great Portland Street; Guy's Hospital, and the London Hospital. In the Provinces and Scotland and Ireland there are those connected with the universities of Sheffield, Manchester, Liverpool, Leeds, Bristol, Durham, and Birmingham, and the Devon and Exeter Dental Hospital; the Edinburgh Incorporated Dental Hospital; the Glasgow Incorporated Dental Hospital; the Royal Infirmary, Glasgow; and the Dental Hospital of Ireland, Dublin. As for qualifications in dental surgery, these are almost equally numerous. There are considerable variations in the order in which different licensing bodies require various subjects to be taken up, and every prospective dental student should consequently study not only the regulations of the General Medical Council, but also those of the body whose licence or degree he hopes to obtain.

ORDER OF THE BRITISH EMPIRE.

IN our notice last week of those medical men and women whose names appeared in the first list of the new Order of the British Empire, Dr. Duncan McFadyen Millar and Dr. William Ernest Nelson should have been included among the Officers of the Order.

THE Right Hon. Christopher Addison, M.D., M.P., was on August 31st sworn Minister of Reconstruction.

THE Royal Sanitary Institute will hold a meeting on Saturday, September 29th, at 10.30 a.m., at the Town Hall, Chatham. Surgeon A. G. L. Reade, R.N.V.R., will open a discussion on epidemic cerebro-spinal meningitis. Dr. J. Holroyde will speak on the housing problem and Mr. R. L. Honey on public abattoirs; discussions will follow.

A COURSE of elementary lectures on infant care for teachers, infant welfare workers, and mothers, will be held under the auspices of the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy, on Mondays, at 5.30 p.m., from October 1st to December 17th, at 1, Wimpole Street.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

INFECTIVE JAUNDICE.

BY

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AND

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CAPTAIN R.A.M.C.

HISTORICAL ACCOUNT.

EPIDEMICS of jaundice have been described from the earliest times, and many of the best accounts have been compiled from the study of the disease in armies in the field. Cockayne draws attention to the fact that the author—probably Hippocrates—of the *De Internis Affectionibus* describes "ἄλλος ἵκτερος. ἐπιδήμιος οὗτος καλέεται, διότι πᾶσαν ὥρην ἐπιδραμβάνει. In 1745 Clegghorn described an outbreak of epidemic jaundice in Minorca, and Larrey, in 1800, published an account of an epidemic of jaundice during the siege of Cairo, and drew particular attention to the contagiousness of the disease and to the occurrence of haemorrhages in his patients. Amongst French writers, Ozanam (1846-9), Monneret (1859), the elder Laveran (1865), Lancereaux (1882), Landouzy (1882), and Mathieu (1886), have all described epidemic diseases of varying intensity in which jaundice was a constant feature. Lancereaux described his cases under the title of "Ictère grave essentiel," and Landouzy called the disease "Fièvre bilieuse," and Mathieu, drawing attention to the frequent occurrence of relapses, gave to his description the title of "Ictère fébrile à rechutes." The accounts of the diseases described by these authors vary, and it is probable that there were different etiological factors in each epidemic.

Attention may be drawn, however, to certain descriptions in so far as they throw light upon the particular type of epidemic jaundice which is to be described in these pages. In 1859 Carville described an epidemic in the garrison at Gaillon, and gives an account of 47 cases, of whom 11 died. All developed jaundice, and albuminuria was present in every case. Haemorrhages were common; 15 had epistaxis, in 3 there was purpura, and in one haematemesis. The incubation period was six days. A similar epidemic was described by Worms in St. Cloud in May, 1865.

Mathieu in 1886 described cases of jaundice and drew attention to the fact that the term "catarrhal jaundice" was an insufficient description, and claimed that the fever, general symptoms, enlargement of the spleen and albuminuria, justified the title of infectious jaundice.

Weil in 1886, and some months after the publication of Mathieu's report, described four cases of infectious jaundice, and drew attention to the relapses of fever which occurred in two out of the four cases. From this time onwards the symptom-complex of fever, jaundice, enlargement of the liver and spleen, the occurrence of haemorrhages, and occasional febrile relapses, have been described under the name of Weil's disease. This last title has served the purpose of labelling with a simple name any disease which embraced the signs and symptoms which we have just enumerated. Both historically and scientifically the title is incorrect and vague. Epidemic jaundice was described by the Father of Medicine, and his disciples in later years have only added little by little to a clinical picture which is still far from being complete. There is no doubt that there are many and different etiological factors which can give rise to a clinical picture in which fever, jaundice, haemorrhages, enlargement of the liver and spleen, and relapses of fever are variously, but not constantly, present. In none of the descriptions quoted above is the picture complete. In none has the cause ever been proved, and in many it is not even suggested. Using the last three years, however, we have been enabled to recognize a form of infectious jaundice in which the clinical and pathological picture is uniform and constant, and of which the cause has been discovered and proved.

In November, 1914, two Japanese workers, Inada and Ido, showed the presence of a spirochaete in the liver of a guinea-pig which had been inoculated with the blood of a patient suffering from a form of infectious jaundice. Some months later they proved the specificity of this

spirochaete, and gave to it the name of *Spirochaeta ictero-haemorrhagiae*. In a later part of this paper the work of these Japanese authors is set forth in greater detail. In the British and French armies it has been shown conclusively that an infectious disease usually accompanied by jaundice is caused by the *Spirochaeta ictero-haemorrhagiae*, and descriptions of the clinical and pathological findings have been published by Dawson and Hume, Stokes, Ryall, and others in the British army; and in the French army by Martin and Pettit, Garnier and Reilly, and Costa and Troisier.

Before describing this disease it may be recalled that jaundice has been a relatively common disorder in armies in the field. In the Federal troops in the war between North and South America there were 22,509 cases, with 161 deaths, amongst a total of 2,218,559 men. In 1870, from February to May, there were 799 cases amongst 33,380 men in the Bavarian troops stationed to the south-west of Paris. During five months in the South African war there were 5,648 cases, with a small mortality.

Since the commencement of the present war we have been unable to ascertain the incidence of cases of jaundice amongst the British and French troops in France. Before we were in possession of the Japanese work we were able to prove that certain cases of jaundice belonged to the enteric group of diseases. In the summer and autumn of 1915 our attention was arrested by the occurrence of severe cases of jaundice in which there were high fever, haemorrhages, enlargement of the liver, and a tendency to febrile relapses, which in no way conformed either clinically or bacteriologically to the typhoid group.

In the autumn of 1915 we made a special endeavour to study these cases by collecting them into a single hospital, and the result of our work has been published in detail in the *Quarterly Journal of Medicine*, October, 1916, and January, 1917. It was only in April and May, 1917, that we were able to show that the *Spirochaeta ictero-haemorrhagiae* was the cause of this disease, after we had read the account of the Japanese work published in the *Journal of Experimental Medicine*.

CLINICAL DESCRIPTION OF THE DISEASE.

In order to draw attention to the characteristic features of this disease, a complete case will be briefly described and an account of the chief signs and symptoms will be set forth under the headings of the various systems of the body.

On August 7th, 1917, Pte. A. B. was suddenly seized with vomiting and diarrhoea, with a feeling of intense weakness. For two days he lay in his billet with a temperature of 103° to 104° and had frequent diarrhoeal stools. On August 9th the prostration was very marked and there was a considerable amount of blood in the stools. The temperature was 101°. On August 12th he was noticed to be jaundiced. On August 14th he had an attack of haemoptysis and spat up about one pint of blood, and the expectoration was blood-stained for the following five days.

On admission to a base hospital on August 16th, there was universal intense jaundice and the temperature was 101.2°. There was a scabby mass of haemorrhagic herpes about the lips. The tongue was brown and very dry. The patient was drowsy and there was considerable abdominal distension and discomfort. The initial diarrhoea was followed by constipation, which necessitated the use of enemata. There was marked tenderness in the right hypochondrium and the liver was enlarged to three fingerbreadths below the right costal margin. The spleen was not palpable. The red blood cells numbered 4,800,000 to the cubic millimetre and the haemoglobin was 80 per cent. The white cells numbered 24,000 to the cubic millimetre and a differential count showed:

Polymorphonuclear leucocytes	...	...	82 per cent.
Lymphocytes	...	...	10 "
Large mononuclear leucocytes	...	...	5 "
Coarsely granular eosinophile leucocytes	...	...	3 "

The urine was loaded with bile, and there was a sixth of a boiled test tube of albumin together with granular casts. Some bile was escaping into the duodenum as the stools were of a light brown colour.

There were crepitations to be heard over the lower lobes of the lungs. There was no recurrence of haemoptysis or melaena. During the first fortnight of the illness the patient complained much of pains in the back and

limbs. On August 20th the temperature had fallen to 98° to 99°, though the jaundice was still intense. On August 26th the jaundice was rapidly fading, and on this day spirochaetes were found in the urine in large numbers. During the next five days the general condition of the patient improved so much that he was sent to England on August 31st. There was no secondary rise of fever while the patient was in France.

Such is the usual history of a case of moderate severity, and the noteworthy features are the following: A sudden onset with gastro-intestinal symptoms and high fever, the marked prostration, the occurrence of melaena and haemoptysis, the presence of haemorrhagic herpes, the appearance of jaundice on the fifth day, the fall of temperature at the end of eleven days, and the finding of typical spirochaetes in the urine.

GENERAL FEATURES OF THE DISEASE.

The Onset.—The patient has almost invariably been attacked by the disease either in the trenches or immediately after having left them. The onset is usually sudden, with shivering, pains in the head and particularly behind the eyes, generalized pains, and a feeling of extreme prostration. So sudden is the onset that the patient can frequently point to an exact moment when he finds himself overcome; as one said, he "fell out very weak" on the march; or in another instance, he "suddenly collapsed at church parade." At the time of reporting sick the temperature is raised to 103° to 105° and the pulse rate is about 100 per minute. During the first two or three days before the appearance of jaundice there are vomiting, great prostration and lassitude, with abdominal and muscular pains. The conjunctivae are injected, and herpes, which rapidly becomes haemorrhagic, appears on the lips.

Gastro-intestinal.—A dirty, brown tongue and anorexia is common to all; constipation is the rule, and it is only rarely that there is diarrhoea at the onset, as in the case described above. The constipation is usually extreme and has to be relieved by enemata. The stools may become clay-coloured, though in most cases the presence of a small quantity of bile gives the stool a light-brown coloration. Usually there is considerable abdominal tenderness, which is more marked in the upper than in the lower abdomen. Though vomiting is usual at the onset, it generally ceases before the patient reaches a base hospital, on the sixth to eighth day of the disease. Hiccough was occasionally present in very severe or fatal cases. Melaena sometimes occurred in patients with diarrhoea.

The liver is frequently enlarged to the extent of three fingers' to a hand's breadth below the right costal margin and the tissues covering it are usually very sensitive and tender.

The spleen has only been palpable on two occasions in our experience. From observation at operation and from the size of the organ at *post-mortem* examination it seems certain that the spleen is very rarely sufficiently enlarged to be palpable.

The superficial lymphatic glands are frequently palpable in the axillae and groins.

Haemorrhages.—Out of eighteen severe cases under our care, fourteen had haemorrhages. Haematemesis occurred in four and haemoptysis in six. Epistaxis was considerable in four cases and slight in two cases. Melaena was observed in three instances and in three there was a marked purpuric eruption in the skin. In one patient there were epistaxis, haemoptysis, and melaena.

The Skin.—The jaundice usually appears about the fourth day of disease and gradually deepens up to the eighth or ninth day and then fades. In some cases it is very intense and the skin takes the greenish hue met with in complete obstruction of the common bile duct. Herpes labialis, which is haemorrhagic, occurs in at least 40 per cent. of all cases. Pruritus is rarely intense, though patients frequently complain of some itching of the skin. The conjunctivae are often injected and the eyeballs are tender.

The Circulatory System.—The rate of the heart does not increase in proportion to the rise of temperature, and in severe cases with a temperature of 104° to 105° the pulse-rate may be only 100 per minute. The rhythm of the heart is not usually affected, except in one patient, in

whom auricular fibrillation, of which records were obtained, persisted for five days. The size and sounds of the heart are perfectly normal. The blood pressure never falls as it does in the enteric group of diseases, and the systolic pressure ranges about 120 mm. of mercury. The qualitative changes in the peripheral blood will be described in the section on clinical pathology.

The Respiratory System.—In all severe cases there are the evidences of an acute bronchitis, but we have never discovered any signs pointing to bronchopneumonia or lobar pneumonia. Reference has already been made to the occurrence of haemoptysis and rusty sputum. The respiratory rate may be increased to 28 or 30 per minute in severe cases, and in fatal cases the type of breathing is that met with in cases of cholaemia and uraemia.

The Nervous System.—Frontal headache and aching behind the eyeballs is a constant complaint, and is little relieved by antipyretics. The early weakness and prostration are very characteristic of this disease. In our fatal cases twitchings and convulsions preceded the coma in which the patients died. In many cases the muscular pains are very intense, and the whole body is so sensitive that the patient cannot bear any pressure upon it. One patient complained of xanthopsia.

The Urinary System.—Three of our patients had retention of urine, which required the use of the catheter for two or three days. The cause of this disability probably lay in the central nervous system. The urine usually contains a large quantity of bile, which sometimes gives it a dark porter colour. The bile does not usually disappear from the urine till the end of the fourth or fifth week. Albumin can nearly always be detected by the boiling method. In more severe cases, after heating in a test tube and allowing it to stand for twenty-four hours, the albuminous deposit amounts to one-sixth of the boiled test tube. Casts, hyaline and granular, are frequently found without centrifugalization, and at times free blood cells are seen in the deposit. The presence of reducing sugar was never detected, though acetone is said by others to occur in cholaemic cases, probably the result of starvation. The chemistry of the urine has been fully worked out in this disease by certain French authors, who lay considerable stress on the evidences of renal insufficiency.

The Fever.—The initial rise of temperature to 103° or 105° has already been noted, and during the first twelve or fourteen days there is an irregular range of temperature between 100° and 103°, which gradually falls by lysis to normal or subnormal. After the fall the temperature may be subnormal for two to three days. After this, in some cases about the beginning of the third week, there is a secondary rise of temperature, which lasts for ten to fifteen days. During this period of secondary fever there are usually no evidences of exacerbation of symptoms, and it is difficult to account for its occurrence. In those cases in whom there is no secondary fever the temperature

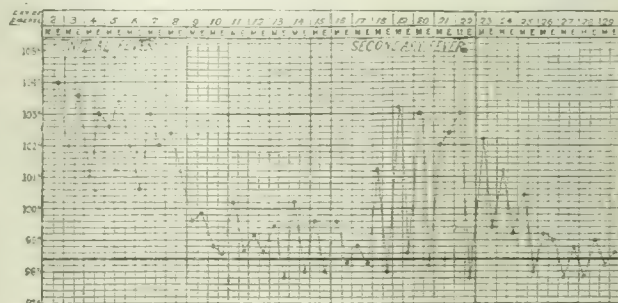


CHART I.

may swing about 99° for a week or more before finally settling to the normal. Chart 1 shows a characteristic fever of relapse.

Course of the Disease.—The first three or four days have been described in the section on the onset of the disease. The jaundice, which has appeared about the fourth day, gradually increases, and is most intense about the tenth to twelfth day. It is then that the temperature falls to normal. In uncomplicated cases the patient begins to improve and the jaundice begins to disappear at the end of the second week. Between the third and fourth weeks

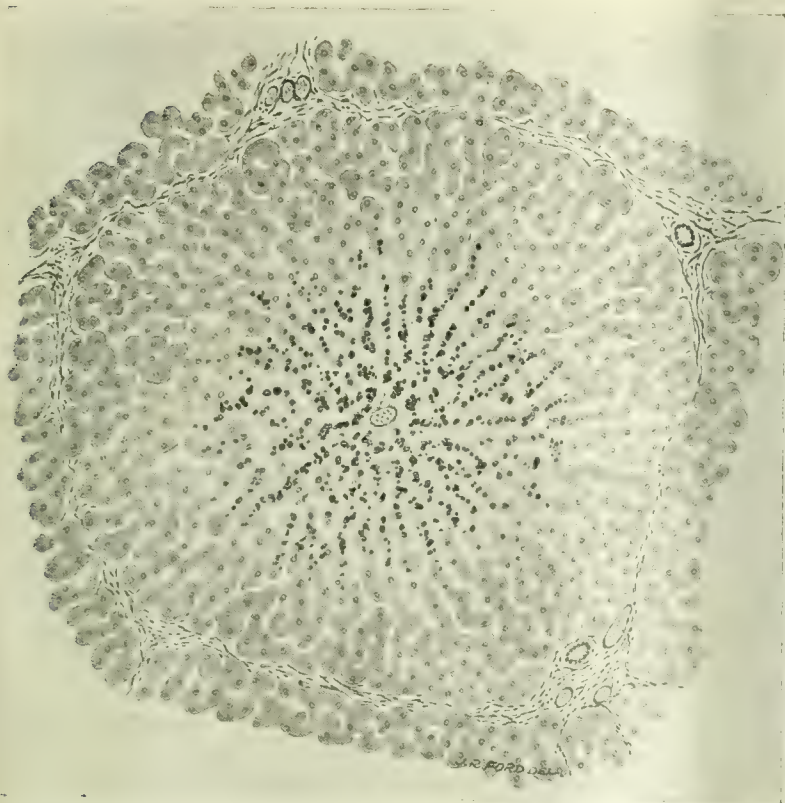


FIG. 1.—Section of liver from a case of spirochaetal jaundice. The liver cells and their arrangement appear normal. It shows biliary stasis and collections of cells in the portal areas.

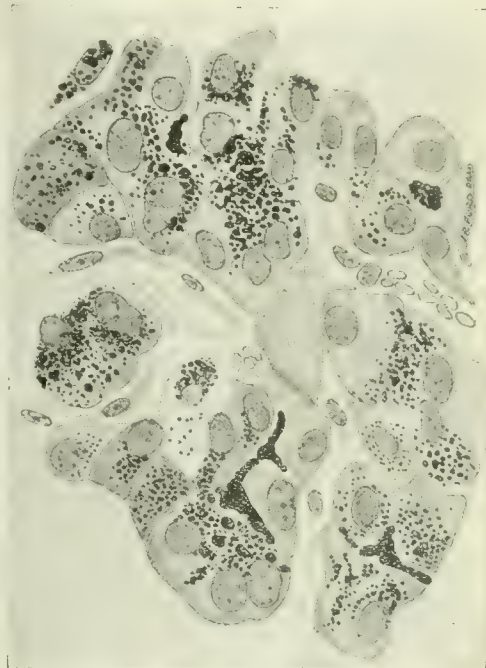


FIG. 2.—Section from the same liver as Fig. 1. (High power.)

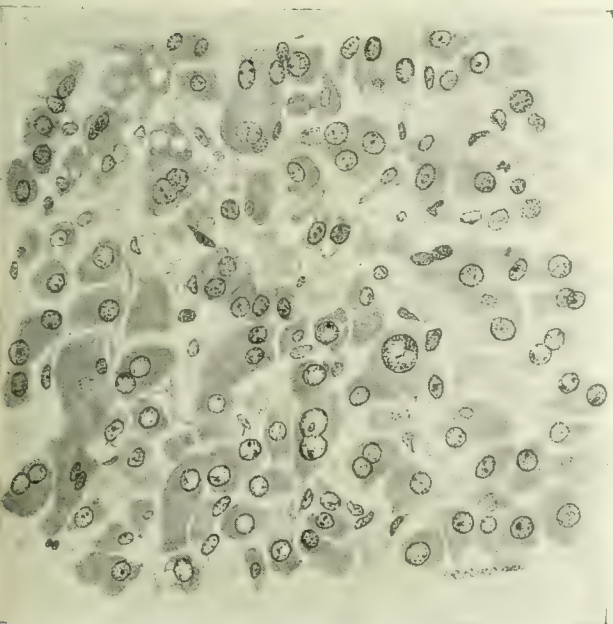


FIG. 3.—Spirochaetes in the blood of a guinea-pig experimentally infected.

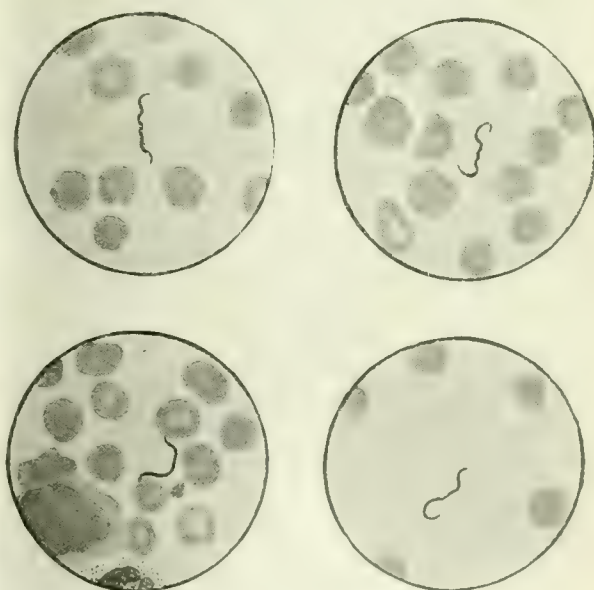


FIG. 4.—Section of liver from a case of spirochaetal jaundice. Showing dissociation of cells.

convalescence has become established. The whole disease is more protracted in severe cases, and convalescence may not begin until the end of the fourth week. As far as we know, the disease leaves behind it no untoward symptoms.

The following is an account of a fatal case:

Pte. C. D. was taken ill with a sudden chill and shivering on December 16th. He had to take to his bed, and complained of headache, nausea, and pains in both thighs. He frequently felt chilly and had pain in the epigastrium. On December 21st he became jaundiced. On this day no abnormal physical signs could be detected in any of the systems, except some epigastric tenderness, jaundice, and a haemorrhagic herpetic eruption on the lips. Vomiting had been occasional from the onset of the illness, and at the end of the first week nothing could be retained in the stomach. After the seventh day the jaundice steadily deepened and the urine was loaded with bile and contained one-sixth of a boiled test tube of albumin. The stools were liquid and of a pale yellow colour.

Except on the first day of admission to a base hospital (fourth day of disease), when the temperature was 101°, there was no pyrexia, and both the pulse and respiration rates fell, to 60 and 16 respectively. There was considerable tenderness of the upper abdomen and the muscles were slightly rigid. The liver was enlarged and the edge extended three fingerbreadths below the costal margin. The spleen was not palpable. An examination of the blood showed 34,100 white cells per cubic millimetre, and the differential count was:

Polymorphonuclear leucocytes	... 93 per cent.
Lymphocytes	... 6 "
Large mononuclear leucocytes	... 1 "

A culture made from the urine was sterile. The faeces showed some blood, but no parasites, no ova, and no organisms of the enteric group were detected.

In the forenoon of December 29th some twitching of the face and arms was noticed, and about an hour later the patient had a general tonic, followed by a clonic convulsion. The patient died one hour after this convulsion. The most noteworthy lesions at the *post-mortem* examination were subendocardial, subpleural, and subperitoneal haemorrhages and large extravasations of blood into both lungs, like infarcts.

PROGNOSIS.

Most cases recover fully, and we would estimate that the mortality is not more than 4 to 5 per cent.

TREATMENT.

Thus far the treatment has been purely symptomatic. During the febrile period the patient is encouraged to drink large quantities of fluid, and an alkaline mixture is usually exhibited. Constipation is combated either by saline purges or by enemata. Salvarsan has been tried, but it is of no avail. We believe that the serum of convalescent patients has been injected into the blood stream of severe cases, but the results of this method of treatment are not in our possession. An antiserum has been prepared and is available for use in the army.

DIFFERENTIAL DIAGNOSIS.

The rôle of the *Spirochaeta icterohaemorrhagiae* in this disease is discussed at some length, and the proof that it is the causal agent is established in a later part of this paper. We may anticipate by here stating (1) that the spirochaete may be found in the human peripheral blood stream; (2) that injection of infected human blood into the peritoneal cavity of the guinea-pig may produce a characteristic fatal illness in that animal, in whose tissues *post mortem* the spirochaetes are present in large numbers; (3) that after the first fortnight of the disease the spirochaete may be found in the patient's urine.

In the early stages of this disease the most rapid and the most certain criterion in diagnosis lies in the discovery of the spirochaete in the peripheral blood stream. As the incubation period of the disease in the guinea-pig is at least six days, it would require a wait of at least eight days before the development of the disease in the guinea-pig could establish the diagnosis. After the second week of illness the discovery of the spirochaete in the urine is sufficient evidence of the disease. These various criteria presuppose the employment of complete bacteriological equipment in the hands of experienced observers. These are not always at hand, and reliance has to be placed on the correct interpretation of the clinical signs and

symptoms. The sudden onset with headache, generalized pains, and a sense of utter exhaustion, vomiting, conjunctival congestion, herpes labialis, and a temperature of 103° to 104°, with jaundice appearing on the fourth or fifth day, make the diagnosis of spirochaetosis icterohaemorrhagica almost certain.

In France the chief causes of jaundice have been the *Spirochaeta icterohaemorrhagiae*, and members of the enteric group of organisms. Jaundice in typhoid or paratyphoid fever usually appears about the end of the second week. There are cases, however, of paratyphoid fever in which the jaundice appears as early as it does in spirochaetosis icterohaemorrhagica. The difficulty in diagnosis is then considerable. At the end of the first week help can be obtained in differentiating the two diseases by means of the atropine test. This test was introduced in the diagnosis of typhoid fever by Captain H. F. Marris, R.A.M.C. One-thirtieth of a grain of atropine sulphate is administered hypodermically, and the increase of pulse rate is recorded every minute for the following hour. If the rate of the heart only increases by ten beats or less, this is evidence that the patient is suffering from typhoid or paratyphoid fever. It is important to bear in mind that the rate of the heart before the injection must not be above 80 to 85 per minute. If the rate increases from 100 to 110 or 115 after the injection of atropine sulphate it is impossible to be certain whether the escape of 10 to 15 beats indicates a positive or negative result. It is rare that the organism can be isolated from the blood in the prevailing enteric group of diseases. In inoculated patients it is necessary to trace the agglutination curve from three to four readings. This means a delay of at least fourteen days after the first sample of blood has been taken.

Apart from these specific methods of differential diagnosis or the presence of a typical clinical picture there can be mere speculation.

Spirochaetal Infection without Jaundice.

It is almost certain that many cases of "P.U.O." in France have been due to the *Spirochaeta icterohaemorrhagiae*, and in the absence of jaundice the difficulty in diagnosis may be great. It is becoming more generally recognized that this same spirochaete may give rise to a clinical picture in which there is an absence of jaundice. The following case illustrates this point.

Sudden onset with body pains, frontal headache, photophobia, and vomiting. Temperature on the first day 104°, pulse 100, and the patient was very ill. The conjunctivae were injected; herpes labialis was present, the spleen was not palpable; the urine showed on heating a thick cloud of albumin, but no bile. Bilious vomiting was persistent for several days.

By the fourteenth day the patient appeared convalescent, but on the twentieth day there was a return of fever and pains, which lasted for five days. After this recovery was slow, but continuous. Nine weeks after the onset spirochaetes were still present in the urine, though health was nearly re-established. At no time was there jaundice or bile pigment in the urine.

On the third day of illness 2½ c.cm. of the patient's blood were injected into the peritoneal cavity of a guinea-pig, which subsequently developed jaundice, and after death spirochaetes were to be seen in the sections of its liver.

For most of this record we are indebted to Captain H. Carson, R.A.M.C.

Costa and Troisier have shown that in certain cases which present meningeal symptoms the cerebro-spinal fluid produces the characteristic disease in the guinea-pig. It is therefore necessary to bear this fact in mind in the elucidation of any case of fever presenting pronounced meningeal signs and symptoms.

It is unnecessary to pursue the differentiation of this disease with jaundice from the common affections of the biliary system associated with jaundice. Nor is it necessary to mention the various febrile diseases which might be confused with spirochaetosis icterohaemorrhagica before the development of jaundice, or with that type of the infection in which jaundice is altogether absent.

CLINICAL PATHOLOGY.

Apart from the finding of the spirochaete in the blood stream and the injection of infected blood into the guinea-pig, which are discussed below, examination of the

peripheral blood reveals the following departures from the normal state. In all severe cases there is a slight anaemia, the average red cell count being 4 to $4\frac{1}{2}$ million per c.mm., and the haemoglobin percentage is reduced to 80 to 90 per cent. Some cases become very anaemic, and in one case the red cells numbered 2½ million per c.mm. There is invariably a leucocytosis, amounting in some cases to 25,000 per c.mm. Differential counts show a relative increase of the polymorphonuclear leucocytes to 75 to 80 per cent.

The fragility of the red cells has been frequently tested and is found to be either normal or slightly diminished. No abnormal red cells have ever been detected. It is certain, therefore, that the jaundice is not of haemolytic origin.

As there was evidence that the jaundice was due to some obstruction in the biliary passages, and as the *post-mortem* examination on two cases suggested an inflammation of the duodenum, attempts were made on many occasions to siphon off the duodenal contents by means of an Einhorn tube. Though no spirochaete was ever detected in the fluid so obtained, the finding of catarrhal cells in large numbers suggested the presence of a duodenitis in some cases.

Many of our cases in whom the spirochaete was discovered were investigated thoroughly from the point of view of the enteric group. The examinations were always negative, both from blood culture and from a study of the agglutination curve.

MORBID ANATOMY.

The opportunities of *post-mortem* examination have been few, and the following account is based on four cases in our own series and the accounts of four *post-mortem* examinations described by Captain Stokes and others. Six patients died on the ninth, twelfth, thirteenth, fourteenth, seventeenth, and twenty-eighth days respectively, and one patient, in whom the date of onset was doubtful, died on the fourth day after admission to a casualty clearing station.

All the bodies were deeply jaundiced with the exception of the case who had died on the twenty-eighth day.

The Stomach and Intestines.—As the jaundice in these cases appeared to be of the obstructive type, special attention was given to the condition of the duodenum, and in three of our cases the appearances pointed to a duodenitis. The mucous membrane was of a bluish-red colour, and the Brunner's glands appeared through the mucous membrane as small yellow, opaque areas, from the size of a pinhead to that of a split pea. The whole of the mucous membrane had a swollen, watery appearance. In these cases the area round the ampulla of Vater seemed to be particularly affected. Other cases did not show this same duodenal condition, and microscopic examination did not give any evidence of recent or old inflammation.

In one case there was a considerable submucous haemorrhage in the stomach, and in another a polypoid condition of the mucous membrane at the pyloric end. Scattered subperitoneal haemorrhages were commonly found over the small intestine. No noteworthy lesions were discovered in the mucous membrane of the small or large intestine in any other case. The omental glands were usually enlarged.

The Liver and Bile Passages.—Particular attention has been given to the naked eye and microscopic appearances of the larger bile passages. These were normal in appearance and showed no evidence of inflammation except in the last half-inch of the common duct lying within the duodenal wall. This was swollen and of bluish colour in resemblance to the duodenal mucous membrane. In one instance a probe passed along the common duct into the duodenum dislodged a formed plug which was impacted in the ampulla. A film made from this plug showed numerous epithelial cell nuclei embedded in a matrix of mucin.

In all cases the liver to the naked eye was normal in pattern and texture, though sometimes altered in colour, due to bile stasis. Microscopically its appearances varied. In one group the cells of the lobules were natural in arrangement and appearance, and, apart from evidence of biliary stasis, the only abnormal feature was the presence of collections of cells in the portal areas, such as occur in other diseases. (Figs. 1 and 2.) In another

group the liver cells were dissociated (Fig. 4), and many were markedly enlarged and contained well-stained nuclei. Collections of such hypertrophied cells, with clear pale protoplasm, appeared, especially just beneath the capsule. Many liver cells contained two nuclei, and mitoses were numerous. Staining with Sudan III showed a very little fat, in the form of fine droplets, which were partly within the endothelium (Kupffer's cells).

The sum of these changes suggests the effect of damage which has been insufficient to cause extensive necrosis, but has acted as a stimulant to cell growth. In addition, the portal areas show collections of small mononuclear cells and polymorphs, and towards the centres of the lobules both intracellular and extracellular granules and masses of pigment were found. These microscopic changes resemble those described by Beitzke and Herxheimer.

In one case there were only slight changes—namely, variations in the sizes of the nuclei, a few mitoses, vacuolation of the central cells of the lobules, and in one place a hepatic venule was filled with a mass of dissociated liver cells mingled with red blood corpuscles. A film made from a scraping of this liver showed one characteristic spirochaete. Stokes in two cases describes an exudation of cells into the interstitial tissue surrounding the smaller bile ducts. He detected leucocytes lying "between the liver columns, and usually between the vessels."

The Kidneys.—Stokes described the lesions in the kidneys under three headings: (1) Swelling and granular degeneration of the tubular epithelium, particularly of the proximal convoluted tubules and the ascending loops of Henle; (2) an exudation of polymorphonuclear leucocytes between the tubules and, more rarely, within them; (3) haemorrhages into the lumen of the tubules in poorly defined patches.

The glomeruli showed no changes in particular.

The Spleen.—In no case was there any enlargement or any sign of involvement of this organ. This harmonizes with the clinical observation that the spleen is not usually enlarged in this disease.

The pancreas was firm and to naked eye and microscopic examination was perfectly normal.

The Lungs.—In all our cases there were haemorrhages in the lungs, in two cases reaching the size and consistence which is met with in cases of mitral stenosis. There was nothing noteworthy in any of the other organs of the body. Stokes showed the presence of the spirochaete in the kidney in one of his cases. In no other morbid human tissue has he or have we been able to detect it.

EXPERIMENTAL PATHOLOGY.

I. HISTORICAL.

It is to the Japanese workers Inada and Ido that we owe the discovery of the *Spirochaeta icterohaemorrhagiae*. In November, 1914, they announced the discovery of a spirochaete in the liver of a guinea-pig which had developed jaundice and died as the result of the inoculation of blood from a case of jaundice, epidemics of which they were investigating in conjunction with Hoki, Kaneko, Ito, and Matsuzaki. This finding they were able to repeat, the spirochaete being found in the liver and blood of the infected animals in large numbers. The infection was shown to be transmissible from animal to animal. Later these Japanese workers were able to demonstrate the specificity of this spirochaete, the finding of it in the patient's blood in six cases, in the tissues in two fatal cases, and the discovery of protective substances against it in the serum of patients recovering from the disease putting this question beyond doubt. Similar findings were announced by the German workers Hübener and Reiter, Uhlenbuth and Fromme, and Beitzke, obtained by them during investigations of the jaundice epidemic amongst their troops. No mention, however, is made by them of the Japanese work. The researches of Stokes, Ryle and Tytler, Dawson and Hume, on the British front, and later those of Martin and Pettit, Garnier and Reilly, Costa and Troisier in the French army, have shown that a similar type of jaundice is epidemic on the Western front, findings corresponding with those of the Japanese having been obtained.

II. EXPERIMENTAL INOCULATION.

Attempts to reproduce this condition in animals have shown that the guinea-pig is the animal of choice, the monkey and rabbit being more or less immune, whilst the

mouse and white rat occupy an intermediate position. The guinea pig can be infected by the intraperitoneal injection of the patient's blood or urine. In the case of blood, success can only be looked for with any degree of certainty if it is taken early in the disease—fourth or fifth day—and though the blood may still be infective as late as the seventh, eighth, or ninth day, later than that period the results are almost always negative. The intraperitoneal injection of 3 to 5 c.cm. of blood gives the most satisfactory results. As regards the infectivity of the urine for the guinea-pig, some difference of opinion seems to exist. The Japanese authors claim that the patient's urine is infectious for the animal early in the disease, and as in the case of the blood, this diminishes as the disease progresses. They have, however, had positive results as late as the twenty-first day. On the other hand, Garnier and Reilly claim that it is only from the tenth to eleventh day onwards that the urine is capable of infecting the guinea-pig, that is to say, from the time the spirochaete can first be demonstrated in the urine microscopically, and that earlier in the disease the results of their experiments have been consistently negative. Stokes's attempts in this direction were on no single occasion attended with success, despite the fact that the centrifugized deposit from large quantities of urine was employed and the attempts were made at various periods of the disease. Our experiments, though few in number, were negative.

The Disease in the Guinea-pig.

The disease in the guinea-pig is characterized by jaundice, haemorrhages, conjunctival congestion, albuminuria, and pyrexia. It is nearly always fatal. The incubation period in the animals injected with the patient's blood is somewhat variable—from six to thirteen days. Stokes quotes a case in which it would appear to have been as long as eighty-six days. After several passages of a strain the incubation period is gradually reduced until it reaches a point where it remains more or less constant, between four and five days. The mode of inoculation naturally affects the incubation period, it being longer when the infectious material is injected subcutaneously. The disease is ushered in by a sharp rise in temperature, the animal is quiet and refuses to eat. A temperature of 103° F. is the rule, though it may rise to as much as 106° F. Jaundice appears when the temperature has reached its maximum, the animal becomes more acutely ill, and usually twenty-four hours after its appearance we have a fall of temperature to subnormal, collapse, and death. Spirochaetes appear in the blood with the onset of pyrexia (Fig. 3), and can be demonstrated in the urine *ante mortem*. Conjunctival congestion is usually present, skin haemorrhages and haematuria are not infrequent.

Blood Changes in the Guinea-pig.

Anaemia towards the end of the disease in the animal, according to Stokes, is marked and accompanied by a fall in the leucocyte count. Our observations, though few in number, do not bear out this statement, a moderate degree of anaemia only, and a polymorphonuclear leucocytosis with a total white count of from 18,000 to 25,000 being noticed. These findings bear out those of Dawson and Hume in this disease in man, a moderate polymorphonuclear leucocytosis being a constant feature. Apart from a certain degree of polychromasia, we have not found any changes on the part of the red cells.

Pathological Changes in the Guinea-pig.

The findings in guinea-pigs which have died of the disease, or which have been killed after the appearance of the jaundice, are characteristic. We have jaundice of varying intensity of the skin and all internal surfaces. As a rule the jaundice is marked, but occasionally, as in man, one meets with cases which show little or none. This is, however, a rare occurrence. Fine petechial haemorrhages are seen in the skin, subperitoneally and in the muscles, particularly those of the thighs and abdominal walls. The loose areolar tissue of the groins, axillae, and cervical regions shows haemorrhages of varying size, and the lymph glands in these regions are enlarged and frequently haemorrhagic. The post-peritoneal tissue also shows numerous haemorrhages, particularly in the region of the kidney, that organ being frequently surrounded by a layer

of free blood. The small bowel is usually congested, and in the larger percentage of cases shows numerous subserous haemorrhages usually elliptical in shape. On opening the gut it is occasionally noticed that the duodenum, particularly in its upper portions, is more congested and the mucosa more swollen than the rest of the small intestine. This same fact was drawn attention to by Dawson and Hume. The large bowel may show little or nothing, or it may be the site of areas of haemorrhage, which vary from clusters of pin-point haemorrhages to areas 0.5 to 1 cm. in diameter, which suggest the commencement of ulcer formation.

The kidneys are acutely congested and show minute haemorrhages, subcapsular and throughout the cortex. The suprarenals are usually the site of large haemorrhages, as is the case in any acute toxæmia in the guinea-pig. The liver, as a rule, shows no macroscopic changes. The spleen is congested, friable, and in the majority of our cases showed distinct enlargement, though Stokes describes it as "not obviously enlarged." The epididymis and testicle may also show haemorrhages. The lungs show the most characteristic changes in the shape of multiple clear-cut haemorrhages, varying in size from that of a pinhead to a threepenny-piece, and giving rise to that appearance which the Japanese authors very happily describe as being like "the wings of a mottled butterfly." As pointed out by Stokes, the larger haemorrhages are usually confined to the lower lobes and may be arranged symmetrically along the lateral margins of them. He also draws attention to the fact that these haemorrhages in the lungs and intestine are of early appearance, having been noticed by him in animals killed twenty-four hours after injection. The heart, as a rule, shows nothing, but, as in the case of other viscera, it is sometimes the site of small haemorrhages.

Pathological Histology.

Liver.—The changes seen in the liver may vary from cloudy swelling to acute parenchymatous degeneration, small prescribed areas of cell necrosis sometimes being found on section. According to the Japanese, the biliary ducts show no congestion, but Stokes describes an inflammatory process about the smaller bile ducts with a leucocytic infiltration of the affected areas—a pericholangitis—and to this he is inclined to attribute the jaundice.

Kidney.—This organ shows those changes characteristic of an acute parenchymatous nephritis. The tubular epithelium shows degenerative changes, in many cases both marked and extensive. There is a leucocytic infiltration of varying degree around the affected tubules, and not infrequently the affected tubules in places are packed with leucocytes. Haemorrhages occur throughout the cortex and many tubules are seen to be filled with red cells. These degenerative processes fall chiefly on the proximal convoluted tubules and the thicker portion of the loop of Henle, the glomeruli as a rule not being markedly affected.

Suprarenals.—Almost invariably these organs are haemorrhagic, and in acute cases they show haemorrhages involving practically the whole of their structure. The haemorrhages apparently originate in the medulla.

Lymphoid Tissue.—The spleen, lymph nodes, and Peyer's patches all show congestion and some endothelial proliferation. The spleen shows evidence of increased blood destruction, the sinuses being packed with macrophages containing red cells; free pigment and leucocytes are also present. The lymph glands occasionally show haemorrhage, and the Peyer's patches are usually surrounded by haemorrhage in the form of a thin layer of free blood, and also show extravasated blood throughout the lymphoid tissue.

Lungs.—The haemorrhages in the lungs are seen to be pyramidal in shape, with their base lying against the pleura. They are frequently limited by the boundaries of the lobule. The vessels leading to these areas of haemorrhage are frequently seen to be packed with leucocytes, and Stokes describes cases in which thrombi have been noticed in these vessels, though he does not consider the evidence sufficient to attribute the haemorrhages to these thrombi.

Distribution of the Spirochaete in the Guinea-pig.—The spirochaete lives and multiplies in the blood stream and in various organs. It is usually extracellular, and when

present in the tissues it is found in the interstitial tissue, or more rarely in the endothelium or in the phagocytic cells. In the guinea-pig, unlike the case in man, it is found with ease in the blood of the jaundiced animal, especially in the case of a strain which has gone through several animal passages and kills the animal rapidly. The liver contains the spirochaete in great numbers, and it is sufficient to make a smear from a portion of this organ to have a preparation showing a dozen or more spirochaetes per oil-immersion field. In stained sections the spirochaetes are seen to be numerous and extracellular for the most part, forming when very numerous a sort of garland round the individual cells. After the liver, the kidneys and suprarenals contain the largest number of spirochaetes. In the kidney they occur in the interstitial tissue between the tubules and also in the walls and lumen of the tubules themselves. Unlike the case in the liver, their distribution in the kidney is by no means general but is limited to areas, where, however, they are numerous. Although comparatively numerous in the blood stream, the spleen and bone marrow contain few. The lymphoid tissue (splenic follicles and lymph glands) also shows but few spirochaetes, and in the lungs, heart muscle, striated muscle and arterial walls they are rare. They are numerous in the urine from the commencement of the jaundice. Though the foregoing description of the distribution of the spirochaete in the diseased guinea-pig is true for the majority of cases, one occasionally meets with animals in which the spirochaete is only found with difficulty. It may be stated as a general rule, however, that those animals showing the most marked lesions contain the most spirochaetes.

Mode of Excretion.—In the guinea-pig the spirochaete is excreted in the bile, faeces, and urine, though it is only in the latter that it is with any ease demonstrated microscopically. The Japanese workers have shown, however, that all three are infective for the guinea-pig, their experiments with the bile of infected animals giving a greater percentage of successful results than those with the faeces and urine, despite the fact that on no single occasion were they able to demonstrate the spirochaete microscopically in it.

Technique of Transfer.—The disease can be transmitted from animal to animal most surely by employing the heart blood or the emulsion of liver of a diseased animal. Inada states that he found the former, injected in quantities of 2 c.cm., the most satisfactory, but our findings and those of Stokes would point to the emulsion of liver being the more certain of the two. In the case of the heart blood all that is necessary is to collect the blood with the usual precautions as regards sterility and to inject it intraperitoneally into the fresh guinea-pig. If the liver emulsion is to be employed, the liver is removed as rapidly as possible after opening the animal, using the greatest possible care to avoid contamination, and is placed in a sterile vessel, where it is roughly ground up with a small quantity of normal saline. The resulting emulsion is then rapidly centrifuged to throw down the lumps of liver tissue, which would block the needle, and the fluid so obtained injected intraperitoneally or subcutaneously. The employment of a large-bored needle will be found advisable, and in all cases where a possible contamination is suspected, such as invasion of the liver tissue by bacteria *post mortem* should the animal have been dead some little time, the subcutaneous route for inoculation is the one of choice. In a like manner an emulsion of any other organ containing the spirochaete, such as the kidney or suprarenal, could be employed. Besides the subcutaneous and intraperitoneal methods of inoculation which are employed as a rule owing to their simplicity, the guinea-pig can be infected by way of the mouth, feeding the animal on food soaked in liver emulsion, by applying the virus to one of the available mucous surfaces, and by smearing it on to the shaved skin.

III. MORPHOLOGY.

Microscopical Appearance.

This organism is fairly pleomorphic, and varies in length from 4μ to 25μ , with an average length of 8 to 9μ . Its thickness varies with the staining method employed, but the Japanese workers are of the opinion that it is probably about 0.25μ . The ends are sharp and pointed, and are in most cases hooked, not uncommonly both ends being bent to the same side in the form of a letter C, or one end is

bent in an opposite direction to the other, giving the parasite an S-shaped form. The spirochaete, unlike *Treponema pallidum*, shows irregular undulations usually composed of 2 to 3 large or 4 to 5 smaller waves. This is not always the case, Martin and Pettit pointing out that occasionally one comes across forms in which the waves are more numerous and more regular, the parasite approaching more the form of *T. pallidum*. In the blood the spirochaete conforms to the typical form, except in those severe infections where it is very numerous, and then one meets with parasites bent in the form of a ring or twined one about another. On the other hand, the forms met with in the liver vary much in shape and length. One sees straight forms, others bent at one end only, giving the parasite the appearance of a note of interrogation, and again others showing round or oblong granules, 3 to 4 in number, staining a deep purple with Giemsa. Still larger granules may sometimes be observed projecting from the body of the spirochaete—the so-called “lateral bud” of the spirochaete already described in the case of other varieties—the significance of which is not apparent. Degenerative forms are also met with which are thick, devoid of waves, and blunt at the ends. Flagella were not described by the Japanese, but Martin and Pettit and Vaudremer in a recent publication describe flagella, which they have been able to demonstrate by Löffler's and Van Ermengem's staining methods. These are terminally placed, and vary in number and length. Further, they have been able to show that the flagellum ends in a small circular knob, the significance of which has yet to be elucidated.

Staining Methods.—Unstained in a hanging drop preparation, the spirochaete is invisible with the ordinary microscope except when very numerous, and even then its presence is detected only with the greatest difficulty.

Dark-ground Illumination.—By this means the spirochaete can be readily studied. It is not nearly so refractile as *T. pallidum*, and its movements are much more sluggish. As a rule it remains motionless, or is simply carried across the field by the currents set up between the slide and cover-slip. It is, however, capable of lashing movements of the extremities, the centre portion of the parasite remaining rigid, or it may show twisting worm-like movements.

Dried Smears.—Smears of blood, tissues, or urine sediment can be readily stained by Giemsa, Leishman, Tribondeau, or a rapid silver impregnation method such as Fontana. With Giemsa, after a preliminary fixation with methyl alcohol, absolute alcohol, or osmic acid, the preparation is stained for two hours with a mixture of 20 drops of stain in 10 c.cm. of water. Generally speaking, when the leucocytic granules are deeply stained, the spirochaete will be found to be stained. With Leishman, after the preliminary fixation for one minute with undiluted stain, the diluted stain is allowed to act for thirty minutes. This gives quite satisfactory results, and though not deeply stained the spirochaete is readily visible. Coloured by these methods, the spirochaete has a pinkish-purple tint. Burri's Indian ink method and similar processes give us a rapid and satisfactory means of demonstrating the spirochaete in smear preparations, but perhaps the most satisfactory of all is that of Fontana, which consists of staining the preparation with an ammoniated silver nitrate solution after a preliminary mordancing with 5 per cent. aqueous solution of tannic acid.

Staining of Sections.—The most satisfactory staining process for sections will be found to be the older Levaditi method.

Staining of Flagella.—For this purpose the methods of Löffler and Van Ermengem both give satisfactory results. The following are the directions given by Martin, Pettit, and Vaudremer:

(a) **Löffler.** Fix in ether-alcohol. Cover the preparation with Löffler's fuchsin ink and heat gently, stopping the heating as soon as the preparation commences to steam. Wash in distilled water, and then three times with absolute alcohol. Stain with alkaline aniline gentian violet, warming gently. Wash in distilled water and dry.

(b) **Van Ermengem.** Follow the classical technique, but in place of Ziehl's carbol fuchsin stain the preparation with alkaline aniline gentian violet, diluted so as to obtain a background not too deeply stained.

IV. CULTIVATION EXPERIMENTS.

The first successful attempts to cultivate the spirochaete were those of the Japanese Ito and Matsuzaki,

Starting from the infected guinea-pig, the spirochaete was obtained in pure culture by the method of Noguchi, guinea-pig kidney replacing that of the rabbit usually employed. The cultures were covered by a layer of liquid paraffin. The best results were obtained at a temperature of 22° to 25° C. They noticed that growth commenced in from three to seven days, or rarely after a delay of as much as two weeks, that the first generation lived for three to six weeks, and that the lives of the succeeding generations were rather shorter. Since then they have succeeded in growing the organism on various different media, solid and liquid—blood agar and gelatin, human serum, diluted ox serum and ascitic fluid. Martin and Pettit in repeating this work have been unable to obtain cultures on solid media, but, however, have been successful with various liquid media. The most satisfactory they found to be diluted rabbit serum (1 in 5 of normal saline), and diluted ox serum (1 in 9 of normal saline), without the addition of pieces of tissue, but merely covered with a layer of liquid paraffin. The organism grows well at a temperature of between 25° and 32° C., refusing to grow at 37° C. or only after acclimatization. The cultures are inoculated with the heart blood or emulsion of liver of a jaundiced guinea-pig which has been preferably killed and not allowed to die of the disease. The cultures remain clear, any cloudiness or turbidity being an indication of contamination and of failure because the spirochaete refuses to grow, or only shows feeble growth in the presence of other organisms. The cultures are without odour and ascitic fluid remains uncoagulated. In culture the spirochaete is evenly distributed throughout the media, and is shorter and more active than when seen in the tissues. Occasionally one sees several spirochaetes intertwined together in the form of a rosette, and here and there individuals of exceptional length. As the culture becomes older the organism becomes less active, and degeneration forms make their appearance. Subcultivation should be practised when growth is at its height, that is, when spirochaetes are numerous and active. The cultures are capable of reproducing the disease in the guinea-pig, and their virulence is maintained up to the twenty-second day.

V. MODE OF SPREAD OF THE DISEASE.

In their first communication the Japanese authors expressed the opinion that infection occurred through the skin or by the mouth. As was shown by them, the spirochaete is excreted chiefly by way of the urine, which provides a ready means for the dissemination of the virus. They had noticed, also, that epidemics of jaundice occurring in mines were confined to "wet" mines, and that if in a mine the cases came from one particular portion, that portion of the mine was invariably a flooded one. The animal experiments performed by them showed that the guinea-pig could be readily infected by way of the mouth, or by simply applying the infectious material to the shaved skin, abraded or intact—five minutes' contact being sufficient for infection to have taken place. Knowing these facts it seemed probable that in these epidemics, in the mines at any rate, the water having been contaminated by urine the spirochaete gained entrance to its new host via the skin or by the mouth. This was further borne out by the fact that when the flooded portions of the mine were pumped dry the incidence greatly decreased. In the communication of Stokes, Ryle and Tytler attention is drawn to the fact that the cases of jaundice occurring in this sector of the line came almost exclusively from one or two portions of the front line trench, and that as soon as the units were moved out of these particular trenches they ceased to have cases of jaundice, and in a similar manner fresh units moving into them, who had had no cases up to that time, almost immediately commenced to develop them. These portions of trench when compared with the rest of the line were distinguished from the remainder by always being in a very wet condition, it being impossible to drain them properly. In their first paper the Japanese discussed the possibility of biting insects, such as the flea or mosquito, playing a part in the spread of the disease from man to man, but concluded that the smallness of the numbers of the spirochaetes in the peripheral circulation made it very doubtful. Stokes also undertook experiments with a view to finding out if the body louse, so common amongst the troops, could be incriminated. When one considers, however, how general

the distribution of the louse is, and how localized the areas from which cases of jaundice come, this does not seem probable. His experiments proved negative. In a recent communication the Japanese state that they have been able to show the presence of the spirochaete in 38 per cent. of the field rats coming from areas in which jaundice was epidemic, and they suggest that the infection may be conveyed by the rats' urine directly or indirectly. Stokes has been able to confirm this finding, six out of fifteen rats caught in these areas in which jaundice was endemic having been shown to contain the spirochaete in the kidney capable of producing the disease in the guinea-pig. It would appear, therefore, that the rat acts as a reservoir for the infective agent, spreading the disease by means of its urine directly or indirectly, and that infection is further spread by the patient's urine and faeces.

VI. IMMUNITY.

The Japanese in their first paper pointed out that the blood of convalescent patients contained protective substances capable of neutralizing the virus *in vitro*, and of protecting the guinea-pig against infection. This substance is first demonstrable in the blood serum after the tenth day of illness, but, as a rule, is not found before the fifteenth to the twentieth day. This immune substance persists in the blood for a long time, the Japanese authors quoting two cases in which it was detected at the end of five and a half years. It is specific, and is not present in the serum of healthy persons, nor in the serum from cases of jaundice of other origin.

The immune substances can be demonstrated by the reaction of Pfeiffer, the results of the experiment being confirmed by the subsequent condition of the guinea-pigs, the control animal developing jaundice and dying, while the other which received the virus and the patient's serum remains unaffected. They also showed that this substance was endowed with curative properties, the diseased guinea-pig being cured by an injection of the patient's serum if it was administered before the onset of jaundice. These facts have been confirmed by the French and by Stokes, the latter having shown that even after the appearance of jaundice the guinea pig can be cured, provided the serum is injected before the collapsed stage is reached. In view of these facts, the Japanese have prepared an antiserum by immunizing a horse, and report encouraging results from the employment of this serum therapeutically. The French also are preparing an antiserum, but so far have published no results of its application in the disease.

Attempts have also been made to demonstrate immune bodies in the patient's serum by means of the reaction of the fixation of complement. As antigen an emulsion of liver rich in spirochaetes was employed. Stokes reports negative results with this reaction, and, while Martin and Pettit state that it was positive in the five cases in which it was tried by them, they at the same time admit that a strongly syphilitic serum gave a positive result also.

The serum of the patient, according to Garnier and Reilly, does not agglutinate the spirochaetes, whereas the Pasteur Institute serum agglutinates them readily, the spirochaetes losing their mobility and running together into clumps.

VII. BACTERIOLOGICAL DIAGNOSIS.

Direct Examination of the Blood.

Owing to the shortness of the period during which the organism is to be found in the circulation and the smallness of its numbers when present therein, the direct examination of blood smears for the spirochaete is of little value as a practical method of diagnosis. However, in the early stages of disease (up to the seventh day) it is sometimes possible to demonstrate the spirochaete in this manner, and, seeing that it requires little time or trouble, it is worthy of trial. The blood may be examined by means of the ultra-microscope; blood smears may be stained by Giemsa, Leishman, and Fontana, or preparations made with Burri's Indian ink method.

Animal Inoculation.

The reproduction of the disease in the guinea-pig by the injection of the patient's blood or urine is undoubtedly the most satisfactory and convincing diagnostic test we at present possess, but unfortunately, owing to the fact that it is only in the early stages of the disease that the blood

is infective and that the infectivity of the urine is a very variable quantity, this method of diagnosis as a practical measure has its limitations. In the early days of the disease, up to the seventh or even ninth day, one, or preferably two, guinea-pigs should be inoculated intraperitoneally with 3 to 5 c.cm. of the patient's blood. Injection of larger quantities of blood is of itself sufficient frequently to kill the guinea-pig. In a positive case, after an incubation period of from six to twelve days, the animal develops the disease and dies, showing the characteristic changes already described. Similarly, in the early days of the disease the injection of the urine into the guinea-pig should be done, and even after the blood has ceased to be infective and the case is well advanced, it is perhaps worthy of trial, because, as shown by Garnier and Reilly, positive results may be obtained as late as the twenty-eighth day. These workers inject the centrifugalized deposit from 40 to 60 c.cm. (occasionally as much as 150 to 250 c.cm.) of recently passed urine, suspended in 5 c.cm. normal saline. Naturally all precautions as regards sterility must be observed in the collection and centrifugalization of the urine.

Examination of the Urine for *Spirochaetes*.

As pointed out by the Japanese, the spirochaete is eliminated chiefly by way of the kidney, and from the ninth day onwards can be demonstrated microscopically in the urine. At first it appears in the urine in small numbers only, the number gradually increasing to a maximum reached about the thirteenth to fifteenth day of disease, to diminish again and finally disappear from the urine about the fifth or beginning of the sixth week of illness. Should, therefore, a case of jaundice present itself too late in the disease to make the injection of the guinea-pig with the blood of no use, and should the injection of a guinea-pig with the urine have proved negative, the demonstration of the spirochaete in the urine gives us valuable information as to the cause of the jaundice. The procedure is simple and is as follows: The urine is collected in a sterile vessel and 50 c.cm. or so centrifuged. The deposit so obtained is washed with distilled sterile water and recentrifuged and smears made with the final deposit. Preparations can be made by the Indian ink method, Harrison's collargol method, or with a 2 per cent. aqueous solution of Congo red, treating the smear so obtained with 1 per cent. HCl in alcohol, as recommended by Benians. These methods have the advantages of rapidity and simplicity, but in our opinion the best is the staining of dried smears by the method of Fontana. Should, therefore, the urine of a case of jaundice, examined in this manner towards the end of the second or beginning of the third week, show the presence of numerous spirochaetes having the morphological characters of the *Spirochaeta icterohaemorrhagiae* already described, and should the case have been proved negative for the enteric group by blood culture, examination of stools and urine for bacilli or by agglutination, there is little doubt that the case in question is one of spirochaetosis. It must be borne in mind, however, that it is not sufficient to examine the urine on one occasion only, but several examinations at intervals of two to three days may be necessary before the spirochaete is found. Even then, as pointed out by Stokes, we may fail to find the spirochaete because it is to be expected that in mild cases the numbers excreted will be small, and the period during which they are to be found in the urine transient. It cannot be claimed, however, that this method of diagnosis has the same value as the production of jaundice in the guinea-pig as there are certain obvious sources of error. These are the limitation of the microscope when used alone to determine the species of micro-organism with which one is dealing and the presence of other bodies in the preparation resembling spirochaetes liable to mislead an inexperienced observer. The latter error should not be made by a skilled worker, and though the examination by us of control urines from cases of scarlet fever, measles, lobar pneumonia, typhoid and paratyphoid fever have occasionally revealed the presence of spirochaetes, this has been of rare occurrence, and in no case did these spirochaetes or spirilla bear any morphological resemblance to the *Spirochaeta icterohaemorrhagiae*. We have, therefore, concluded that in a case of jaundice the clinical symptoms of which point to spirochaetosis, which has been proved negative to the enteric

group, and in the urine of which spirochaetes with the morphology of *Spirochaeta icterohaemorrhagiae* have been found, one is in possession of a chain of evidence warranting the diagnosis of spirochaetal jaundice.

Immunity Reactions.

1. *Reaction of Neutralization*.—This reaction, already referred to under the heading of immunity, can be made use of in diagnosis. It suffices to mix a toxic dose of virus (liver emulsion) with 1 to 2 c.cm. of the serum from the case in question and to inject it into a guinea-pig intraperitoneally. The control animal receives the virus alone. If the case is one of spirochaetosis, the guinea-pig remains unaffected, the control animal dying with the characteristic *post-mortem* changes; on the other hand, if the case were not one of spirochaetosis, both animals would develop jaundice.

2. *Fixation of Complement*.—It would not appear that, in our present state of knowledge, this reaction would be of much service in diagnosis. Martin and Pettit report positive results, however, in the five cases in which it was tried by them, but the value of these results was somewhat detracted from by the fact that a strongly syphilitic serum gave a positive result as well with their antigen.

CONCLUSION.

It would seem to be proved that there is in the armies in France a type of infective jaundice which is the same in clinical and pathological features as that described by the Japanese workers, and that this disease is caused by the *Spirochaeta icterohaemorrhagiae*. And there is also undoubted proof that this same spirochaete may cause a similar train of symptoms without the appearance of jaundice.

A complete bibliography is appended, and to the authors of the various publications we acknowledge our debt.

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A Clinical Lecture

ON

SOME NOSE AND THROAT DISEASES
OF CHILDHOOD.DELIVERED IN THE ROYAL HOSPITAL FOR SICK CHILDREN,
EDINBURGH.

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HOSPITAL FOR SICK CHILDREN, EDINBURGH.*Adenoids and Enlarged Tonsils.*

LIGHTNING diagnosis is seldom a satisfactory proceeding, but here is a patient whom one is tempted to label at once without further examination. Look at the little girl and note her open mouth, her projecting upper lip, her narrow pinched nostrils and her vacant look. There you have an excellent illustration of the so-called adenoid facies.

The facial expressions of disease were carefully studied by the physicians of last century, but, like the "temperaments," they nowadays receive scant attention. Facial appearances are still worth studying, especially in children, but I would warn you that the adenoid facies is not invariably diagnostic of adenoids. A few weeks ago a boy of 7 was sent to the department to have adenoids removed. Although he had the adenoid facies, I found neither adenoids nor enlarged tonsils. He had, however, a crumpled and deflected nasal septum, obstructing both nostrils, the legacy of a previous injury. Some of you may have seen in Dundas Ward the expressionless child with open mouth and protruding tongue. That child originally came to the throat department. She has no adenoids, but is an example of the Mongol type of idiot. On the other hand, very many children suffering from adenoids show not the least trace of their complaint on their faces.

A certain amount of adenoid tissue is present in the nasopharynx of every child, and between the ages of 2 and 10 it is very liable to hypertrophy. Over 90 per cent. of the children brought to the ear and throat department here are sufferers from adenoids, and the frequency of adenoids among children of school age has been estimated by various authorities at 30 to 40 per cent. The symptoms are very varied. The mother tells you that the child cannot breathe properly, that he snores at night, that his speech is "thick" and muffled, that he continually suffers from colds, that he complains of earache, or that he is backward at school. Epistaxis is also a common symptom.

Many of those children also suffer from enlarged tonsils. If you find the tonsils enlarged there is no need to put your finger into the nasopharynx. Adenoids are certainly present in such a case. You may, however, have large adenoids with tonsils of normal size.

A flow of white gummy mucus from behind the soft palate is often a sign of adenoids, and if you are fortunate you may catch a glimpse of the growths in a post-nasal mirror. By attention to those points one may avoid the disagreeable procedure of palpating the nasopharynx, for which no child will ever forgive its doctor.

On the subject of enlarged tonsils little need be said, but it may be well to remind you of their remote effects. In every child suffering from enlarged tonsils the tonsillar gland is palpable behind the angle of the jaw. This is a significant fact, and the important point to remember is that the tonsils and associated adenoids should be removed before the tubercle bacillus gains admission to the gland through the diseased tonsil. Never forget, therefore, to attend to the tonsils in all cases of enlarged cervical glands.

There is another common disease of childhood which should always lead one to examine the tonsils and that is rheumatism. Some time ago I removed the tonsils of a small boy who was having repeated attacks of "growing pains." One tonsil contained a small abscess the size of a pea. There have been no further attacks of pain since the operation, and I could multiply instances of this nature.

How, then, is the operation to be performed? I beg of you to study the method carefully, for one so often sees cases in which tonsils and adenoids have been incompletely removed. After a thorough operation there is no such thing as recurrence.

Nowadays we prefer to "enucleate" the entire tonsil in its capsule, using a guillotine, of which there are many suitable patterns on the market, and then to clear out the adenoids by means of a curette with a square opening, such as StClair Thomson's. Delstanché's or Gottstein's curettes, which have a triangular opening, are not nearly so effective.

A guillotine which I frequently use when it is important to minimize hæmorrhage is Elphick's hæmostatic guillotine. It is furnished with a crushing blade, which clamps the vessels before the cutting blade is driven home. If complete hæmostasis is desired the clamp may be left on the tonsil stump for several minutes, but, of course, in that case C.E. mixture should be given, as ethyl chloride anaesthesia will not allow sufficient time.

I may summarize as follows the main points in the tonsil and adenoid operation:

Having administered ethyl chloride, introduce the guillotine with its upper surface towards the tonsil, thread it over the tonsil, and dig the point of the instrument well in behind the tonsil, then lever the tonsil forwards so as to produce a swelling on the palate; press upon this swelling with your left thumb, thus forcing the tonsil through the ring of the guillotine. Lastly, drive home the blade and withdraw the guillotine with its lower surface, carrying the tonsil, uppermost.

After removing the tonsils, hook the curette well up behind the palate and shave off the adenoids with a downward sweep.

Foreign Bodies in the Air Passages.

A child was brought here by her mother, who thought she had adenoids. For six months the little girl had been suffering from nasal obstruction and attacks of coughing and sneezing. Observing that the discharge and obstruction were unilateral, I suspected a foreign body, and with some difficulty removed a boot button from the left nostril. Such cases are not uncommon, and the tolerance of the nasal mucosa is rather remarkable. Last year, in France, I removed a fragment of shrapnel from the nasal cavity of a soldier, who had been wounded eighteen months before. It was embedded in the middle turbinal, and the man was unaware of its existence.

When we come to consider the question of foreign bodies in the lower reaches of the respiratory tract—the larynx, trachea, and bronchi—we find that we are dealing with conditions of a much more serious nature.

A great stimulus was given to the study of the subject by the introduction of direct methods of examination. By means of Bruning's and Jackson's tubes we may now inspect the entire tracheo-bronchial tree, and the procedure has been further facilitated by the introduction, by Killian, of suspension-laryngoscopy. The manipulations, however, are difficult, and demand much patience and long practice.

The situations in the air passages in which foreign bodies are most commonly found are the larynx and the right bronchus.

As regards the larynx, it is well to bear in mind that there may be no history of foreign body, but the child may be thought to be suffering from diphtheria or simple laryngitis. This was the case with a boy aged 9, who was admitted to this hospital some months ago. He was kept under observation for a few days, during which time he suffered from dyspnoea, hoarseness, and pain in the larynx. The x-ray photograph showed a distinct shadow in the laryngeal region opposite the fifth cervical vertebra. Direct laryngoscopy was then attempted, and the foreign body, which lay just below the vocal cords, grasped with long forceps; but it was found to be so very firmly impacted that it could only be slightly displaced. Unfortunately, this displacement caused complete obstruction of the airway, and tracheotomy had to be performed. The tracheotomy wound was enlarged and the cricoid cartilage divided, so that the foreign body, which turned out to be a sharp-edged piece of meat bone, could be easily withdrawn. The boy was very ill for several days, but eventually made a good recovery.

When a foreign body passes the larynx it usually lodges in the right bronchus, which, as you may remember, is not only wider than the left bronchus but lies in a more direct line with the trachea.

Bronchoscopy is by no means an easy operation, but if the foreign body be allowed to remain it will almost

certainly set up septic bronchitis and abscess of the lung. Should the direct method be unavailable, tracheotomy had better be performed, as this operation has been proved to have a favourable influence on the mortality rate. Not infrequently the foreign body is coughed out through the tracheotomy wound.

Occasionally children are brought to the hospital who are said to have swallowed some foreign body, usually a coin, and radiography reveals its presence in the oesophagus. There may be no symptoms, as the oesophagus is a very tolerant structure. As a rule, the body is impacted at the entrance to the oesophagus, in the post-cricoid region.

The instrument known as the coin-catcher may be used in removal, or, better still, the more modern and scientific method of oesophagoscopy. It is a much easier proceeding than bronchoscopy.

Laryngeal Diseases in Children.

In conclusion, I wish to direct attention to a few practical points regarding diseases of the larynx in small children. These diseases are difficult to diagnose, and are often a source of much anxiety not only to the parents but to the medical attendant.

The child's larynx is a smaller structure than might be supposed, and its cartilages are very soft. Hence stenosis and suffocation are more liable to occur in children than in adults. Laryngoscopy is more difficult, though in the ordinary routine examination of the throat with a tongue-depressor one often sees the epiglottis in small patients. I have had to allay the fears of more than one anxious mother who thought her child's epiglottis was something pathological. The inferior turbinal bone in the nose is a similar offender, and on three occasions in my experience it has been diagnosed as polypus. Nasal polypus is very rare in childhood.

You may be called out one night to see a child who has suddenly developed a "croupy" cough, accompanied by choking and shortness of breath of a very alarming nature. I need not enlarge on this condition, which is so fully described in textbooks under the various names of "laryngitis stridulosa," "croup," or "spasmodic laryngitis."

The nervous spasm occurring in rickety infants, and known as laryngismus stridulus, is quite a different disorder. The spasm and cyanosis are quite transient, and attacks may come on at any time during the day or night. Treatment should be directed towards the underlying condition.

In both of those diseases remember that adenoids are frequently an important factor in the etiology.

Another laryngeal affection of infancy is congenital laryngeal stridor. It commences at birth or shortly after birth, and consists of a crowing or croaking sound accompanying each respiration. The sound varies in intensity and diminishes during sleep. Thanks to direct laryngoscopy, we now know that the larynx in those cases is backward in its development. The epiglottis is sharply folded upon itself and the arytenoids are closely approximated so that the upper aperture of the larynx is narrowed. No treatment is required, as the condition tends to disappear during the second year of life.

Lastly, I shall merely mention papilloma of the larynx, which must be borne in mind as a possible cause of laryngeal obstruction in children. Its diagnosis is beset with difficulty, tracheotomy is often necessary, and the growths are very liable to recur after removal.

MR. W. B. SMITH, Federal chemist, Kansas, recently reported that court plaster which is being sold throughout the State is full of tetanus bacilli. This report led to the arrest of five Germans. Samples of the plaster are being examined by the United States Department of Justice.

A SOCIETY for American fellowship in French universities has been formed for the purpose of bringing to the notice of American students the extensive facilities offered by French institutions and to induce them to seek there the opportunities for further study which they have hitherto been led to believe were to be found only in Germany. Ten or more graduate fellowships for American students are to be established in French universities to be awarded as the result of competition and to be held for two years. The society has published a book entitled *Science and Learning in France*.

COMBINED VACCINATION WITH MULTIPLE VACCINES (QUADRUPLE, QUINTUPLE, AND SEXTUPLE).

BY

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THE advantage of using the method of combined vaccinations, introduced by one of us (C.) long ago, is at the present time recognized. The triple vaccine—typhoid + paratyphoid A + paratyphoid B—for instance, prepared and used by one of us since 1905, has recently been adopted in all the allied armies, thanks especially to the work of Dreyer, Walker, Gibson, Bassett-Smith, Cumming and Cummins, Widal, Chantemesse, Vincent, Sergeant, Nègre, Rho, Conte, Porcelli, and others. There are, however, other combined vaccines which will be found useful, and it is on these vaccines—containing, some of them, four, five, and six species of germs—we desire to make some remarks based on a certain amount of experimental work we have carried out.

TETRAVACCINE No. 1 (T.A.B.C.).

Technique of Preparation.—The growth of twenty-four hours typhoid agar cultures is washed off with sterile 0.85 per cent. salt solution to which 0.5 per cent. carbolic acid has been added; the emulsion so obtained is stored at room temperature for twenty-four hours and then standardized.

In some rare cases, when the emulsion is very thick, twenty-four hours may not be sufficient for the small amount of carbolic present to sterilize it completely; the germs, however, will be non-motile, easily counted, and the addition of carbolic salt solution necessary to standardize the vaccine will quickly kill the germs. To standardize the emulsion the bacilli are counted by using a Thoma-Zeiss apparatus, and sufficient carbolic salt solution is added to reduce the number of germs to 2,000 million per cubic centimetre. The standardized emulsion is tested some hours later for sterility. The same procedure is carried out with twenty-four hours old agar cultures of paratyphoid A and paratyphoid B, these two emulsions being standardized to contain 1,000 million organisms per cubic centimetre. The above procedure is also carried out with cholera cultures, the emulsion of which, however, is standardized to contain 8,000 million germs per cubic centimetre. The four standardized emulsions (when found sterile) are mixed together in equal proportions, and the vaccine will therefore contain per cubic centimetre:

Typhoid	...	...	...	500 million
Paratyphoid A	...	...	...	250 "
Paratyphoid B	...	...	...	250 "
Cholera	...	...	...	2,000 "

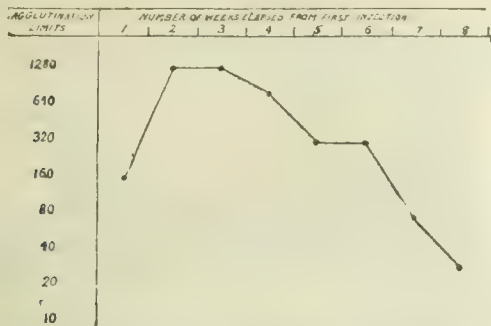
This mixture, which must be tested for sterility, is the combined vaccine. Of this mixture $\frac{1}{2}$ c.cm. is given under the skin of the arm the first time, and the same, or double the amount, a week later.

Blood Examination of Rabbits Inoculated with Tetravaccine No. 1 (T.A.B.C.).

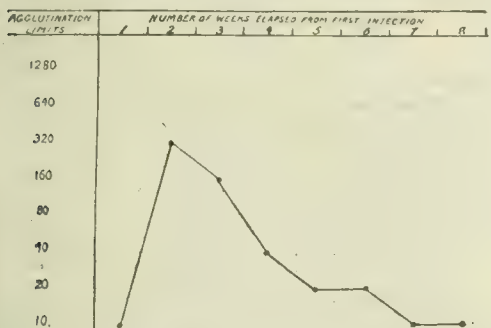
With the assistance of Mendelson, Porcelli, and others we have carried out experiments on seven rabbits, each of which had received two injections of the tetravaccine, at a week's interval.

The doses given varied between 0.2 c.cm. and 1 c.cm.; the production of agglutinins was investigated in all the seven rabbits, and bacteriolysins in three. The amount of antibodies produced did not seem to be in proportion to the amount of vaccine inoculated; this confirmed the old observation made by one of us, that when immunization is obtained by one injection the production of antibodies is not in proportion to the amount of vaccine injected. Provided a sufficient minimum quantity be given, the same amount of agglutinins, bacteriolysins, etc., will be produced whether one, five, or ten times that minimum dose be given.

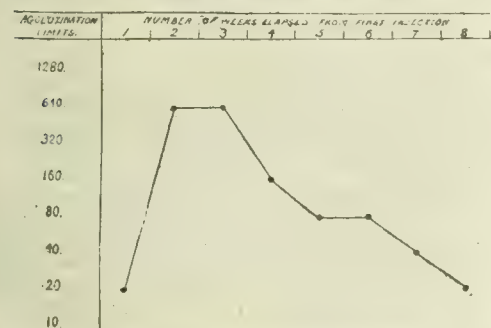
The four curves show the agglutinins induced by the injection of tetravaccine in rabbits. They are practically identical with the curves obtained in control rabbits injected with monovaccines.



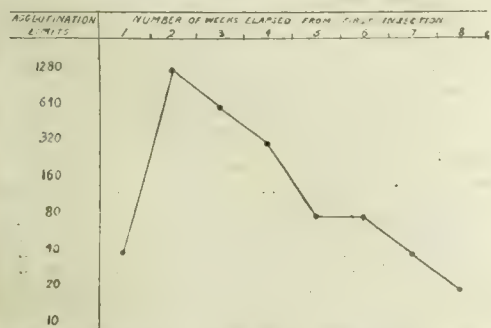
Agglutination curve for *B. typhosus* in rabbits inoculated twice (at a week's interval) with tetravaccine (T.A.B.C.).



Agglutination curve for *B. paratyphosus* A in rabbits inoculated twice (at a week's interval) with tetravaccine (T.A.B.C.).



Agglutination curve for *B. paratyphosus* B in rabbits inoculated twice (at a week's interval) with tetravaccine (T.A.B.C.).



Agglutination curve for *V. cholerae* in rabbits inoculated twice (at a week's interval) with tetravaccine (T.A.B.C.).

As regards bacteriolysins, in the three rabbits examined they were present for the four species of microbes, and did not seem to be present in smaller amount than in control rabbits inoculated with monovaccines.

Blood Examination of Individuals Inoculated with the Tetravaccine (T.A.B.C.).

The production of agglutinins for typhoid is large, for paratyphoid A and paratyphoid B satisfactory, for

cholera small. The agglutinins present for paratyphoid B are generally in larger amount than for paratyphoid A. The production of agglutinins is not inferior to that found in control individuals inoculated with monovaccines. In fact, not rarely have we noticed that during the first two or three weeks the agglutinins, especially for typhoid and cholera, are in higher amount than in individuals inoculated with monovaccines.

Innocuity of the Tetravaccine (T.A.B.C.).

In Ceylon several thousands of individuals were inoculated in 1913 and 1914, and in Serbia more than 120,000 men were inoculated in 1915 with the tetravaccine by Castellani and Mendelson, Lurie, Mitchell, Slattock, Colonel Randon Head of the French Mission, and others, without any untoward result. It was adopted by the American Red Cross Commission, at the head of which were Drs. R. Strong and T. Jackson. No really serious reaction was ever observed, and the inoculated persons were generally able to attend to their duties in from twenty four to forty-eight hours after injection. The opinion of the medical men in charge of the troops and of the Serbian authorities was very favourable; so much so that the vaccine has recently been adopted officially for the whole of the Serbian army. As regards results, owing to the unfortunate condition of the country elaborate statistics are unobtainable, but the four diseases have been practically absent from the portion of the Serbian army which was inoculated with this vaccine.

TETRAVACCINE No. 2 (T.A.B.M.).

This vaccine consists of an emulsion in carbolyzed saline solution (carbolic acid 0.5 per cent., salt solution 0.85 per cent.) of *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, and *M. melitensis*. In the preparation of the vaccine care should be taken to use a strain of *M. melitensis* rich in antigen, otherwise antibodies for this germ may not develop. The technique is the same as that described in the preparation of the Tetravaccine No. 1 (T.A.B.C.), but agar cultures of *M. melitensis* forty-eight hours old should be used. The technique of preparation is the same as that described above. The growth of the typhoid agar cultures is washed off with 0.85 salt solution containing 0.5 per cent. carbolic acid, is stored at room temperature for eighteen to twenty-four hours, and then standardized in such a way that 1 c.cm. will contain approximately 2,000 million typhoid bacilli. The same technique is used to prepare the paratyphoid A and B vaccines, each of these being standardized to contain 1,000 million. The same technique is used to prepare the Malta fever vaccine, but this vaccine is standardized in such a way as to contain 8,000 million per cubic centimetre.

After standardizing the four different vaccines and testing their sterility they are mixed together in equal parts. The vaccine will contain per cubic centimetre:

Typhoid	...	...	...	500 million
Paratyphoid A	...	...	...	250 "
Paratyphoid B	...	...	...	250 "
Malta fever	...	...	...	2,000 "

Of this vaccine 0.5 c.cm. is injected subcutaneously in the arm, and a week later the same or double the amount is given.

This vaccine has been used in a fairly large number of persons (over 600). The reaction was hardly higher than after the simple typhoid or mixed paratyphoid A and paratyphoid B vaccines. The blood of all inoculated persons examined (24) developed a large amount of agglutinins for typhoid, paratyphoid A and paratyphoid B, and a certain amount for Malta fever, which, however, in several cases, was very small. The amount of agglutinins produced for each germ was apparently not distinctly less than in control individuals inoculated with simple "one disease" vaccines.

PENTAVACCINE No 1 (T.A.B.C.P.).

This combined "five diseases" vaccine consists of a carbolyzed saline emulsion of typhoid, paratyphoid A, and paratyphoid B bacilli, cholera vibrios, and plague bacilli.

Agar cultures twenty-four hours old are used in the case of typhoid, paratyphoid A, paratyphoid B, and cholera; agar cultures three days old are used in the case of plague, as this germ grows slowly. The technique of preparation

is the same as that already described. The vaccine is standardized to contain per cubic centimetre:

<i>B. typhosus</i> ...	...	...	500 million
<i>B. paratyphosus</i> A ...	...	...	250 "
<i>B. paratyphosus</i> B ...	...	...	250 "
<i>V. cholerae</i> ...	...	...	2,000 "
<i>B. pestis</i> ...	...	...	500 "

Half a cubic centimetre is given the first time and double the amount a week later.

Method of Vaccination.

The inoculation is made subcutaneously in the arm in the same manner as when using simple typhoid vaccine. In strong male adults we give 0.5 c.cm. the first time and 1 c.cm. a week later; in adults who do not appear to be very strong and also in women half doses are given with apparently the same satisfactory results. Children between 10 and 16 years of age receive about one-third of the adult dose; children below 10 years of age we have not yet inoculated. The inoculation of the vaccine is followed in a few hours by a local reaction (redness and some infiltration) and general reaction (fever, malaise, rheumatic pains), which generally do not incapacitate for work more than twenty-four to forty-eight hours. The reaction may be said to be, as a rule, much more severe than after the inoculation of simple typhoid, or the mixed typhoid, paratyphoid A, paratyphoid B vaccine, or the tetravaccine T.A.B.C., but certainly somewhat less severe, in our experience, than after using Haffkine's monovaccine. It is to be noted that occasionally one comes across individuals who show practically no reaction.

Innocuity of the Pentavaccine No. 1 (T.A.B.C.P.).

In Ceylon four coolies who volunteered were inoculated nine times each at a week's interval. They remained in good general health, though two had somewhat severe general and local reactions. All the individuals inoculated in the Balkanic and Adriatic zones (more than 400), apart from a rather severe reaction, remained in perfect health; they had each two injections—0.5 c.cm. the first time, 1 c.cm. a week later.

Blood Examination of Rabbits inoculated with Pentavaccine No. 1 (T.A.B.C.P.).

It is interesting to note that we have had much better results in rabbits inoculated in this country than in the tropics. Very often, in Ceylon, rabbits which were inoculated with more than four species of germs produced antibodies only for three or four species and not for all. In Ceylon rabbits are generally smaller than in Europe, and big healthy rabbits in this country seem to respond to inoculation much better. The results as regards agglutinins in two rabbits are collected in Table I.

TABLE I.—Pentavaccine (T.A.B.C.P.).

Rabbits Inoculated.	Blood tested against	Limits of Agglutination. Weeks after First Inoculation.					
		1	2	3	4	5	6
No. B—III.	<i>B. typhosus</i> ...	1/160	1/1280	—	1/320	—	1/160
	<i>B. paratyphosus</i> A ...	1/20	1/320	—	1/80	—	1/40
	<i>B. paratyphosus</i> B ...	1/160	1/640	—	1/160	—	1/160
	<i>V. cholerae</i> ...	1/160	1/640	—	1/160	—	1/160
	<i>B. pestis</i> ...	1/20	1/160	—	1/80	—	1/20
No. A—4.	<i>B. typhosus</i> ...	1/160	1/1280	1/640	1/640	1/320	1/160
	<i>B. paratyphosus</i> A ...	1/20	1/160	1/80	1/40	1/20	1/20
	<i>B. paratyphosus</i> B ...	1/80	1/640	1/320	1/80	1/80	1/40
	<i>V. cholerae</i> ...	1/80	1/1280	1/320	1/80	1/80	1/80
	<i>B. pestis</i> ...	0	1/140	1/20	1/20	1/20	1/20

Porcelli observed that rabbits inoculated with the pentavaccine T.A.B.C.P., prepared by one of us, showed complete protection against the subcutaneous injection of virulent plague bacillus.

Blood Examination of Individuals Inoculated with Pentavaccine No. 1.

Lack of time has prevented the study of the amount of all protective substances produced in inoculated individuals. The investigation, therefore, has been limited to studying

the amount of agglutinins produced in comparison with individuals inoculated with simple "one disease" vaccines, the results being practically identical.

PENTAVACCINE No. 2 (T.A.B.C.M.).

This combined vaccine is prepared according to the technique already described. It is so standardized that each cubic centimetre contains:

Typhoid ...	...	...	500 million.
Paratyphoid A ...	...	...	250 "
Paratyphoid B ...	...	...	250 "
Cholera ...	...	...	2,000 "
Malta fever ...	...	...	2,000 "

In man $\frac{1}{2}$ c.cm. is given at the first injection, and the same or double the dose a week later.

Inoculation of Rabbits.—Three rabbits have been inoculated, with the results as regards agglutinins shown in Table II.

TABLE II.—Pentavaccine No. 2 (T.A.B.C.M.).

Rabbits Inoculated.	Blood tested against	Limits of Agglutination. Weeks after First Inoculation.					
		1	2	3	4	5	6
No. B—1	<i>B. typhosus</i> ...	1/160	1/1280	—	1/160	—	1/80
	<i>B. paratyphosus</i> A ...	1/20	1/160	—	1/40	—	1/20
	<i>B. paratyphosus</i> B ...	1/40	1/320	—	1/160	—	1/20
	<i>V. cholerae</i> ...	1/40	1/640	—	1/80	—	1/20
	<i>M. melitensis</i> ...	1/20	1/320	—	1/160	—	1/80
No. B—2	<i>B. typhosus</i> ...	1/40	1/1280	—	1/160	—	1/40
	<i>B. paratyphosus</i> A ...	0	1/80	—	1/20	—	1/20
	<i>B. paratyphosus</i> B ...	0	1/160	—	1/40	—	1/20
	<i>V. cholerae</i> ...	0	1/640	—	1/320	—	1/40
	<i>M. melitensis</i> ...	1/20	1/320	—	1/80	—	1/40
No. A—19	<i>B. typhosus</i> ...	1/20	1/1280	1/1280	1/320	1/160	1/160
	<i>B. paratyphosus</i> A ...	0	1/640	1/640	1/160	1/80	1/80
	<i>B. paratyphosus</i> B ...	0	1/640	1/640	1/320	1/80	1/80
	<i>V. cholerae</i> ...	0	1/1280	1/640	1/320	1/160	1/80
	<i>M. melitensis</i> ...	0	1/320	1/640	1/320	1/80	1/40

Inoculation in Man.

In man 0.5 c.cm. is given subcutaneously in the arm, and a week later another injection of the same or double the dose. The reaction, according to observations made by one of us in Ceylon, and by Lurie in Serbia, is not severe, and the inoculated individuals are able to resume their ordinary avocations in twenty-four to forty-eight hours. The inoculated persons develop agglutinins in large amount for typhoid, in fairly large amount for paratyphoid A and paratyphoid B, in small amount for cholera and Malta fever; the amount of agglutinins produced does not seem to be much smaller than in control individuals inoculated with monovaccines.*

HEXAVACCINE (T.A.B.C.P.M.).

This vaccine consists of an emulsion in carbolyzed salt solution (carbolic acid 0.5 per cent., salt solution 0.85 per cent.) of *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, *V. cholerae*, *B. pestis*, and *M. melitensis*. The technique of preparation is the same as that for the other multiple vaccines described above. The combined vaccine is standardized so as to contain per cubic centimetre:

<i>B. typhosus</i> ...	...	...	500 million.
<i>B. paratyphosus</i> A ...	...	...	250 "
<i>B. paratyphosus</i> B ...	...	...	250 "
<i>V. cholerae</i> ...	...	...	2,000 "
<i>B. pestis</i> ...	...	...	500 "
<i>M. melitensis</i> ...	...	...	2,000 "

In man 0.5 c.cm. is given the first time and the same or double the amount a week later.

Inoculation of Rabbits.—Rabbits have been inoculated in Ceylon and in this country, the doses varying between 0.1 and 0.5 c.cm. The rabbits in Ceylon did not respond very well to the inoculation as a rule; agglutinins in a number of cases did not develop for all the germs. In this country we have had much more satisfactory results. These are collected, as regards agglutinins, in Table III.

* For details supporting this statement the reader is referred to Dr. Lurie's paper, "Observations on Castellani's Tetravaccine and Pentavaccine," BRITISH MEDICAL JOURNAL, January 8th, 1916, p. 45.

TABLE III.—*Hexavaccine (T.A.B.C.P.M.), Two Inoculations.*

Rabbits Inoculated.	Blood tested against	Limits of Agglutination. Weeks after First Inoculation.					
		1	2	3	4	5	6
No. B-3	<i>B. typhosus</i> ...	1/320	1/1280	—	1/320	—	1/40
	<i>B. paratyphosus A</i> ...	1/40	1/160	—	1/40	—	1/20
	<i>B. paratyphosus B</i> ...	1/80	1/640	—	1/160	—	1/40
	<i>V. cholerae</i> ...	1/320	1/640	—	1/160	—	1/40
	<i>B. pestis</i> ...	1/20	1/80	—	1/20	—	1/20
	<i>M. melitensis</i> ...	1/160	1/320	—	1/160	—	1/40
No. A-21	<i>B. typhosus</i> ...	1/80	1/1280	1/1280	1/320	1/80	1/80
	<i>B. paratyphosus A</i> ...	0	1/320	1/160	1/80	1/20	1/20
	<i>B. paratyphosus B</i> ...	1/20	1/1280	1/640	1/160	1/80	1/80
	<i>V. cholerae</i> ...	1/20	1/640	1/320	1/320	1/80	1/80
	<i>B. pestis</i> ...	0	1/20	1/40	1/20	1/20	1/20
	<i>M. melitensis</i> ...	1/20	1/80	1/160	1/160	1/80	1/80

Porcelli, carrying out experiments in the South of Europe with a hexavaccine prepared by one of us, found that bacteriolysins were produced in very satisfactory amount for all the germs. He observed also that the inoculated rabbits showed complete protection to the subcutaneous injection of virulent *B. pestis*.

Inoculation of the Hexavaccine in Man.

Six persons were inoculated in the tropics in 1913, and recently twenty persons in the Adriatic-Balkan zone. The reaction, as is the case with all vaccines containing plague, is severe; somewhat less severe, however, than after inoculating with Haffkine's plague monovaccine. The blood of two of the inoculated individuals was examined regularly during five weeks for agglutinins; they developed for typhoid in large amount; for paratyphoid A and paratyphoid B in a fairly satisfactory quantity; for cholera and Malta fever in small amount; and only a trace for plague. On the whole the production of agglutinins was similar to that observed in control individuals with monovaccines; but further researches on a much larger number of inoculated individuals will be necessary before coming to a definite general conclusion.

CONCLUSIONS.

1. The inoculation of the combined vaccines mentioned in this paper is harmless. The reaction is not severe with the exception of those containing *B. pestis*, but even simple plague monovaccines, whatever their method of preparation, give a severe reaction.

2. The mixed vaccines should be prepared by using emulsions in carbolized normal saline solution (carbolic acid 0.5 per cent., salt solution 0.85 per cent.) without heating. These emulsions give much less local reaction than broth cultures killed by heat. The presence of 0.5 per cent. carbolic acid is sufficient to kill the micro-organisms.

3. It is essential to use in the preparation of the vaccines selected strains of the various micro-organisms which have been found by experience to be rich in antigen. This is especially the case as regards *B. paratyphosus A* and *M. melitensis*, some strains of which are very poor in antigen, and when injected give rise to only a small production of antibodies.

4. Combined vaccines are of practical advantage, especially in the case of troops, rendering possible a contemporaneous immunization for several different maladies; this saves a great deal of time, and the men do not suffer the discomfort of a large number of inoculations. To protect the troops against typhoid, paratyphoid A, paratyphoid B, and cholera with the old method of ordinary monovaccines in succession, eight inoculations at least were necessary, spread over a period of two months; with the tetravaccine T.A.B.C. two inoculations only are sufficient, spread over a period of a week.

5. The triple vaccine, typhoid + paratyphoid A + paratyphoid B (T.A.B.), prepared and used by one of us since 1905, has been adopted in practically all the armies. We consider that the tetravaccine (T.A.B.C.) is also past the experimental stage, and should be adopted in the routine inoculation of troops going east. The pentavaccines (T.A.B.C.P. and T.A.B.C.M.) have given encouraging results, and can, in our opinion, be used without any risk. The hexavaccine (T.A.B.C.P.M.) is still in the experimental stage, and we propose to continue our experiments

on it, as we consider that this vaccine, if it be found efficient, would constitute the ideal vaccine for use in the tropics.

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RUPTURE OF LEFT BRONCHUS FROM TRACHEA.

BY

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WHILE there is no limit to the variety of possible injuries which the body may suffer, and while the record of them may tend to be equally limitless, occasionally a case is met with whose vagaries are so peculiar as to merit notice. I have had many opportunities of examining the bodies of persons who have died as the result of violence, but I cannot recall any injury quite like that of the following case:

Gunner J. S., aged 34, was admitted to the casualty clearing station, Salonica, with the story that he had on the previous day fallen from an empty general service limber, whose wheel had passed over his chest.

On admission he was suffering great respiratory distress, with orthopnoea. The complexion was livid, face swollen, eyes apparently bulging and lower eyelids very full. There was a great collar-like emphysematous swelling from the edges of the lower jaw to the clavicles, extending backwards across the posterior triangles. The left side of the chest was flattened, owing to fracture of several ribs. There was limited emphysema of the left side of the chest in the axillary line. The sternum was broken at the junction of the manubrium and gladiolus. There was no bruising or other evidence of injury on the skin of the chest wall. The temperature was 103.4°, pulse 110, respirations 44. No mitigation of the patient's distress and agony resulted from treatment. It was thought that his condition was due to acute pulmonary congestion with pneumo-haemothorax; he was so ill, however, that clinical examination was very imperfect. The temperature varied from 99.6° to 102°; the pulse very quickly reached from 128 to 140, and was often uncountable; the respiratory rate ranged from 40 to 52. His condition became rapidly worse, and he died seventy-two hours after injury. *Post-mortem* examination revealed the following:

1. Fracture of third to seventh left ribs at the anterior axillary line, the fifth penetrating the parietal pleura.

2. Fracture (incomplete) of the sternum at the junction of manubrium and gladiolus.

3. The left lung was collapsed to about one-fourth its ordinary size; the lower lobe was intensely haemorrhagic, with a blood cavity within it 2 in. in diameter; on section the lung appeared to be one mass of blood clot; the visceral pleura was covered by very thick shaggy exudation; there was no gross visible laceration of lung; the left pleural cavity was half full of blood.

4. Acute generalized pericarditis, exudation exceedingly loose, of buttered bread appearance; in the pericardial cavity were 1½ drachms of thin pus; heart otherwise normal.

5. Separation of the left bronchus from trachea, the tear being through the anterior portion to the extent of two-thirds of the circumference; acute inflammatory reddening of the mucous membrane of both bronchi; inflammatory infiltration of cellular tissue of middle mediastinum; the cartilaginous rings of trachea and bronchi normally flexible and tough.

The most striking primary features of the *post-mortem* examination were the profound degree of collapse of the left lung, its acute haemorrhagic state, evidence of the severity of the crushing blow, and the acuteness of the pericardial inflammation. This last was difficult to account for, and it was not till closer search was made that the rupture of the left bronchus from the trachea was found. There was no discoverable tear in the posterior pericardium,

though it was distinctly thinned. The source of infection of the pericardium seems, therefore, to have been through the great gap in the respiratory tract. From this gap also came the air which forced its way up the cellular tissue of the mediastinum within the deep cervical fascia so as to form the emphysematous collar described. The possibility of the tear at the junction of bronchus and trachea being an accident of the *post-mortem* examination may be definitely excluded. The valves at the junction of the internal jugulars and the great veins of the neck were examined and found to be intact.

If one tries to pull the bronchi apart from the trachea with the parts *in situ* within the chest cavity it will be found to be impossible. Even after removal from the body if the trachea be taken in one hand and the lung torn away from it with all one's power it will be found that the broncho-tracheal junction will not yield. The force exercised by the wheel of the limber crossing the chest without evidence of injury to skin must have been extraordinary. The wheel was thought by the man to have passed over the thorax obliquely from left to right, following a line from the left nipple to the middle of the right clavicle. This fact, and the situation of the rib fractures might indicate that the lung was crushed backwards and upwards, and the bronchus bent acutely in the same direction over the vertebral column, its comparative rigidity causing it to yield while the other constituents of the root of the lung proved sufficiently resilient. Possibly there was associated with this force a bursting action in an antero-posterior direction, the rupture being in the same line.

NOTE ON THE TREATMENT OF VINCENT'S ANGINA.

By E. EMRYS-ROBERTS, M.D.,

CAPTAIN R.A.M.C.(T.F.).

— MOBILE BACTERIOLOGICAL LABORATORY, B.E.F., FRANCE.

IN view of the widespread incidence amongst our troops on this front of affections of the throat and gums due to the fusiform bacillus and spirochaete of Vincent's angina, it may be of value to indicate a method of treatment that has met with unvarying success since its adoption in the area served by this laboratory during the last eighteen months.

The treatment consists in the local application of the following lotion. By its use the familiar gingivitis is usually cured in about six days, while the throat condition clears up altogether in from twenty-four to forty-eight hours.

Hydrogen peroxide ...	...	...	...	...	...	5V
Vinum ipecac.	...	...	...	...	...	50J
Glycerin	...	...	...	...	...	5V
Aq	...	...	...	...	...	ad 3viij

Vincent's angina of the throat is not only met with as a separate infection, but is very frequently associated with diphtheria. An analysis of the cases that have reached this laboratory shows that in nearly 60 per cent. of diphtheritic throats both fusiform bacilli and spirochaetes are present, while fusiform bacilli but no spirochaetes are present in a further 15 per cent.

The *rationale* of the formula was based upon the following considerations: First, that hydrogen peroxide is especially useful in loosening and cleaning up purulent exudates, and, moreover, would militate against the growth and multiplication of the anaërobic fusiform bacillus; secondly, that ipecacuanha wine might prove to have a more or less specific action upon the spirochaete; and, thirdly, that glycerin, by virtue of its hygroscopic and penetrative properties, would effectually convey the preceding ingredients into otherwise inaccessible recesses.

Whatever may be the theoretical value of these surmises, the practical issue is beyond doubt, and the consistent results obtained would appear to merit the general use of this lotion in Vincent's anginal infections.

I wish to thank Captain Mallet, L.D.S., Captain Place, L.D.S., and the many medical officers at casualty clearing stations and field ambulances who have kindly reported their results.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PERFORATING WOUND OF THE CHEST.

THE following instance of a large foreign body passing through the chest without causing death seems worthy of record. A Greek national soldier, aged 22, was admitted to a dressing station on December 6th, 1916, with gunshot wound of the left leg, and a wound in the back $\frac{1}{2}$ in. wide, near the centre of the right scapula. There was a hard lump in the epigastric region, and haemoptysis was present. On December 7th this swelling was frozen with ethyl chloride and incised. A piece of brass tubing from a shrapnel shell was extracted. It was 10.5 cm. in length, 1 cm. in diameter, and its wall was 1 mm. thick. It weighed 25 grams; one end was smoothly cut, the other jagged and bent. On December 12th the patient was moved four miles on a travois to the head quarters of the field ambulance. Haemoptysis continued till December 13th. On December 16th he was taken four miles on a travois to a casualty clearing station, which he left, almost recovered, on December 27th.

H. S. HOLLIS.

Captain R.A.M.C.(T.F.).

CASE OF TEMPORARY BLINDNESS.

SERGEANT D., aged 49 years, was admitted complaining of being unable to see; he was so blind that he had to be led to the ward.

Hearing the call of the motherland he came voluntarily from Johannesburg to rejoin his old regiment, being a time-expired N.C.O. after having served in the army for ten years. He had always been a healthy man, and never suffered from any disease which would account for his present state.

When admitted he was so blind that he was unable to see anything, not even a man standing by his bed, and mistook the window for the door. Temperature 101.2°, pulse 79, respirations 18. Nothing was to be made out on examination of chest and abdomen, and there was nothing abnormal with respect to urine; the arteries were soft, and the blood pressure normal for his age. He complained of some headache of a diffuse nature but slept fairly well. On making a careful examination of the eyes, it was found that vision was reduced to the recognition merely of hand movements. The media were clear and the fundi healthy; no thickening of the retinal arteries could be seen, nor was there any contraction in their size.

The temperature fell gradually, and at the expiration of eight days became normal. *Pari passu* with the reduction of temperature his vision began to improve, and fourteen days after admission he could see well enough to read a newspaper. As he was not feeling strong he was sent to a convalescent home, where he stayed a fortnight, and was then discharged as fit for duty.

The usual causes of blindness unconnected with visible eye changes are hysteria, uraemia, and acute retrobulbar neuritis. The case bears some resemblance to the latter, but the pupils were undilated and normal in reaction, and there was no pain on movement of the eyes, nor pain on pressure applied over the globes.

On the whole, we are disposed to think that the cause of the temporary blindness was some toxic condition of the blood which caused either anaesthesia of the rods and cones of the retina, or of the neurons of the visual centres in the cortex.

F. P. MAITLAND, Captain R.A.M.C.,

Divisional Physician;

KENNETH CAMPBELL, Captain R.A.M.C.,

Ophthalmic Surgeon.

Military Hospital, Tidworth.

ACCORDING to M. Jules Viala of the Paris Pasteur Institute the number of persons who underwent the antirabic treatment there in 1916 was 1,391. Of these 6 died of hydrophobia, giving a general death rate of 0.43 per cent. In two of the cases, however, the disease developed in the course of the treatment, and one patient died in less than fifteen days after its termination. Deduction of these leaves the following figures: Number treated, 1,388; died of hydrophobia, 3; mortality 0.21 per cent.

Revielus.

MASSAGE.

THE number of books on massage published during the last eight or nine years is legion, but the majority of them have been textbooks addressed to masseurs, and many of them, while not defining any principles, have made claims for a method which have borne the stamp of exaggeration. There has been a need for a book addressed to the medical profession, and discussing principles. We are disposed to think that Dr. MENNELL'S volume *Massage: Its Principles and Practice*,¹ will, even in this first edition, go a long way to supply the want. The author will win the confidence of medical readers from the beginning by his insistence on the doctrine that massage is only a means to an end. This may seem a very obvious doctrine, but its full appreciation implies that the prescriber has the end clearly in view, and understands the means. He must be able to instruct the masseur as to the end, and, although without skill himself in the actual manipulations, must be able to explain the way in which massage should be begun and continued, in fact, to guide its application throughout, so as to obtain steady progress. Moreover, it must be recognized that harm may be done by injudicious massage. The end of massage being the restoration of function, and the cause of the loss of function varying, the means taken for restoration must vary according to the nature, the degree, and the duration of the disability.

Dr. Mennell's introductory chapters on the general principles of massage will be read with profit by all medical men, whether their bent be towards medicine or surgery; they present the views as yet reached by a good and patient clinical observer, as the result of experience unusual in extent and of much thought on the subject. This last quality is lacking in many books on massage. The most original point in these early chapters is the insistence on the importance of what the author calls the "reflex action of massage," which is exemplified by the effect of very gentle manipulation of a recent fracture of a limb. One of the most noticeable results is the transient nature of the subsequent swelling; this the author considers is not properly attributable to any mechanical effect, for the swelling may subside with equal rapidity whether the stroking is performed towards or from the periphery. Moreover, the massage diminishes the spasm that causes the shortening and deformity. The reflex effects of massage on the arterioles are, he holds, of importance in other cases than those of recent injury. Direct mechanical pressure on the vessels does not fully explain the effects on the blood flow that may be produced by massage; but Dr. Mennell shows that the maximum effect can be obtained even in the deeper veins by a pressure lighter than is commonly used, provided that complete muscular relaxation is obtained and preserved. With regard to what is commonly called "passive movement," some interesting views are expressed. Dr. Mennell has grasped the fact that every movement of a limb involves two sets of muscles: the one must be relaxed as the other contracts. For example, for flexion of the elbow the extensors must be relaxed, and the accuracy of movement depends upon the maintenance of a proper balance between the relaxation of the one set of muscles and the contraction of the other. For what is commonly called passive movement the patient's co-operation is required, otherwise the movement will in fact be performed against contraction of the opposite set of muscles, therefore the author proposes the term "relaxed movement" to replace "passive movement." The subject is discussed in chapters on mobilization as a sequel to massage, in which directions are given for applying the principles. It is difficult in words, even with the assistance of excellent photographs such as those provided in this volume, to enable the inexperienced to perform them, but the author succeeds on the whole fairly well. All his plans are simple, as is also the machinery he uses; for re-education in walking he seems almost wholly to dispense with machinery.

The book contains chapters also on the treatment of functional disorders, of neuralgia and neuritis, and of

various constitutional conditions, as well as of diseases of the digestive, the circulatory, and the respiratory system. The concluding chapter deals with deformities, with special reference to those produced by gunshot wounds.

We have rather spoken of the book as a first essay towards a theory of a system of massage. This observation is just, because we have no doubt that the author will eventually develop his teachings further. The teachings of the book conflict with some of the most cherished notions of the masseur, but, as we have said, the book appears to us to be the best on the subject for the use of medical men; it is valuable not only for what it contains but for what it suggests.

THE PSYCHONEUROSES OF WAR.

IN their excellent handbook on the psychoneuroses of war² ROUSSY and LHERMITTE frankly state that their recent experience has enforced the truth of Babinski's views and the errors of the classical conception of hysteria; they refer to the manifestations of the war psychoneuroses almost indifferently as functional, pithiatic, or hysterical. They hold that the vast majority of psychoneurotic subjects are predisposed by heredity or personal antecedents, such as bad education or alcoholism, and in a combatant neuropath the repetition of emotional shocks induces an anaphylactic mental state for such stimuli. The directly exciting factors are concussion, local injury, emotion, and suggestion, auto-suggestion being more important than hetero-suggestion, and of the latter that exerted by medical men is more powerful than that exerted by one patient on another. The psychoneurotic symptoms do not follow immediately on the exciting shock; there is a period of incubation or meditation of variable length, and as a result few cases develop in the fighting line. Beginning with the simplest psychoneuropathic disorders—namely, the paralyses and contractures—the whole series is described, and a chapter is devoted to the purely psychical disturbances. The photographs illustrating the attitude of patients are most successful, especially those showing flexion of the trunk ("camptocormie"). The diagnosis is very clearly discussed, and in reference to the distinction between purposeful simulation and psychoneurosis the aphorism that the least experienced see the most malingering may perhaps be quoted. Treatment is on the lines practised for years by Dejerine, Dubois, and Babinski, consisting of unhesitating direction conveyed by more or less prolonged interviews and conversations, isolation, faradization, and re-education. The cure depends on the physician being the winner in this moral struggle with the patient. The use of hypnotic suggestion is sternly condemned. The volume ends with a useful bibliography of 164 articles, all published since the outbreak of the war.

Dr. EDER, who is imbued with Freud's teaching and firmly believes in the efficacy of hypnotic suggestion, has written a very readable book on *War Shock*³ or hysteria occurring in persons free from hereditary or personal psychoneurotic tendencies but with minds more responsive than normal to psychical stimuli. It is not, he contends, a new disease, but a form of hysteria in which one factor (psychical trauma) is overwhelmingly large in proportion to the other (predisposition), and differs from non-war shock in degree but not in essentials. He has utilized as material cases seen while in charge of the psychoneurological department of a military hospital at Malta. The diseases considered—hysteria and psychasthenia—are without any underlying physical basis; insanity is not included, and the term "neurasthenia" is excluded, as the author is unable to find, at any rate among the disturbances created by the war, any clinical entity that corresponds with it. His 100 cases are classified as: conversion hysteria 77, anxiety hysteria 17, and psychasthenia 6; but admittedly most of those grouped as anxiety hysteria would be regarded by Janet as psychasthenia. Out of his cases 70 per cent. were without any family or personal nervous instability, whereas in the remaining 30 per cent. there was such evidence; these results agree with those of Elliot Smith, but differ from those of Mott, Forsyth, Roussy, Lhermitte, and others. Treatment by hypnotic

¹ *Massage: Its Principles and Practice*. By James B. Mennell, M.A., M.D., B.Sc. Cantab. With an introduction by Sir Robert Jones, C.B., F.R.C.S., Colonel R.A.M.C. London: J. and A. Churchill, 1917 (Demy 8vo, pp. xvi + 359; 135 figures. 8s. 6d. net.)

² *Les psychonévroses de guerre*. Par G. Roussy et Jean Lhermitte. Collection Horizon. Précis de médecine et de chirurgie de guerre. Paris: Masson et Cie. 1917. (Pp. 184; 13 plates. Fr. 4.)

³ *War Shock*. By M. D. Eder, B.Sc., M.R.C.S., L.R.C.P. London: Heinemann, 1917. (Pp. 154. 5s.)

suggestion cured 80 and improved 14 out of 97 cases; this includes 5 cases submitted to psycho-analysis, with one cure and 4 improvements. Although he admits that the war has created some new diseases, such as trench fever, and greatly increased our knowledge of those existing, he denies that any fresh psychoneuroses have arisen since 1914, and remarks that Oppenheim's new diseases—reflex paralysis and akinesia amnestica—are the outcome of ignorance of contemporary psycho-pathological work.

We may note in this connexion a substantial volume by Dr. FRANCIS HECKEL,⁴ although it is neither based on the experience of the war nor, as its title might naturally lead the reader to suspect, is it a description of war neuroses. In fact, had it not been for the interference with printing and publishing caused by the outbreak of war, this work would have seen the light in 1914. This delay has, indeed, enabled the author to make a reference to the influence of war, but otherwise the argument is on pre-war lines, and to the effect that there is a reciprocal relation between emotional states and metabolic diseases, in that each may induce the other. He thus endeavours to detach the neurosis of terror (if this is the proper translation) from the realm of the alienist and to show its relation to general pathology and its connexion with metabolic disorders, in which he is especially interested. The term "neurosis of terror" was introduced in 1895 by Freud, with whose views the author is entirely out of sympathy. The clinical manifestations are divided into (1) psychical, almost entirely confined to emotional anomalies; (2) physical and functional disturbances of the viscera, such as spasm of the excretory and secretory ducts, false angina pectoris; and (3) metabolic disorders of very various kinds, including diabetes, gout, obesity, calculous diseases, asthma, rheumatism, migraine, eczema, urticaria, neuralgia. At first in a latent and chronic stage, the neuroses subsequently become paroxysmal. The work is laborious, but it seems doubtful if so much trouble is really necessary at the present time to show that metabolic disorders may be caused by emotional shock, and, on the other hand, that metabolic diseases may give rise to nervous and psychical disturbances.

PHYSICAL TREATMENT OF WAR DISABILITIES.

*Physical Remedies for Disabled Soldiers*⁵ is the title given by Dr. FORTESCUE FOX to the book written by himself and other authorities on methods of treatment other than those of surgical operation or the administration of drugs, vaccines, etc., thus marking the change which has taken place in the meaning of the word "physic," which is still popularly associated with the swallowing of drugs. Whether some better term might not be found for external treatment is a question, for in its broadest sense all remedies, except psychical, are physical. Be that as it may, Dr. Fortescue Fox is well qualified to describe the baths and exercises and various manifestations of electrical and radiant energy which are applied at the Red Cross clinic under his charge, as well as the climatological treatment at various health resorts. He has been well seconded by his coadjutors, Major R. Tait McKenzie, Dr. Herniman-Johnson, and Dr. James B. Mennell, and the book should prove a most valuable guide to all who are engaged in treating the deformities and disabilities following on injuries received in warfare, especially by helping them in the difficult task of choosing what form of treatment is most likely to benefit each patient.

Dr. F. P. Nunneley, of Llandrindod Wells, who has made a careful study of whirlpool baths at Brighton, states that their use at a temperature of 110° F. to 120° F. produces better results than radiant heat, and is a valuable preparative to massage. The chapter upon re-education and work is of considerable interest, and the description of what is being done on a large scale in France is not the least valuable part of it. From an economic point of view it is no use to cure a man's disabilities unless he can be made a useful citizen afterwards and not a burden upon the community.

⁴ *La névrose d'angoisse*. Par le Dr. Francis Heckel. Paris: Masson et Cie. 1917. (Pp. 535. Fr. 9.)

⁵ *Physical Remedies for Disabled Soldiers*. By R. Fortescue Fox, M.D. With chapters by Major R. Tait McKenzie, R.A.M.C., Francis Herniman-Johnson, M.D., and James B. Mennell, M.A., M.D. London: Baillière Tindall, and Cox. 1917. (Demy 8vo, pp. xiv + 277; 83 figures. 7s. 6d. net.)

SURGICAL NURSING AND AFTER-TREATMENT.

Dr. H. G. RUTHERFORD DARLING's work on *Surgical Nursing and After-Treatment*⁶ has been written in accordance with the syllabus laid down for the final examination of the Australian Trained Nurses' Association. In the course of thirty-two chapters he deals first with the general principles of surgical nursing, such as the furnishing and management of an operation theatre, the preparation of patients, instruments, dressings and ligatures for operations, and with such details as vaginal douching, the administration of enemata, bandaging, catheterization, hypodermic injections, nasal feeding, making of splints, and the hundred and one other things with which a nurse should be familiar. The subjects of haemorrhage, shock, concussion, fractures, dislocations, and sprains are also discussed. Secondly, he deals with regional surgical nursing, devoting a chapter to each portion of the body, and describing in detail the management, as far as a nurse is concerned, of each operation. Preparations for the operation, arrangements during the operation, the after-treatment of the case, and the complications which may arise, are gone into minutely. A great deal more is contained in the book than would ever be left to a nurse by an English surgeon, the discussions on after-treatment especially being such as would be described in an ordinary surgical work on after-treatment intended for the use of a surgeon. Many of the important details of post-operative treatment which are and should remain the sole province of the surgeon (for example, Allingham's method of plugging the rectum for secondary haemorrhage after operation for haemorrhoids) are discussed by the author as if they were within the duties of the nurse to decide on and carry out. Possibly much of this is intended to fulfil the second term in the title, and is addressed to surgeons and house-surgeons. Certainly matters are discussed in the book which it would never fall to the lot of a nurse in this country to undertake. The book is well written, and may be recommended confidently not only to nurses (with the reservation mentioned) but also to senior students, house-surgeons, and even to the operating surgeon.

NOTES ON BOOKS.

THE twenty-sixth edition of the *Annual Charities Register and Digest*⁷—for the current year—will prove, like its predecessors, of the greatest value to all who wish for information as to agencies for the prevention and relief of distress, and for guidance in dealing with individual cases. The introduction by Sir C. S. Loch on "How to help cases of distress," again forms a valuable feature of the work, while the very full table of contents, and the elaborate index make it easy to find one's way throughout the volume in spite of the wealth of detailed information which it contains. It is an indispensable book of reference for those engaged upon organized charitable work.

⁶ *Surgical Nursing and After-Treatment*. A Handbook for Nurses and Others. By H. G. Rutherford Darling, M.D., M.S. Lond., F.R.C.S. Eng., Assistant Surgeon, South Sydney Hospital. London: J. and A. Churchill. 1917. (Cr. 8vo, pp. xii + 582; 129 figures. 8s. 6d. net.)

⁷ *The Annual Charities Register and Digest*. With an introduction by C. S. Loch. Twenty-sixth edition. London: Longmans, Green and Co., and the Charity Organization Society. 1917. (Demy 8vo, pp. 1054. 5s. net.)

THE review of Japanese periodicals by the staff of the Research Department of the Severance Union Medical College, Seoul, Korea, of which Dr. Ralph G. Mills is director (vol. 2, part ii), contains a contribution to the pathogenesis of lacquer poisoning. L. Toyama and I. Kayaba state that predisposed persons are sometimes affected on passing near a varnish tree or walking through a shop containing lacquered articles. This has been attributed to some volatile substance, but there are facts which suggest that there may be some other agency. While a house was being repaired a pot containing a hard black material, which was pronounced by an expert to be lacquer, was found. As it had been buried for centuries, it was assumed that all volatile substances had disappeared, but toxic matter was still present. The chief ingredient of lacquer is "urushiol," which is blackened from oxidation by laccase contained in the juice of the plant. Various derivatives of this substance are found in the lacquer—a hydrated and a methylated urushiol, which are also toxic, and two non-toxic forms, dimethylated and hydrodimethylated urushiol.

British Medical Journal.

SATURDAY, SEPTEMBER 15TH, 1917.

REMAKING THE DISABLED.

A COMPARISON of the account given this week (p. 369) of the principal military orthopaedic centres now at work with the information on the subject we were able to publish last May shows that considerable progress has been made towards perfecting the extensive organization required. The goal is to provide on a sufficiently large scale and at convenient centres the staff and equipment necessary for the systematic treatment of all men suffering from disabilities of the limbs due to injuries received in the war. This, stated in a very general way, is the aim of the department of practice to which the term "military orthopaedics" has been applied. Originally the word "orthopaedics" was framed to specify the correction of deformities in children, but it had already been extended before the war to embrace deformities produced in adults by injury or disease, and it had been recognized that methods of treatment primarily designed for children were applicable also to their elders. If, as we believe to be the case, the word was constructed, not from *παῖς*, child, but from *παιδεία*, the secondary extended meaning of which was "education," it will be found appropriate, since re-education is an important part of the treatment of men disabled by wounds. It is not, for instance, sufficient to make the movements of a stiff joint free; the muscles wasted by disease must be put in the way of recovery, and the will must be educated to use them in co-ordinated actions.

When the classes of military cases calling for orthopaedic methods of treatment are passed in review it will be found that they are numerous, and that each class includes very many wounded men. We think first of derangements and disabilities of joints including ankylosis, and of malunited and ununited fractures. We have to think also of traumatic lesions of nerves requiring a long course of treatment by splinting, massage, electricity, and often also by operation such as nerve suture or tendon transplantation. An orthopaedic centre must also be prepared to supply surgical appliances for all cases of disablement; they are best made in workshops forming part of the equipment of the centre; there the men can be properly fitted, the use of the appliances learnt, and any necessary alterations or adjustments made before discharge. In addition, the centres may be conveniently used for the correction of deformities and disabilities of the feet which interfere with a man's marching powers and general activity, such as hallux rigidus, hallux valgus, hammer-toe, metatarsalgia, flat and claw feet, and painful heels.

Compound fracture of the femur due to gunshot wound is perhaps the most serious injury of a limb that can be sustained. It is serious at the time, endangering life, owing to the frequency with which such wounds become infected, and it is serious also owing to the disabling deformity that may remain after the wounds have healed and the bones united. The course of treatment must be prolonged, but the best opinion seems to be that, given the thorough and systematic application of methods now well understood,

the majority of these cases, if the primary infection of the wound can be controlled, may be expected to recover with useful limbs without much shortening or deformity. Continuity of treatment is essential, and the limb once properly splinted must be retained in correct extension and alignment until the long process of consolidation is complete. There is probably no class of case in which treatment can so beneficially influence the final result, but it must be conducted on sound principles by the best modern methods, and must be continuous. The method of splinting adopted must be such as to enable the surgeon to treat the wound, and watch its progress without taking off the splints; the movement of the parts inevitable in the removal and readjustment of splints will not only retard consolidation but may light up quiescent infection. Considerations such as these have, we understand, caused the military authorities to prescribe that fractures of the femur are to be included among orthopaedic cases, and to be sent for treatment to orthopaedic centres, where it may be found advisable to set apart special wards for them.

The purpose of an orthopaedic centre is restoration of function, and its activities may be divided into three stages: In the first, the surgeon attends to the immobilization of fractures, removes obstacles to free movements of joints and tendons, and seeks to restore interrupted continuity of nerves. In the second, massage, electricity, and baths are used for the restoration of muscular action, and for the relief of pain and stiffness of joints. These two stages overlap; baths, for instance, may be used as a preparation for manipulative treatment of joints. The third stage is the training of the man to use his limb. A complete orthopaedic centre comprises, therefore, not only theatres for aseptic operations and for surgical manipulative treatment, and a plaster room, but also massage, electro-therapeutic, and hydrotherapeutic departments, each under skilled medical direction. To order massage, electricity, or baths without ensuring that the treatment is properly carried out with regard to the particular need of each case is to waste time and energy. The centre must possess also facilities for physical exercise, including gymnastics, and, for the final training, curative workshops where a man may resume or learn a trade. The part played by these workshops at this stage is of the highest importance not merely because through them a man may be returned to civil life, capable of doing useful work, but also because the purposive movements of, for example, carpentering or metal work call the higher centres of movement into activity, enlist the will, which is the natural stimulus of voluntary movement, and have a most beneficent effect on the mind as increasing skill is gradually gained.

In conclusion, we would suggest that larger use might be made of the great opportunities that exist in these centres for affording to surgeons instruction and clinical training in orthopaedics. If courses open to all surgeons were established at the principal orthopaedic centres in the United Kingdom there would, we believe, be no lack of applications from those anxious to obtain such post-graduate instruction and experience. The principles can be grasped by reading, but skill in their application can be most certainly and quickly attained by observation and practice of the various points of detail in manipulation, and in the making and adjustment of appliances which are so essential to success. One of the benefits surgery may hope to win out of the wreckage of war is a permanent improvement in methods of treating fractures and other injuries of the limbs and of

preventing the development of deformities and disabilities. The knowledge and experience to be gained in an orthopaedic centre is needed now for the treatment of wounded soldiers and sailors, but it will be wanted in the future in civil practice; the provision of facilities for gaining experience and dexterity now will be a lasting benefit to all practitioners, alike to those who will work in agricultural districts and to those whose lot will be cast in industrial communities.

A BIOLOGICAL CONCEPTION OF LIFE.

DR. J. S. HALDANE, in his too rare excursions into the exposition of the principles of physiology, is easily tempted into the paths of philosophical speculation, much to the profit of his hearers or readers. In 1915 he gave the course of Silliman lectures at Yale College; his subject was organism and environment as illustrated by the physiology of breathing. The course has recently been published in a volume¹ which gives a very thorough account of his own researches and of those of many others by whom our knowledge of the respiratory mechanism and its control has been advanced to its present position.

He has taken this occasion to set out once again his views as to the nature of life. Physiologists in general, as he points out, are for the most part either vitalists or mechanists when it comes to explaining what life is. The mechanistic physiologist holds that life can be explained in terms of matter and motion, in accordance with the chemical, physical, or mathematical laws known to us. The vitalist, on the other hand, holds that some obscure vital principle or force is at work in the living body to regulate the processes, chemical, physical, or what not, that result in what we all recognize as life. Looked at from another point of view, the vital principle is an influence that resists the tendencies of physical and chemical agencies to produce disintegration of the structure of the living body. Ever since the middle of last century physiologists have been for the most part mechanists or materialists, though always there has been a stout minority of vitalists to oppose them. Vitalism received a considerable impetus some time ago from the work of an experimental embryologist, Hans Driesch, who restated the evidence for the view that we must assume the existence of some guiding influence in living matter which directs development into the right way. This guiding principle or vital force he called "entelechy."

Dr. Haldane himself is emphatically neither a mechanist nor a vitalist; to judge from a footnote in the book of his lectures he might allow himself to be described as an organicist. He first gives an account of the regulation of breathing, a very complex affair of co-ordination between both chemical and nervous mechanisms, designed so as to keep the percentage of CO₂ in the pulmonary alveoli as near the figure 5.6 as may be. He then passes on to a description of the readjustments of this regulation in acclimatization and disease—here will be found an account of the curious and almost purposeful properties of oxyhaemoglobin, the oxygen-carrier of the red blood corpuscles—and then points out the importance of the acidity or alkalinity of the blood, so far as respiration is concerned. It was only recently that Hasselbalch of Copenhagen succeeded in finding a trustworthy method of determining the reaction of the blood, or rather its richness in hydrogen

ions and hydroxyl ions; Dr. Haldane shows how acutely sensitive the respiratory centre in the medulla is to changes in the alkalinity of the blood, which is itself in turn mainly dependent upon metabolic processes going on in the liver and in the kidneys, but also tends to vary from moment to moment in accordance with such variable factors, to mention one only, as the development of lactic acid in muscles that are being used. Dr. Haldane illustrates his points with examples drawn from the experience of mountain climbers, balloonists, dwellers at Pike's Peak, persons exposed to carbon monoxide fumes, and numerous experimental physiologists. The position with regard to the respiration, as with the circulation and with the other systems of the living body, may be summed up in the words used by Claude Bernard forty years ago—all the vital mechanisms, varied as they are, have only one object, that of preserving constant the conditions of life in the internal environment of the cells composing the body.

Finally, Dr. Haldane summarizes his objections to the inadequate conceptions of both mechanists and vitalists, and points to organic regulation as the essence of life. The living organism as a whole is seen to regulate its internal environment with extreme delicacy, and no less to regulate its external environment so far as it can; yet, given change in the latter, it exhibits great powers of adaptation to the altered circumstances, even changing its own structure while preserving perfectly its own identity and characteristic activities. The laws of physics and chemistry, adequate as they may be for the inanimate world, do nothing to explain the fact of organic regulation, and can give no picture of the control of the processes in the living tissues which is their most characteristic feature. This is not for want of physical or chemical data; we must conclude, then, that it is the very conceptions of matter and energy, of physical and chemical structure and changes, that are at fault when it is the organic world that has to be explained. Away, then, with the mechanists! As for the vitalists and believers in Driesch's entelechy, they ignore the participation of the environment in the regulation of the organism; vitalism does not correspond to the observed facts therefore; and as, in addition, it seems to set a limit to the experimental investigation that is essential to the progress of physiological science, it, too, must go by the board.

Physiology, says Dr. Haldane, has always dealt with life, and not with what physics and chemistry are at present capable of interpreting. He holds that each detail of organic structure, composition, and activity is a manifestation or expression of the life of the organism regarded as a separate and persistent whole. The life of an organism, including its relations to internal and external environment, is something of prime reality, since it persists actively and as a whole. What persists is neither a mere definitely bounded physical structure nor the activity of such a structure; there is no sharp line of demarcation between a living organism and its environment. An organism and its environment are one, just as the parts and activities of the organism are one, in the sense that though we can distinguish them we cannot separate them unaltered, and consequently cannot investigate or understand one apart from the rest. It is literally true of life, and no mere metaphor, that the whole is in each of the parts, and each moment of the past in each moment of the present. To the biologist, therefore, absolute space and time, matter and energy, are but partial aspects of reality; the fundamental facts with regard to life cannot be made to fit into the conceptions by means of which we now so successfully

¹ *Organism and Environment as Illustrated by the Physiology of Breathing*. By John Scott Haldane, M.D., LL.D., F.R.S. 1917. Oxford University Press: H. Milford. (Crown 8vo, pp. xii + 138. 5s. 6d. net.)

interpret inorganic phenomena. The biologist must treat life as a primary reality; materialism and vitalism, both serviceable creeds in their day and within strict limitations, are creeds outworn.

Going beyond his biological conception of life as organic regulation transcending structure and form, Dr. Haldane points out that the higher organisms are also centres of knowledge and volition, and concludes that it is unmeaning to treat consciousness as a mere accompaniment of life. Conscious personality, he says, is far more than mere organism, and the conception of life is just as inadequate in connexion with personality as are the conceptions of matter and energy in connexion with life. Biology, dealing with living organisms, has for its material an order immanent in the natural world that is far above the order disclosed to us by the study of the inorganic world. Can biology help us in the search for evidences of the presence of God in the natural world? No, says Dr. Haldane; it is not from the data of biology, and still more clearly not from those of the physical sciences, that we derive our conception of God, but from the facts of knowing and consciously doing which we observe in ourselves and our fellow men as conscious personalities. It is the perception that in us as conscious personalities a Reality manifests itself which entirely transcends our individual personalities, that constitutes our knowledge of God. It is in the world of duty and knowledge, not in the natural world as such, that we find the God whom our fathers have worshipped, and in whose strength they have been of good courage and faced trouble, danger, and death. In losing our individual lives we find our true life, and in no part of human activity is this losing of the individual self more clearly realized than in scientific work. The life of such a man as Charles Darwin is in truth a standing proof of the existence of God.

SCIENTIFIC AND INDUSTRIAL RESEARCH.

THE second annual report of the Committee of the Privy Council for Scientific and Industrial Research, which deals with the year 1916-1917,¹ has just been issued. In December last the Government decided that the work of the Committee, together with that of its Advisory Council, should be consolidated by the setting up of a separate department known as the Department for Scientific and Industrial Research, with offices in Great George Street, Westminster. The foundation of the new department led to the creation of the Imperial Trust for the Encouragement of Scientific and Industrial Research, for which purpose a Royal Charter was granted. The report of the Advisory Council records progress made in various directions. The vital need for research at the universities, especially in pure science, and for co-operation between capital, management, science and labour, is insisted upon. During the past year the council have addressed themselves in the main to the organization of industrial research; their motive for this is twofold—the paramount importance of arousing and maintaining the interest of manufacturers in the application of science to industry, and the circumstance that the war has created in industry an atmosphere favourable to the growth of new ideas. On the other hand the war has, unfortunately, made the prosecution of work in pure science, and the organization thereof, a matter of extreme difficulty. The main policy of the year has accordingly been the working out of a scheme of co-operative industrial research. It will be remembered that the Government has placed a fund of one million pounds sterling at the disposal of the department, thus enabling it to encourage the more important industries of the country to undertake research.

Realizing that the independence and initiative of British manufacturers are a great national asset, and that State help, to be effective, must aim at increasing these qualities, the Council decided that the new fund should be disbursed for the most part on a co-operative basis, in the form of liberal contributions towards the income raised by approved voluntary associations of manufacturers established for the purpose of research. Grants in aid are also made to approved individual workers engaged in sporadic investigations. Matters of direct medical interest dealt with in the report are inquiries into the hygienic effects of atmospheric pollution, and into the conditions of labour in mines. The department made a grant last November for researches into the influence of hot and moist atmosphere on miners, and into the methods of cooling and drying the atmosphere of mines, the experimental work being carried out in Dr. J. S. Haldane's laboratory in Oxford and in other suitable laboratories. A research was also undertaken by a committee appointed by the Council, with the object of producing standard types of breathing apparatus for mine rescue work. Dr. W. M. Fletcher, who is assessor to the Council from the Medical Research Committee, was given a watching brief in relation to the experiments of this committee with oxygen apparatus. The wider aspects of the work of the new department concern the medical profession. Its purely industrial features are somewhat remote from the medical sciences and medical practice; but in so far as the department stands for the organization and endowment of research as a whole, its aims and methods deserve our close attention.

EXPERIMENTS ON ANIMALS IN 1916.

THE return relating to experiments on living animals during 1916¹ has been presented by the Chief Inspector, Professor G. D. Thane, who, in view of the pressure due to the war, again submits a summary report. In England and Scotland the total number of persons who held licences during the year was 651, and of these 352 performed no experiments. Twenty-two new places, mostly laboratories connected with military hospitals or Government establishments, were registered for the performance of experiments. The report contains the usual list of licensees and the number of experiments returned by each. It is divided into two parts for the purpose of separating experiments performed without anaesthetics from those in which anaesthetics were used. The total number of experiments was 66,043, being 4,530 less than in 1915. The total is, as usual, greatly swelled by the inclusion of inoculations, hypodermic injections, and similar proceedings, which numbered 64,295. In the course of cancer investigations more than 7,600 experiments were performed by eight licensees, but were nearly all inoculations into mice; 20,000 experiments were performed for Government departments, county councils, municipal corporations, and other public health authorities; while 28,000 experiments were undertaken for the preparation and testing of antitoxic serums and vaccines, and for the testing and standardizing of drugs. During the year the several registered places were frequently visited by the inspectors, and a large number of experiments were witnessed by them. For the most part such visits were made without previous notice. The inspectors found the animals suitably lodged and well cared for, and the licensees generally attentive to the requirements of the Act and to the conditions attached to their licences by the Secretary of State. A few irregularities were noted and dealt with, one licensee having his licence revoked, and three others being admonished or censured. The report for Ireland shows that the number of persons holding licences at the end of 1916 was 20, of whom 15 performed no experiments. The number of experiments performed was 580, of which 485 were simple inoculations.

¹ Cd. 8718. H.M. Stationery Office. Price 3d.

¹ H.M. Stationery Office. Price 2d.

The inspector, Mr. R. F. Tobin, reports that he has every reason to believe that the holders of the licences obeyed the spirit as well as the letter of the Act, and that experiments were not unnecessarily multiplied.

THE USE OF SACCHARINE.

In a recent letter to the public press Dr. H. C. Ross stated that saccharine—the sale and manufacture of which he says have been prohibited in America on the grounds that as a sugar substitute it is a fraud, and that in certain doses it deranges digestion—has been shown by research in this country to be a possible predisposing cause of a serious malady of the stomach. This rather cryptic warning has incited a correspondent to inquire if there are good reasons to forbid patients the use of saccharine. The research in this country to which Dr. H. C. Ross refers is presumably that undertaken under the John Howard McFadden endowment by himself and others into cell reproduction and cancer, in the course of which it is shown that paraffin, vaseline, saccharine, and other derivatives of coal-tar act as “auxetics” or agents stimulating cell proliferation. It is in virtue of the contained auxetics that soot and tar cause squamous-celled carcinoma of the scrotum, and that kangri cancer in Kashmir is set up by contact of the soot on the braziers with the skin. But so far there does not appear to be any reliable evidence that saccharine has produced gastric carcinoma in man, or that its toxic effects are very obvious. In fact, all that Professor W. E. Dixon says in his textbook of pharmacology on this subject is that, though most coal-tar derivatives when taken continuously irritate the kidneys and cause albuminuria, it is uncertain if saccharine has this action; and in his recent work on “Food Poisoning” (p. 41, Chicago, 1917), E. O. Jordan states that in daily doses of 0.3 gram saccharine is likely to induce digestive disturbance. There does not, therefore, appear to be sufficient evidence to warn diabetics and obese patients who take saccharine in strict moderation to forego any satisfaction they may thus obtain, and we believe that the Food Committee of the Royal Society has come to a similar conclusion.

THE FUTURE OF THE MIDWIFE.

DR. E. W. HOPE, medical officer of health for the city of Liverpool, presented an interesting memorandum on the present and future position of the midwife¹ to the last annual meeting of the Association for Promoting the Training and Supply of Midwives. He pointed out that a large and increasing proportion of births among the poorer classes—nearly three quarters of the total—are attended by midwives. Many of these patients are under adverse home conditions due to want of means, which add to the responsibilities and difficulties of the midwife. Dr. Hope has long regarded the midwife as an essential factor of fundamental importance in every scheme affecting the welfare of maternity and infancy. Such a standard of midwifery skill must be provided as to safeguard the normal straightforward cases, and to recognize danger signals. The ready help of the expert must also be secured for emergencies. The author next enumerates some of the many benefits which the nation would reap from an adequate midwifery service. Thence he passes to consider the social and pecuniary status of the practising midwife throughout the country, and endorses from a wide experience the statement of Dr. Janet Lane-Claydon that in London it is hardly possible under existing circumstances for a reasonable livelihood to be earned by midwives. He admits that the State has made efforts to improve the position of these women through the Midwives Act and Orders of the Local Government Board, and through the Central Midwives Board, but more needs to be done. The real demand at the present time, he says, is for more practising midwives, all trained to the

highest plane of the present standard. Neither of these needs will be achieved unless means are found to attract a well-educated, good class of practitioner, who will be guaranteed enough pay, when trained, to free her from financial anxieties. Having argued that the midwife is essential in the present scheme of things, Dr. Hope discusses how a more efficient service may be secured by enabling a longer and better training to be taken at smaller cost to the student, and by rendering her calling less arduous and more attractive. The plan he proposes is the preliminary examination and selection of candidates, followed by subsidized training, and subsequent employment upon terms, on proof of fitness. He recommends that over and above the fee received for each patient a suitable amount should be paid. In Liverpool a fee of one guinea for emergency cases has for many years past been assured by the city council to the doctor, if the patient herself is not able to pay as much. This principle could be applied so that every midwife is assured of a fee of not less than a guinea for each birth attended. Dr. Hope claims that this arrangement would need simple administrative machinery only, and that it would solve many of the difficulties connected with the midwifery problem. A subsidized and trained midwife would be expected to undertake practice wherever she was sent; but, by the method of making up her fee to one guinea for each birth attended, her practice would be unfettered and free choice would be left to her patients; moreover, she would not be induced to shirk or undersell, her security would be greater, and she would have no bad debts. The scheme is suggestive, and seems worthy of careful consideration. The cost to the country is estimated at less than £100,000 a year.

THE PREVALENCE OF TUBERCULOSIS IN AUSTRIA.

THE increase of tuberculosis in Austria since the outbreak of the war has been the subject of several articles this year by the leading Austrian authorities on this subject. Professor R. v. Jaksch¹ writes that not only has the mortality from tuberculosis among civilians shown a most terrible rise since the second year of the war, but the figures for the army are also more disquieting. During 1915 tuberculosis was the cause of death in 18 cases (14.8 per cent.) out of 122 necropsies in reserve military hospitals in Prague. During the first quarter of 1916, when 45 necropsies were performed, death was due to tuberculosis in 9 (19.6 per cent.). In the second quarter of 1916 there were 126 necropsies, and among them death was due to tuberculosis in 40 (31.75 per cent.). Dr. A. J. Cemach² has used diagnostic subcutaneous injections of 0.004 to 0.005 gram tuberculin to demonstrate the rapid increase of tuberculosis in the army. He began to apply this test to every soldier admitted to his hospital of 100 beds in the spring of 1915, surgical as well as medical cases being included. The percentage of positive reactions was 14 to 25 in the summer of 1915, 18 to 28 in the following winter, and 22 to almost 45 in the summer of 1916. The lowering of the standard of fitness for the army was, he thought, largely responsible for this increase of positive reactions. Professor H. Schlesinger,³ in discussing the effect of the war on the character of tuberculous manifestations, says that though no form of tuberculosis unknown before the war has been seen, the relative frequency of the different forms has changed. Rapidly progressive so-called florid phthisis has become commoner, and the cervical glands oftener invaded than was the case among adults before the war. The number of tuberculous joint affections showed a rise, and, as might have been expected, gastro-intestinal complications of tuberculosis were more common than before. He agreed with other German writers that the comparative frequency

¹ *Wien. med. Woch.*, January 13th, 1917.

² *Ibid.*, January 20th, 1917.

³ *Ibid.*, January 27th, 1917.

¹ Liverpool: C. Tinling and Co., Limited, 53, Victoria Street.

of initial haemoptysis has risen during the war. On the basis of reaction to tuberculin, Professor F. Hamburger⁴ has found the incidence of latent tuberculosis among 470 soldiers between the ages 18 and 50, none of whom showed any sign of active tuberculosis, to be as high as 98 per cent. In his opinion none of the cutaneous or percutaneous methods of estimating the frequency of inactive tuberculosis with tuberculin is reliable. In sorting out the tuberculous fit for military service from the unfit he adopted the following procedure. After a fortnight's rest in bed, men who were free from fever were caused to take walks, increasing gradually from 3 to 12 kilometres, and from a leisurely stroll to normal marching speed. The men who developed fever or haemoptysis were rejected; the remainder were given three weeks' further special training, and were then drafted to the front. Discussing the perennial question whether soldier's tuberculosis is a new infection incurred in the army or the outbreak of an old infection, Professor Sörgo⁵ insists that no convincing evidence has been advanced to show that men with lungs previously perfectly sound from a clinical point of view have emerged from the war suffering from pulmonary tuberculosis. Both clinical and *post-mortem* evidence indicated that in the overwhelming majority of cases infection had occurred before the commencement of military service, but, judging by the tuberculin test, from 95 to 100 per cent. of all men in the army were already infected. He concluded that, so far, there had not been during the war any appreciable rise in the total incidence of tuberculosis, but that more inactive cases had become active than before the war; this would mean more sources of infection, to be followed eventually by a rise in the total incidence of tuberculosis.

EYESIGHT AND HEARING CERTIFICATES FOR FIREMEN IN MINES.

In a communication dated August 29th the Home Secretary draws the attention of medical practitioners in colliery districts to the provision in the Coal Mines Act, 1911, which requires that a person holding the certificate of qualification as a fireman, examiner or deputy, must subsequently, so long as he continues to be employed, obtain every five years from a school, institution, or authority approved by the Secretary of State, or from a medical practitioner, a fresh certificate in the prescribed form to the effect that his eyesight enables him to make accurate tests for inflammable gas, and that his hearing enables him to carry out his duties efficiently. For those men who obtained their original certificates in 1912, when the Act came into force, the first period of five years has now elapsed, or will shortly do so. The new certificate can only be given in the prescribed form (Mines and Quarries Form No. 73), and after applying the tests therein specified. Copies of the form and the official cards required for the eyesight test (Mines and Quarries Form No. 74 A-E) will be obtainable through any bookseller, or directly from H.M. Stationery Office. No certificate is valid unless given in the prescribed form. It is of the utmost importance for the safety of the underground workmen in the collieries that no fireman should continue to be employed as such unless his eyesight and hearing are up to the necessary standard, and the Secretary of State relies on medical practitioners to apply the prescribed tests with the greatest care and in a practical manner, with due regard to the object in view. A short explanation of the method by which firemen test for inflammable gas in mines with a safety lamp will be found in the Home Office pamphlet entitled, *How to Test for Firedamp*, price 1½d. The medical practitioner's fees for these certificates are not prescribed, but the Home Secretary has fixed the maximum fee which may be charged by an approved school, institution, or authority for the certificate at 5s.,

or, if it is a certificate as to hearing only, which is sufficient in the case of a fireman employed in a mine in which inflammable gas is unknown, at 2s. 6d. Applications for similar certificates as regards eyesight only may be made by "shot-firers" appointed under the Orders as to the use of explosives in mines. In such cases the same tests of eyesight are to be applied, and the same form is to be used subject to the necessary adaptations. For this the maximum fee chargeable by an approved school, institution, or authority is 2s. 6d.

APICAL TUBERCULOSIS IN ADULTS AND THE FOCAL TUBERCULOSIS OF CHILDREN.

OPIE¹ has made some interesting additions to his observations on the two distinct forms of tuberculous lesions which may be found in the lungs of adults. These, as quoted in a previous number of the JOURNAL (1917, vol. ii, p. 191), are (1) the apical, or that commonly recognized, which tends to spread downwards into the lung, and is not accompanied by tuberculosis of the bronchial glands, and (2) the focal or healed remains of tuberculous lesions in childhood (second to eighteenth years), which are present in at least 92 per cent. of adults, do not attack the apices more than the remainder of the lungs, being, in fact, usually found near the middle of the lung, and are accompanied by tuberculosis of the bronchial lymphatic glands. As the outcome of the present investigation, it appears that in the subjects of healed focal tuberculosis of childhood, subsequent apical tuberculosis runs a chronic course and is usually cured. Whereas in the rare cases in which an adult who has escaped tuberculous infection in childhood is attacked by apical tuberculosis, the disease may run a very severe course, and is accompanied by tuberculosis of the regional lymphatic glands. This shows the important influence of the protective vaccination exerted by the focal tuberculous lesions of childhood, and, to some extent, may explain the terrible ravages of pulmonary tuberculosis among savages when first brought under the wing of civilization. The other important conclusion is that apical tuberculosis of adults is not the result of the focal lesions of childhood but is due to a subsequent infection, for apical tuberculosis becomes increasingly frequent from adolescence to old age, or during the period when the focal lesions are completely healed, calcified, and no longer active; further, in a large proportion of the instances of associated focal and apical tuberculosis the respective lesions are in different lungs, thus rendering any spread by the lymphatic vessels improbable.

THE RELATION OF STREPTOCOCCI TO EPIDEMIC POLIOMYELITIS.

DURING 1916 several American bacteriologists reported almost simultaneously that the cause of acute epidemic poliomyelitis was a streptococcus which can be isolated from the tonsils, central nervous system, and mesenteric lymphatic glands of patients dead from the disease, and that when injected, preferably intravenously, into animals it produces flaccid paralysis. These observations of Rosenow, Mathers, Nuzum and Herzog are manifestly in opposition to Flexner and Noguchi's (1913) conclusion that the causal organism of epidemic poliomyelitis is a minute, filterable, strictly anaerobic globoid body. The results of two recent investigations are antagonistic to the view that streptococci have any etiological relation to poliomyelitis. In the first research, undertaken by Bull² at the Rockefeller Institute, streptococci cultivated from the tonsils of thirty-two human cases of poliomyelitis were inoculated into guinea-pigs, cats, dogs, rabbits, and monkeys. Streptococci cultivated from non-poliomyelitic sources

⁴ *Wien. med. Woch.*, March 10th, 1917.

⁵ *Ibid.*, April 28th, 1917.

¹ E. L. Opie: *Journ. Exper. Med.*, Baltimore, 1917, xxvi, 263-277.

² C. G. Bull, *Journ. Exper. Med.*, Baltimore, 1917, xxv, pp. 557-580.

were also similarly tested, and in both series the results were identical. In no instance was a condition induced resembling poliomyelitis either clinically or pathologically. On the other hand, a considerable proportion of the rabbits and a smaller percentage of some of the other animals developed streptococcal lesions, such as meningitis, meningo-encephalitis, arthritis, myositis, endocarditis, and cerebral and renal abscess. During the great epidemic of poliomyelitis in 1916 in New York no example of metastatic inflammation, such as usually occurs in streptococcal infection, was reported. Streptococci isolated from the poliomyelitic brain and cord of monkeys which succumbed to inoculation with the filtered virus failed to induce in monkeys any paralysis or histological changes characteristic of poliomyelitis. Further, monkeys which have recovered from infection with streptococci derived from cases of poliomyelitis are not protected from infection with the filtered virus, and their blood does not neutralize the filtered virus *in vitro*. Kolmer, Brown, and Freese,² of Philadelphia, cultivated from the cerebro-spinal fluid of cases of human poliomyelitis four varieties of micro-organisms—namely, streptococci, diplococci, diphtheroids, and Gram-negative bacilli. The first two apparently correspond to Rosenow's polymorphous streptococcus. Intracranial, intravenous, and intraperitoneal injection of these four easily cultivated micro-organisms failed to cause paralysis in rabbits or monkeys; arthritis and meningitis were produced by the streptococci, but there was no clinical or histological evidence of true poliomyelitis. The conclusion to be drawn from both these researches is that the streptococci secondarily invade the nervous system in poliomyelitis.

THE DISABLED SOLDIER IN CANADA.

In this country during the last few months placards entitled "Disabled sailors and soldiers: what every man should know" have been put up in various public places for the information of invalided soldiers and their families. A magazine entitled *Recalled to Life* has also appeared for the popular discussion of matters affecting the welfare of disabled men. The Military Hospitals Commission for Canada, whose business it is to re-establish disabled Canadian soldiers in the working world, is likewise convinced of the importance of letting every one know what must be done in order that the disabled soldier may be restored to ability and set up in a career of self-supporting industry. Hence the public, as well as the maimed soldier, must clearly understand the nature of the problem and the need for general co-operation. In addition to issuing a poster on much the same lines as the one we are familiar with, the Commission has published a miniature edition on cardboard, so that every invalided Canadian soldier may have a copy. A leaflet entitled "The Soldier's Return" is also being distributed both to disabled soldiers, and among civilians, for whose information it has in fact been mainly prepared. This takes the form of a lively dialogue, which should prove useful and stimulating to all concerned. The secretary's address is 22, Vittoria Street, Ottawa.

A CONFERENCE of representatives of Local Medical and Panel Committees throughout the country will be held under the auspices of the British Medical Association at the Connaught Rooms, Great Queen Street, London, on Thursday, October 18th, at 10 a.m. Dr. J. A. Macdonald will preside. Particulars of the business to be transacted by the conference will be published next week.

THE members of the committee appointed by the Secretary of State for War to inquire into various matters connected with the personnel and administration of the Army Medical Services in France proceeded to that country on

September 1st, and immediately began to take evidence. The Committee is instructed on its return to carry out a similar investigation in the United Kingdom.

We deeply regret to have to announce the death, on September 11th, of Dr. John Roberts Thomson, who was President of the British Medical Association when it met at Bournemouth in 1891, and afterwards for three years (1899-1901) Chairman of Council. Dr. Thomson had been in failing health for some time, though it was not generally known that his condition had become serious. We hope to publish an obituary notice in an early issue.

THE MEDICAL DEFENCE UNION.

THE annual report of the Medical Defence Union for 1916 repays study. Like all other institutions, the Union has had to contend with difficulties due to the war. A great deal of work has been cast upon the executive by the urgent claims for advice from many members in respect of their joining the R.A.M.C., and the consequent dislocation of medical practice, insurance work, and partnership agreements. Although litigation has been considerably lessened since the war began, quite the usual number of threatened actions have been dealt with. With regard to such attacks, members must feel great satisfaction in knowing that the mere fact of a letter being issued by the secretary to the person demanding compensation suffices in 98 per cent. of cases to cause collapse of the threatened proceedings; hence the wholesome respect felt by speculative solicitors for the Medical Defence Union. Passing from the work of individual defence, which has always been its first care, the Council report that collective defence of professional interests in the shape of prosecution of unqualified practitioners is carried out as a matter of policy where a case is submitted to them by public authorities or by members that successful action would benefit the public or the profession generally. This fact is recognized by the department of the Public Prosecutor, the General Medical Council, and the British Medical Association, all of which authorities have brought cases to the notice of the Council with a view to prosecution. On this matter the report makes the sound observation that the number of successful prosecutions would be greater were the Medical Act of 1858 suitably amended, as it should be, to protect qualified practice, instead of being a mere protection to certain specified medical titles, descriptions, or styles. The hope is expressed that after the war renewed endeavours to induce the State to make unqualified practice illegal may be more successful, since the trend of new legislation seems slightly in favour of this course. With regard to the National Insurance Act, it is noted that cases calling for consideration during the year were numerous, and that each fresh issue of regulations gives rise to new difficulties in panel practice. A protest is entered against the waste of time caused to overworked practitioners by inquiries held by Insurance Committees, to whom time is apparently no object, into allegations of costly prescribing for panel patients, or into frivolous and vexatious complaints by insured persons or approved societies. The solicitor's report analyses the legal work entrusted to him during the year, and contains a number of shrewd remarks on the nature of the Union's work. Since the war an increasing number of cases referred to the solicitor have concerned matters affecting the personal interests of members, particularly in regard to their partnerships or practices, or to questions arising out of the National Insurance Act. As might be expected, there is scarcely a partnership which was in existence when war was declared which has not been in some way disrupted by the calls which have had to be met by the medical profession. The guidance of the Union has been sought in many instances where the terms of partnership could not be accommodated to the new order of things. The financial report shows a sound position notwithstanding depreciations of investments, and a certain shrinkage of membership inevitable at the present time.

The annual general meeting will be held at the Medical Society of London, 11, Chandos Street, Cavendish Square, W.1, on Thursday, September 20th, at 4.30 p.m.

² J. A. Kolmer, C. P. Brown, and A. M. Freese, *Journ. Exper. Med.*, Baltimore, 1917, xxv, pp. 789-805.

THE WAR.

ORTHOPAEDIC HOSPITALS AND CURATIVE WORKSHOPS.

WE were able a few months ago (May 5th, p. 586) to give some account of the development of military orthopaedic hospitals and curative workshops, founded upon a report by King Manuel to the Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem. We are now in a position to give particulars of further developments, founded upon another report by King Manuel.

ENGLAND.

The number of beds in the Military Orthopaedic Hospital, Shepherd's Bush, is now 1,100, but this will shortly be increased to 1,270. The total number of patients discharged from the hospital since it opened in March, 1916, is 1,737, and of these only 390 were discharged as permanently unfit, 325 were returned to duty, 507 were sent to command dépôts, and 515 to employments. The new electro-therapeutic department of this hospital, under Captain W. R. Bristow, gave over 1,600 treatments during three months, and as many cases were treated in the massage department. In the hydrotherapeutic department, opened on July 24th, an average of 79 patients are receiving treatment. At present 120 men are employed in the curative workshops and about 500 in the hospital generally. The new curative workshops which are being completed will provide places for 100 more men. The work done includes engineering, electrical work, metal grinding and polishing, felting, tailoring, fancy leather work, carpentering, photography, art iron work, oxy-acetylene welding, French polishing, painting and sign writing, metal engraving, coopering, motor-car overhauling, surgical bootmaking and repairing, and splint making. In the last named over 2,500 stock splints were made, and 339 special splints, and, in addition, numerous repairs and alterations were carried out. Of 74 men who had passed through the workshops and been discharged from hospital to August 4th, 10 had returned to duty, 35 to a command dépôt, and 20 to employments, making a total of 65 returned to the army, leaving only 9 as permanently unfit. This hospital still needs a new operating theatre, but when this has been built it will be complete.

The Military Orthopaedic Hospital at Alder Hey, near Liverpool, now has 800 beds, and is provided with massage and electro-therapeutic departments, curative workshops, and a gymnasium newly erected. It is therefore very complete, although the provision of new massage, electro-therapeutic and hydrotherapeutic departments is under consideration. It has an annexe in the Pilkington Special Hospital for Disabled Soldiers and Sailors at St. Helens, well equipped and under the medical charge of Dr. J. R. Kerr. A hospital at Calgarth, beautifully situated on Windermere lake, provided by the generosity of Mr. Hedley, is approaching completion, and will be provided with electro-therapeutic, hydrotherapeutic and massage departments, and also curative workshops. It is hoped that this may be worked as an additional annexe to the hospital at Alder Hey.

The 2nd Northern General Hospital at Beckett's Park, Leeds, provides accommodation for 800 orthopaedic patients, a number which will shortly be raised to 1,000. It is composed of huts, and has two operating theatres devoted to orthopaedic work, the one for aseptic operations, the other for surgical manipulations and the application of plaster splints. These two theatres have been built under the supervision of Sir Berkeley Moynihan and Colonel Littlewood, the officer in charge. The curative workshops are nearly finished and ready to receive the equipment provided by the Joint Committee of the British Red Cross and the Order of St. John, but new massage, electro-therapeutic and hydrotherapeutic departments, and a gymnasium are required. This hospital has already accomplished much excellent work; many cases have been fitted to return to military duty, and of the remainder the majority have been so greatly improved as to be fit to return to civil life able to use their limbs in normal fashion.

At Oxford good progress is being made with the establishment of an orthopaedic centre connected with the 3rd Southern General Hospital. Captain Girdlestone is at the

head of this centre, which will provide 250 beds in the base hospital, the Wingfield Hospital, the Radcliffe Infirmary Hut, and a hut hospital about to be built.

It has been decided also to establish an orthopaedic centre at Newcastle-on-Tyne in connexion with the 1st Northern General Hospital in the Royal Victoria Infirmary; the infirmary hopes to be able to use a large area of the town moor (Castle Leazes) for the erection of an orthopaedic department. In Newcastle also is the Cowen Home for the training of disabled men under a committee whose chairman is Sir Thomas Oliver, M.D.

SCOTLAND.

In Scotland there are three orthopaedic centres: one at Bellahouston, Glasgow, with 500 beds, under Major Parry; in its curative workshops more than one hundred men are engaged in learning various trades, and although they have only been working for a short time the results are already satisfactory. The hospital possesses a fine hydrotherapeutic department and good massage and electrical departments.

The Bangour War Hospital, Edinburgh, provides 500 beds for orthopaedic cases; the surgical work is conducted under the direction of Colonel H. J. Stiles, deputy inspector of military orthopaedics in Scotland. At this hospital a large permanent hydrotherapeutic department is being erected, but it still requires new workshops.

At Oldmill Hospital, Aberdeen, there are 500 orthopaedic beds under the supervision of Professor Marnoch. It has three large huts for use as curative workshops, and extensions are contemplated to provide more workshops, a gymnasium, and a hydrotherapeutic department.

IRELAND.

At the Military Orthopaedic Hospital, Blackrock, Dublin, there are 300 beds, with massage and electro-therapeutic departments, and workshops for carpenters, smiths, tailors, and shoemakers, and a lathe house; in addition there are six acres of land on which patients are regularly instructed in the principles and practice of horticulture. This hospital, which is under the charge of Major Potter, was opened on May 19th last; it needs additional workshops.

The Ulster Volunteer Force Hospital, Belfast, was opened on March 1st in an entirely new building situated in the grounds of the Queen's University. It is in reality a branch of the Ulster Volunteer Force Hospital, and was erected by its committee. It provides 194 beds for orthopaedic and limbless patients, but the accommodation has proved inadequate; it also stands in need of electrical, massage and hydrotherapeutic departments.

In the report the double function of curative workshops is more than once insisted upon; they are useful not only for the exercising of the injured limb and the training of the men to useful work, but also as a means of mental re-education, helping the men to a more active life, both mental and physical.

TETANUS IN HOME MILITARY HOSPITALS.

IN the JOURNAL of June 30th, 1917, was printed a summary of the third analysis of cases of tetanus treated in home military hospitals, compiled by Surgeon-General Sir David Bruce, chairman of the War Office Committee for the Study of Tetanus. We have now received from Sir David Bruce a fourth analysis of such cases, covering part of October, November, and part of December, 1916, and dealing with the first 100 cases completed since the last analysis was written. During the four periods analysed the rate of mortality has steadily gone down. In the first group the mortality was 57.7 per cent.; in the second 49.2; in the third 36.5; of the present series of 100, 69 recovered—mortality 31 per cent. The ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals was, roughly, six times as high in September, 1914, as it was two months later; and it remained at or about the lower level until the end of 1916. This fall in ratio was undoubtedly due to a great extent to the introduction of prophylactic injections of antitetanic serum, which took place about the middle of October, 1914.

The present series shows once again that the shorter the incubation period the greater the mortality rate, and vice versa. There were only twelve cases with a short incubation period (that is, up to ten days), and sixty cases with

an incubation period of more than twenty-two days; the shortest incubation period was seven days, and the longest 190. Since the beginning of the war there has been a diminution in the number of cases with short incubation periods, and a corresponding increase in the number of cases with long incubation periods. This is a measure of the action of the prophylactic inoculation of antitoxin.

Sir David Bruce points out that it is sometimes by no means easy to decide whether a case is one of localized or generalized tetanus. He defines general tetanus as that in which spasticity or rigidity occurs in muscles distant from the site of wound, trismus being the most common initial symptom in this form; in local tetanus the spasticity or rigidity is confined to the muscles in the neighbourhood of the wound. He looks on local tetanus as a much modified variety of the original disease, or even as a new type due to the action of the prophylactic injection. In general tetanus the toxin molecules may be pictured as gaining entrance to the circulation, and so reaching all parts of the nervous system. Of the 100 cases under review, 61 could be placed in the general, and 28 in the local, group; in the remainder there was doubt. In the 61 cases of generalized disease there were 21 deaths—mortality 34.4 per cent. All the cases of localized tetanus recovered. Trismus was recorded in 54 of the generalized cases, opisthotonos in 17.

With regard to operative interference, the Tetanus Committee advises that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should always be given; further, they consider it probably safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there are other and imperative reasons for immediate operation. When the symptoms of the tetanus have subsided, and the tissues are flooded with antitoxin, then the wound can be opened up and searched for foreign bodies or hidden collections of pus and tetanus bacilli.

Of the 100 cases 61 were noted as having received a prophylactic injection in France; of these 51 recovered—mortality 16.4 per cent. Of the remaining 39 cases 22 were not recorded to have had prophylactic treatment, though probably many received it; of these 12 recovered—mortality 40.5 per cent. Of the remaining 17 patients who had no prophylactic injection of any kind, 6 recovered—mortality 64.7 per cent. The number of patients treated with antitetanic serum after the onset of symptoms was 98, of whom 68 recovered—mortality 30.6 per cent. Of the two cases which did not receive therapeutic treatment with serum in England, one recovered and the other died.

Once again the analysis of the cases furnishes no evidence either for or against the intrathecal route. It will be remembered that in the first year of the war the figures seemed to show that this route showed advantage over others. Analysis of the figures relating to dosage likewise furnishes no useful deduction as to the curative influence of this factor.

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on September 6th contains the names of officers, non-commissioned officers, and men to whom the King has been pleased to award the Victoria Cross for acts of conspicuous bravery and devotion to duty. The name of the following medical officer, an obituary notice of whom was published in the *JOURNAL* on August 25th, 1917, appears in the list:

Temporary Captain Harold Ackroyd, M.C., M.D., late R.A.M.C. (attached Royal Berks Regiment).

For most conspicuous bravery. During recent operations Captain Ackroyd displayed the greatest gallantry and devotion to duty. Utterly regardless of danger, he worked continuously for many hours up and down and in front of the line, tending the wounded and saving the lives of officers and men. In so doing he had to move across the open under heavy machine-gun, rifle, and shell fire. He carried a wounded officer to a place of safety under very heavy fire. On another occasion he went some way in front of our advanced line and brought in a wounded man under continuous sniping and machine-gun fire. His heroism was the means of saving many lives, and provided a magnificent example of courage, cheerfulness, and determination to the fighting men in whose midst he was carrying out his splendid work. This gallant officer has since been killed in action.

FOREIGN HONOURS.

The King has granted permission to wear the following decorations conferred by the Russian Government upon medical men in recognition of services rendered to the Russian

sick and wounded under the auspices of the British Red Cross Society and the Order of St. John of Jerusalem in England:

Order of St. Anne, Class 2, with Swords.—Dr. F. G. Clemow, C.M.G.

Order of St. Stanislas, Class 2.—Dr. E. M. Hime.

Order of St. Anne, Class 3.—Mr. A. E. Hind, F.R.C.S.

A supplement to the *London Gazette*, dated August 31st, contains a further list of decorations and medals awarded by the Allied Powers at various dates to the British Forces for distinguished service during the course of the campaign; the list includes the following medical officers:

By the President of the French Republic.

Légion d'Honneur.—Croix de Chevalier: Major (temporary) Lieut.-Colonel Arthur Brownfield Fry, I.M.S.

Croix de Guerre.—Captain Lionel Douglas Bailey, R.A.M.C.; temporary Lieutenant Ratenshaw Nariman Kapadia, M.B., I.M.S.; Captain Frederick William Hay, M.B., I.M.S.; Captain James Burne Lapsley, M.B., F.R.C.S., I.M.S.; temporary Major Thomas Malcolm Russell Leonard, West African Medical Service, attached Nigerian Contingent.

It is announced that the French President has also conferred the Legion of Honour upon Dr. Frances Ivens, Surgeon in Charge of the Scottish Women's Hospital at Royaumont.

By the King of Italy.

Silver Medal for Military Valour.—Captain Charles Aubrey Godson, I.M.S.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Lost at Sea.

COLONEL T. DALY, C.M.G., R.A.M.C.

Colonel Thomas Daly, C.M.G., R.A.M.C., was reported as drowned, in the list of casualties published on August 30th. He was lost in the transport *Areadian*, when that vessel was torpedoed and sunk in the Mediterranean on the way to Egypt, on April 15th last. He was educated in Dublin, and took the L.R.C.S.I. and L.R.C.P.I. in 1882. Entering the army as surgeon on August 1st, 1885, he became surgeon-major on August 1st, 1897, lieutenant-colonel on August 1st, 1905, and colonel on March 1st, 1915. He served on the North-West frontier of India, in the Tirah campaign of 1897-98, receiving the medal with a clasp; and in South Africa from 1899 to 1902, taking part in the operations in the Orange Free State, including the action at Bethlehem, in the Transvaal, and in Cape Colony, and received the Queen's medal with three clasps and the King's medal with two clasps. He joined the Expeditionary Force in France in December, 1914, was mentioned in dispatches in the *London Gazette* of November 13th, 1916, and received the C.M.G. on January 1st, 1917. From June 14th, 1915, he had been serving as A.D.M.S. with a division of the new army.

Killed.

STAFF NURSE NELLIE SPINDLER.

Staff Nurse Nellie Spindler, Queen Alexandra's Imperial Military Nursing Service Reserve, was reported as killed, in the casualty list published on August 31st. Before the war she was a member of the staff of Leeds Workhouse Infirmary. After joining the army, she served for a time at Lichfield, and went to France in June, 1916. She was killed by a shell.

Died on Service.

CAPTAIN H. Y. C. TAYLOR, R.A.M.C.

Captain Henry Young Cameron Taylor, R.A.M.C., died at Bexhill on August 25th. He was educated at Edinburgh University, where he graduated as M.B. and C.M. in 1896, also taking the F.R.C.S. Edin. in 1905. After filling the posts of clinical assistant at the Golden Square Throat Hospital and at the Central London Ophthalmic Hospital, of house-surgeon to the Hospital for Sick Children, Great Ormond Street, and of senior house-surgeon at Huddersfield Infirmary, he served as a civil surgeon in the South African war, gaining the medal. On his return he went into practice at Bexhill, where he was medical officer of the post office and of the local branch of the British Red Cross Society. After taking a temporary commission in the R.A.M.C. he was employed at Netley Hospital.

CAPTAIN A. TRAILL, R.A.M.C.

Captain Anthony Traill, R.A.M.C. (temporary), died at a casualty clearing station, of internal haemorrhage, on August 25th, aged 27. He was the son of Edmund B. Traill

of Pebmarsh, Essex, and of Chiru, Traill, Argentina. He took the L.M.S.A. in 1915, and joined the army soon after.

Accidentally Killed.

CAPTAIN W. J. ANDERSON.

Captain W. J. Anderson, East African Medical Service, was reported as killed by accident in the casualty list published on September 10th.

Died of Wounds.

CAPTAIN J. H. BAMPION, R.A.M.C.

Captain James Henry Bampton, R.A.M.C., was reported as having died of wounds, in the casualty list published on September 6th. He was educated at Birmingham University, where he gained the Walter Myers Scholarship, and graduated as B.Sc. in 1908, and M.B. and Ch.B. in 1911; afterwards studying at Berne University. After acting as house-surgeon of Birmingham General Hospital, he took up the part of assistant school medical officer of that city, and settled at Gravelly Hill, Birmingham. He took a temporary commission as lieutenant in the R.A.M.C. on February 1st, 1915, was promoted to captain on completion of a year's service, and was attached to the Royal Field Artillery when wounded.

CAPTAIN J. E. S. WILSON, M.C., R.A.M.C.

Captain James Ernest Studholme Wilson, M.C., R.A.M.C., attached Oxford and Bucks Light Infantry, died of wounds in hospital abroad on August 23rd. He was the elder son of the late Rev. Studholme Wilson, of Stoneleigh, Newport, Salop, and was educated at the London Hospital. After taking the M.R.C.S. and L.R.C.P. Lond. in 1911, he went into practice at Iwer, Buckinghamshire, where he was medical officer of the Iwer, Denham, and Langley Cottage Hospital, and of the Alexandra House Home for Feeble-minded Girls. He took a temporary commission as lieutenant in the R.A.M.C. in the latter half of 1915, was promoted to captain after a year's service, and received the Military Cross on September 22nd, 1916.

Wounded.

Lieut.-Colonel A. S. Donaldson, Canadian A.M.C.

Lieut.-Colonel G. S. Williamson, R.A.M.C. (T.F.).

Captain E. G. Anderson, R.A.M.C. (temporary).

Captain R. S. Aspinall, R.A.M.C. (temporary).

Captain L. Ball, R.A.M.C. (T.F.).

Captain K. Biggs, R.A.M.C. (S.R.).

Captain J. E. Bloomer, Canadian A.M.C.

Captain H. M. Clarke, R.A.M.C. (T.F.).

Captain A. L. E. F. Coleman, R.A.M.C. (temporary).

Captain W. H. Cornelius, R.A.M.C. (S.R.).

Captain H. J. De Brent, R.A.M.C. (temporary).

Captain H. H. Elliot, R.A.M.C. (temporary).

Captain A. R. Hargreaves, R.A.M.C. (temporary).

Captain H. G. Janion, M.C., R.A.M.C. (temporary).

Captain J. H. Jones, Canadian A.M.C.

Captain R. W. Kenny, M.C., Canadian A.M.C.

Captain D. Lees, R.A.M.C. (temporary).

Captain W. Leslie, M.C., R.A.M.C. (temporary).

Captain W. B. Loveless, R.A.M.C. (temporary).

Captain R. D. Mackenzie, Canadian A.M.C.

Captain J. A. V. Mathews, R.A.M.C. (temporary).

Captain A. W. Matthew, R.A.M.C. (temporary).

Captain S. S. Meigham, R.A.M.C. (T.F.).

Captain T. M. Miller, R.A.M.C. (S.R.).

Captain J. Moore, Canadian A.M.C.

Captain S. A. W. Munro, R.A.M.C. (temporary).

Captain D. S. Robertson, R.A.M.C. (temporary).

Captain J. R. Small, R.A.M.C. (temporary).

Captain E. S. Smallpage, Australian A.M.C.

Captain W. Stobie, R.A.M.C. (T.F.).

Lieutenant R. T. Worthington, R.A.M.C. (temporary).

Staff Nurse E. McQuillan, Q.A.I.M.N.S. Reserve.

Staff Nurse I. Webster, Q.A.I.M.N.S. Reserve.

Prisoners of War.

Captain E. D. F. Hayes, R.A.M.C. (temporary).

Captain H. K. Ward, M.C., R.A.M.C. (S.R.).

Erroneously Reported Wounded.

Major J. P. Kenny, Australian A.M.C., reported as wounded in the casualty list published on August 27th,

was reported as *not* wounded in that of September 4th, the first report having been made in error.

Erratum.

In the obituary notice of Captain Joseph Cecil Harris, in the JOURNAL of August 25th, there was an inaccuracy with reference to his military status and service. Captain Harris belonged to the Territorial Force, and received his first commission on October 1st, 1912; he was promoted captain on April 4th, 1915, whilst serving in the 3rd North Midland Field Ambulance, with which unit he went to France in March, 1915. He was lent to a casualty clearing station for temporary duty, and was killed on August 16th by a bomb dropped from an enemy aeroplane. The same clearing station was heavily shelled throughout the following day.

DEATHS AMONG SONS OF MEDICAL MEN.

Adam, Arthur Innes, Lieutenant (acting Captain) Cambridge-shire Regiment, younger son of the late Dr. James Adam, of Emmanuel College, Cambridge, reported as wounded and missing on September 16th, 1916, now presumed killed on that date, aged 22. He was educated at Winchester and at Balliol College, Oxford, gaining a scholarship at both school and college, and served at Oxford in the cavalry squadron of the O.T.C. He took a first class in Classical Honour Moderations in 1914. He got a commission on October 8th, 1914, went to the front in June, 1915, was wounded in the following month, and was promoted to acting captain from January, 1916.

Allinson, C. H., Second Lieutenant (acting Captain) Suffolk Regiment, younger son of Captain A. A. Allinson, I.S.M.D., Bengal (retired), reported missing November 13th, 1916, now presumed killed on that date.

Beckingsale, John Edgar, Second Lieutenant, Duke of Cornwall's Light Infantry, only son of D. L. Beckingsale, M.D., of Towyn, Merioneth, killed while leading his platoon into action, August 22nd. He was formerly living in Southern California, and came home to join the army.

Bow, John Mackenzie, W.S., Private, Canadian Forces, son of the late Deputy Surgeon-General John Campbell Bow, I.M.S., killed August 15th, aged 54.

Burton, Arthur Vivian, Captain Royal Flying Corps, only son of Lieutenant-Colonel A. H. Burton, late R.A.M.C., killed in a flying accident at Catterick, August 30th, aged 22. He got his first commission in the Army Service Corps on December 28th, 1914, joined the R.F.C. in 1916, and was gazetted Captain in June, 1917.

Claremont, Frederick Victor Leszynski, 2nd Lieutenant R.G.A., killed in France on August 4th, 1917, younger son of the late C. C. Claremont, M.D., B.S., of Southsea, Physician to the Royal Portsmouth, Portsea, and Gosport Hospital, and of Mrs. Claremont, 81, Camden Road, N.W.

Forbes, Alec, Captain Royal Warwickshire Regiment, elder son of the late Dr. W. G. Forbes, of Stokesley, Yorkshire, reported wounded and missing on September 3rd, 1916, now presumed killed on that date, aged 28.

Hull, Edward Cecil Gordon, Second Lieutenant Royal Field Artillery, elder son of Dr. Hull, of Streatham, London, S.W., killed August 26th.

Oakshott, William Albert Neville, Lieutenant Royal Irish Rifles, only son of Dr. J. A. Oakshott, District Asylum, Waterford, killed August 16th, 1917. He was a medical student at Trinity College, Dublin, when the war broke out. He got his first commission in the Royal Munster Fusiliers on October 20th, 1914, and had been wounded in April, 1916.

O'Connor, Hubert, M.C., Captain King's Shropshire Light Infantry, eldest son of Mr. Charles O'Connor, F.R.C.S.I., died on August 17th, aged 30, of wounds received the previous day. He was educated at Clongowes Wood, the Irish Jesuit College, and at Trinity College, Dublin, where he took his degree, being afterwards called to the Irish Bar. In 1910 he contested East Limerick as an Independent Nationalist, in the interests of Mr. W. O'Brien. He got his first commission on January 6th, 1915, and received the Military Cross on June 28th, 1916.

Osler, Edward Revere, only son of Sir William Osler, Bt., of Oxford, died of wounds on August 30th, aged 21. He was educated at Winchester and Oxford, where he was a commoner of Christchurch, and received his commission in May, 1916. By his death the baronetcy bestowed on his father is left without an heir.

Price, George Bernard Locking, Second Lieutenant Gordon Highlanders, only son of the late Lieut.-Colonel William Locking Price, I.M.S., killed August 22nd. He got his commission last March.

Tudsbury, Lancelot, Second Lieutenant Royal Field Artillery, youngest son of Dr. Tudsbury, of 100, St. George's Square, S.W., killed August 22nd, aged 19.

Warburton, Arthur John Egerton, London Regiment, son of the late Dr. Arthur Warburton, of East Molesey, died of pneumonia on active service on August 14th, aged 22.

Woodforde, Major Phillip Sidney Soanne, 1st Infantry Battalion, Australian Imperial Force, somewhere in France, on May 6th, 1917, of wounds, aged 23 years. Eldest son of the late Dr. Ernest Woodforde, he was a New South Wales native, and was present at the Gallipoli landing as lieutenant, where he was wounded the first day. He returned to the peninsula, and after the evacuation was sent on to France, where he won his

way to the majority of his battalion. He was again badly wounded, sent to England, and got back in time for Pozières. Finally killed at, or somewhere near, Bullecourt.

Yelf, James Harbidge, Private, Canadian Infantry, youngest son of the late Dr. L. K. Yelf, of Moreton-in-Marsh, killed August 21st, aged 35.

Dr. L. A. Francis, of Uxbridge, writes to inform us that the good news has reached him that his son, Second Lieutenant W. F. Francis, who had been officially reported killed and of whom a brief obituary notice appeared in this column, is a wounded prisoner in Germany.

MEDICAL STUDENTS.

Barry, William Roche Brereton, Second Lieutenant Royal Dublin Fusiliers, reported wounded and missing since August 16th, 1916, is the second son of Judge Brereton Barry, of Glengageary, co. Dublin. He was a second year medical student at Trinity College, Dublin, when he got his commission in February, 1916.

Hatte, Edward Stokes, Second Lieutenant Royal Irish Rifles, killed recently, was for two years a medical student at Dublin University. He was the son of Mr. W. M. Hatte, of Kington, Cowper Road, Dublin. After leaving college he went to Ceylon as a planter, and went to Egypt with the Ceylon Planters Corps, serving in the fight with the Turks on the Suez Canal, and at Gallipoli from the first landing to the evacuation. He went to France in March, 1916, and soon after got a commission in the Royal Irish Rifles, was severely wounded in September, 1916, and rejoined in May, 1917.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

Scotland.

HOSPITALS FOR DISABLED SOLDIERS.

IN Edinburgh it has been decided to found three new hospitals for the care of discharged soldiers suffering from special diseases and disabilities caused by war service. The Edinburgh and South-Eastern District Pensions Committee, one of the four Scottish districts set up by the Ministry of Pensions, has in hand plans for the conversion of Craig End, Liberton, into a hospital for neurasthenia. At Muriston, near Calder, the Committee intend to set up a hospital for epileptics on the colony system. For orthopaedic cases a building in Edinburgh has been secured in the neighbourhood of an existing institution for technical instruction. The cost of these undertakings is being borne partly by the Treasury and partly by the Red Cross Society.

SANITARY CONGRESS AT GLASGOW.

The forty-third annual congress of the Incorporated Sanitary Association of Scotland was held on September 5th and 6th in the Masonic Hall, Glasgow. The subject of a proposed Ministry of Health was introduced early in the session, and was discussed at some length. The general principle of the setting up of such a central department was approved, but the view was expressed that Scotland should have its own head quarters. The president of the congress, Mr. F. G. Holmes, C.E., delivered his address on the practical application of modern sanitation. A brisk discussion took place on the question of the sterilization of the flesh of tuberculous carcasses, from the hygienic and economic standpoints. Mr. A. M. Trotter maintained that tuberculous meat adequately cooked by steam under pressure could be rendered harmless to the consumer, but the selection, preparation, sterilization, and distribution ought to be supervised and controlled by an official of the local authority or of the Government. In Glasgow sterilization of tuberculous flesh would provide meat sufficient for two million meals per annum. Professor Sims Woodhead and Professor Matthew Hay wrote in support of these views. Professor Noel Paton, in a letter, said that if bacteriologists found that the process of sterilization killed the bacilli it was manifest that the flesh should be used as food, especially at the present time. Professor Hunter Stewart also wrote concurring in Mr. Trotter's views, and Professor Glaister and Dr. C. Templeman, M.O.H. for Dundee, spoke to the same effect. Dr. A. K. Chalmers, M.O.H. for Glasgow City, opposed the sale of sterilized meat. On the second day of the congress the housing problem was the main topic of discussion.

Ireland.

BENEFIT SOCIETIES AND DISABLED SOLDIERS.

DR. MAGUIRE, of the Irish Insurance Commission, has awarded two soldiers, discharged as unfit for service from the army, the balances of money claimed by them in sickness and disablement insurance benefits from the Irish Trade and Labour Society, Enniscorthy, of which they were members. The society had refused to continue the payment of benefits on the grounds that the army authorities had decided that the two men were only entitled to partial disablement pensions, and were not incapable of doing light work. It was contended on behalf of the men that, while not incapable of doing certain classes of work, they were still unfitted, as the result of the injuries they received in the war, to undertake the work of farm labourers, upon which they had been engaged before joining the army.

LOCAL GOVERNMENT BOARD AND DOCTORS OF MILITARY AGE.

In reply to a communication from the North Dublin guardians, to the effect that the Local Government Board refused to sanction the appointments of Drs. Lowe and Curran to act during the absence of Drs. Donnelly and Dolan, on vacation, on the ground that the gentlemen in question are eligible for military service, Mr. T. G. Green, the guardians' solicitor, quoted orders showing that the appointment of substitutes is subject to the approval of, and revocation by, the Local Government Board, who have vested in them the power of veto; and expressed the opinion that the guardians would not be well advised to test the validity of the Local Government Board's refusal to sanction the appointments made, as, undoubtedly, the courts would hold that the Local Government Board were within their rights and powers in exercising their veto. As there had been no legal decision on that particular point the guardians might, if they wished, submit a case to counsel on it.

Correspondence.

THE ORGANIZATION OF MILITARY X-RAY WORK.

SIR,—I have before me the July number of the *American Journal of Roentgenology*. It contains a statement on the action of the U.S.A. military authorities in the organization of x-ray work for army purposes. As this is in such striking contrast to the methods adopted in this country, I venture to call your attention to it.

On June 11th the Surgeon-General convened a meeting of prominent radiologists with some of his medical officers. This conference sat in session for two weeks. As a result—

1. A number of schools for the teaching of military radiographic work were established in charge of experts in different parts of the country, and were directly controlled by the Surgeon-General.

2. Medical officers intending to do x-ray work have to attend for three months' instruction, and then are accepted or declined according to the ability shown.

3. Arrangements for the x-ray examination of recruits—especially from the point of view of the condition of the chest—were made.

4. The numerous methods for the localization of foreign bodies were considered, and it was decided that three methods should be taught thoroughly, and only these three.

The Government is defraying the expense of this organization and teaching, and officers taking the course of instruction draw, during this period, the pay of their respective ranks.

This action of the American authorities in their recognition of the importance of expert medical men controlling the radiographic work shows great foresight.—I am, etc.,

C. THURSTAN HOLLAND,
President of the Röntgen Society of London.

Liverpool, Sept. 1st.

A NEW SCHOOL FOR THE STUDY OF HEART DISEASE.

SIR,—The question of a new school for the study of heart disease is not sufficiently answered by your correspondents Dr. Poynton, Sir James Mackenzie, and Dr. Chalmers Watson. Dr. Poynton says in the *JOURNAL* for August 25th, "What we want is an institution concerned with the organization of a broad investigation of this study," etc. One of the most important and one of the most neglected methods is ignored or overlooked altogether by all three gentlemen. I refer to the radiological examination of the heart. To see a thing and observe its working is much more convincing than anything else. Progress in this direction has been largely retarded by the want of familiarity of physicians with its technique and by the modesty of the radiologists in not pressing its claims. This method cannot solve all the problems or vagaries of pathological conditions of the heart. But as a sequel to clinical examination it comes before everything else. Its advantages are obvious. To a trained observer its deductions are most definite. No method for the examination of the grosser conditions of heart disease is so precise in the information obtained. By screen examination the size, shape, conditions of hypertrophy, of dilatation, of effusion into the pericardium, of enlargement of the ventricles and auricles, dilatation of the aorta, aneurysms, and many other things are so readily seen that one sometimes marvels that they are not always cleared up in this way before attempting a diagnosis.

From these appearances the conditions of the valves can sometimes also be deduced. But without considering the latter the former are of sufficient importance to suggest, in many cases, the necessary form of treatment. Again, the appearance of the heart can now be so readily transferred to photographic paper by a single flash exposure in one 300th of a second (not the so-called instantaneous exposure which is from one-tenth to a second) that accurate study of the appearances can be made at leisure. I should place the order of a complete examination of a case of suspected heart disease in the following manner. First, clinical examination; second, radiological examination; third, cardiographic and allied methods.

No new school of heart disease in my opinion is complete without the inclusion of the radiological method.—I am, etc.,

London, W., Sept. 3rd.

JAMES METCALFE.

SIR,—Dr. Poynton's two letters on "a new school for the study of heart disease" are of such importance that I do not think any apology is needed for reopening the subject.

Dr. Chalmers Watson very pertinently asks why "heart disease" is selected as the realm of medicine in which a new school is specially required, and suggests that the study of "intestinal disorders" has a much greater claim. May I ask, Why not both conditions? And why not special schools for half a dozen of the most important diseases from which the nation suffers?

Is not the solution of this problem a ministry of health and a national medical service? Is it not possible for an efficient Ministry of Health to establish "schools of research" to study all the most important diseases? These schools of research should be in touch with all the hospitals and general practitioners in the kingdom, which would enable them to obtain from these sources the information they require.

Sir James Mackenzie has recently been advocating the carrying out of research work on "the first symptoms of disease" by general practitioners. He very rightly insists that this important work must first be done before we are able to recognize and treat disease in its earliest stages.

Advance by the single-handed effort of busy practitioners will be very slow and uncertain. But link up the efforts of every practitioner and hospital with schools for special research by means of a sympathetic and intelligent Ministry of Health, then advance will be both rapid and sure.

Does not a scheme of this magnitude thrill the imagination of all who wish to see the advance of medicine? Is not saving life and improvement of the physique of the rising generation, by a scientific study of prevention of disease and the recognition and treatment of disease in its earliest stages before irreparable organic disease sets in, the greatest service that can be rendered to the nation after

this devastating war? Will not such an improvement in the physical condition of the rising generation result in an enormous increase of national human energy and efficiency, and a corresponding increase in the breadth of the national mental outlook upon life?

I believe it is a vast scheme of this kind which Dr. Poynton had in mind when he wrote his first letter on "a new school for the study of heart diseases"; but he is rather less ambitious or rather more cautious than I am, and preferred to test his scheme on a limited semi-private basis, whilst I should like to see it begun on a broad national basis.—I am, etc.,

H. L. FLINT,
Captain R.A.M.C.

B.E.F., France, Sept. 4th.

CANADIAN UNIVERSITY HOSPITAL UNITS.

SIR,—In your issue of August 25th, on page 271, your Canadian correspondent, under the heading, "University Hospital Units," writes: "Soon after the commencement of the war the universities of McGill, Toronto, Queen's, Laval, Dalhousie, St. Francis Xavier, and the Western University, and the universities of Alberta and Manitoba, offered to the military authorities hospital units fully equipped and composed for the most part of members of each university for service overseas in whatever field they could be of most use. The offers of the last two universities mentioned (Alberta and Manitoba) were not accepted, but units have been mobilized, equipped, and sent across the seas by each of the other universities."

May I point out that after the offer of the University of Manitoba to the Department of Militia, Ottawa, to raise and equip a hospital unit had been declined, the Manitoba Medical College, which is the medical school of the University of Manitoba, offered to organize any hospital unit the Department of Militia might require. The department asked this college, through the university, to organize a casualty clearing station, and within a month from the date the authority to raise No. 4 Canadian Casualty Clearing Station had been given this unit, organized by Manitoba Medical College, was on the ocean and bound for England. It travelled on the same ship as the hospital unit from St. Francis Xavier, No. 9 Canadian Stationary Hospital, and reached England in June, 1916, about a month in advance of the unit from Western University, London, Ontario, No. 10 Canadian Stationary Hospital.

I may also add that the universities of the four western provinces—Manitoba, Saskatchewan, Alberta, and British Columbia—in addition to raising a university battalion, raised the 11th Field Ambulance, which has been continuously with the Canadian Division in France for a period of over a year.

I should not have written had I not felt that your correspondent, who usually reports very accurately medical affairs in Canada, had in this instance failed to render justice to the part played in this war by the Canadian universities west of the Great Lakes.—I am, etc.,

ROSS MITCHELL,
Captain C.A.M.C.

B.E.F., France, Sept. 3rd.

THE ASSOCIATION AND THE PROFESSION.

SIR,—Your correspondents Captain H. B. Morgan and Dr. J. A. Bell may, I think, be answered together, for though they write about different subjects, their attacks on the Association are made from the same standpoint, and are couched in much the same forceful language. This evidence of vigorous interest is refreshing and welcome, but the criticisms would be more valuable if they were not based upon an apparently complete misunderstanding of what is proposed, and a seriously imperfect knowledge of the situation which gave rise to the proposals.

Captain Morgan regards the proposals concerning a Ministry of Health, made by the Council and endorsed by the Representative Body with great unanimity, as an "outrage" "of the Prussian type," and equivalent to "burglary" and "embezzlement." This is severe, but I should like to ask him specifically which of the twenty-three resolutions he regards as partaking of this character. Some of these are practically identical with, all of them are based upon, and none of them is incompatible with, resolutions passed by the Representative Body before the war with no serious opposition to them being

evidenced either at the time or afterwards. They are not poisonous emanations from the brain of a wicked Council. They are intended to be exactly what Captain Morgan wants—a contribution to “a preliminary discussion of a scheme for establishing a Ministry” of Health, and were designed not to “force the establishment of a medical bureaucracy on the State,” but directly to prevent the establishment of such a bureaucracy by the State. It appeared to us that this would be the ultimate effect of that threatened “special legislation dealing with infantile mortality” which Captain Morgan thinks “little can be said against.” The action of the Council has at least delayed—we may hope prevented—this, and so saved the practices of our colleagues who are absent from a very serious attack.

Captain Morgan tells us that he has devoted years to the study of this question, and that a scheme of his has been submitted to the Government. I wonder if the grievance is that the Association's scheme, so far as it has been formulated in these general resolutions, differs from his own; if so, it need not be one, for I feel sure that the Chairman of the Council would be delighted to receive this scheme for submission to his committee, and I know that some of us who have been trying to help in this matter would sincerely welcome any ideas that would shed light on a peculiarly difficult subject.

Similarly, Dr. Bell entirely misreads both the nature and the intention of the proposals with regard to the treatment of discharged disabled sailors and soldiers. They are not due to the innate wickedness of the Council, but are the outcome of specific resolutions of the last conference of Panel Committees. They do not provide that these men “shall be attended under the same regulations as those at present applying to temporary residents”; they are entirely different; but they do involve the sending in of a bill before the money is paid. This apparently is the hardship for the prevention of which Dr. Bell desires to start a new organization. The proposals have nothing to do with the general question of what is proper remuneration for insurance practice, but have been separated from this question by the direct instruction of Panel Committees. The “diplomatic steps” by which they have been arrived at are quite incorrectly stated by Dr. Bell. They were much more laborious, namely, (1) persuading the Commissioners that there was a case for increased payment for these cases at all; (2) persuading the Treasury to the same effect; (3) negotiating with the Commissioners, and through them with the Treasury, as to the details and conditions of increased payment; (4) the formal submission by the Commissioners of proposals based upon the result of these negotiations; (5) the conditional and experimental acceptance of these proposals by the Insurance Acts Committee; (6) the submission of the actual draft regulations for the observations of the Committee; (7) the issue of the regulations by the Commissioners, and of a letter from the Committee recommending the Panel Committees to accept them.

Now, here again, what is the specific point to which Dr. Bell offers such vehement objection? Apparently it is that payment is to be on an attendance basis, whereas he wishes it to be a capitation fee of 10s. This was actually one of the suggestions made by the Committee, but being asked by the Treasury for data on which this particular figure could be justified, we were bound to admit that there were no such data at present, and that the figure was really a guess which we believed might be satisfactory to practitioners. The experimental period of payment by attendance is for the purpose of enabling us to get data for proper calculation. However, Dr. Bell is apparently in possession of such data already. He would do the profession and the Association a signal service if he will forward the figures to the Council or Committee. Can he prove that 10s. is the right amount rather than 8s. 6d., 9s., or even 11s.? Or does he really wish the profession to maintain as a principle that the Treasury must pay it on a guess?

Dr. Bell “calls on every practitioner in the country, whether on the panel or not, to say that he will accept” a 10s. capitation fee, and that “on no other terms will he accept any responsibility for attendance on these poor fellows.” Well, the Association hopes to do better than this. It proposes to prove its case, and if supported by Panel Committees, to ask for a 10s. capitation fee not for

disabled soldiers only, as Dr. Bell wishes, but for *all* insured persons whoever they may be. Will Dr. Bell help?—I am, etc.,

London, N., Sept. 4th.

H. B. BRACKENBURY.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—In any comments on “Medical Benefit of Invalidated Seamen, Marines, and Soldiers” (Memorandum 234 I.C., and also on 233 I.C.) I hope it will be pointed out very plainly and distinctly that the remuneration is the *dividend* rate (233 I.C., par. 7, lines 7, 8, and 9; and 234 I.C., par. 5, lines 7, 8 and 9). This dividend rate is only 90 or 92 per cent. of the scale for temporary residents, and the Treasury will only bring up any deficit which is below the percentage just quoted; there is no intention to make up the full amount of 2s. 6d. for a visit. 2s. for a consultation at the surgery, etc.

This rate of remuneration is too low in these days of increased and increasing expenditure; it ought to be increased by at least 25 per cent.

Will Panel Committees give their representatives instructions to vote for increased panel remuneration at the coming conference? I brought forward a motion last October, but it was lost, owing to some sentiment talked by Dr. Brackenbury about a continued low rate of remuneration being the contribution of the medical profession to the war. I believe that the eyes of some people are at length being opened.—I am, etc.,

JAMES GARDNER,

Honorary Secretary to the Burnley Division, and
Chairman of the Burnley Panel Committee.

Burnley, Sept. 9th.

* * Dr. J. A. Bell of Gloucester, in a letter on the same topic, writes to thank the chairmen, secretaries, and members of Panel Committees and numerous other medical men who have sent him expressions of agreement with the views put forward in his letter published in the JOURNAL of September 1st.

QUO VADIS?

SIR,—Now that with the aid of the officials of the Association the myth of Mr. Lloyd George's 1912 whole-time service scheme—or any other *real* scheme—has been finally exploded, I can pass peacefully to that retirement upon which Dr. Fordyce so kindly congratulates me.¹ An additional comfort will be that the refusal of both Dr. Fordyce and Dr. Davies to accept the evidence of responsible officials constitutes a final and striking proof of Dr. Fordyce's own dictum—namely, the impossibility of the disciplinary control of the medical profession. “Vale.”—I am, etc.,

Hove, Aug. 12th.

C. RAWDON WOOD.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS.

SIR,—Having been on vacation I have only yesterday seen a letter in the BRITISH MEDICAL JOURNAL of August 11th, in which Sir Ray Lankester tries to minimize the part Castellani had in the elucidation of sleeping sickness. I would ask the reader to keep in mind that the Commission sent to Uganda in February, 1903, by the Royal Society consisted of two members only, Sir David Bruce and myself. We arrived in Uganda together on the same day, by the same boat. I am therefore in a unique position to know the exact history of the investigation. I have given all particulars in previous letters on this subject (see *Journal of Tropical Medicine*, July 15th, 1908, and *Times* of July 23rd, 1908, August 20th, 1908, August 29th, 1913, and September 22nd, 1913), and any one taking the trouble to read them will see how grotesque is Sir Ray Lankester's claim that the major part of the credit for the discovery should be given to Sir David Bruce. How can Sir Ray Lankester make this assertion when even in the history given by Sir David Bruce himself (inserted in the official reports without my knowledge) it is stated that before the Commission started work, Castellani gave information that he had found trypanosomes in the cerebro-spinal fluid of some sleeping sickness patients, and

¹ BRITISH MEDICAL JOURNAL, August 11th, 1917.

that he described and taught the method of detecting the parasite, and showed it?

It is stated also that Castellani's "most interesting discovery" led to the rapid and easy elucidation of the etiology of the malady, and that without a knowledge of it the Commission—in Bruce's words—"might have worked in the dark, and, in truth, they might even have returned to England still ignorant as to the true cause of the disease." There is no doubt that Castellani gave great importance to his observations (see my letter to the *Times*, September 22nd, 1913). My assertions have never been contradicted either by Sir Ray Lankester or by Sir David Bruce.

In conclusion, I should like to repeat here what I have always stated in previous publications—namely, to Castellani goes the credit of having first discovered the trypanosome in the cerebro-spinal fluid of sleeping sickness patients; of having first connected it with the etiology of sleeping sickness, and of having first published it. To myself, equally with Sir David Bruce, the credit is due of having very greatly enlarged the researches on the trypanosome and of having first discovered that the parasite is carried by a tsetse fly, *Glossina palpalis*.—I am, etc.,

DAVID NABARRO,

Member of the Sleeping Sickness Commission
London, W., Aug. 29th. of the Royal Society, 1903.

KENT HOSPITALS COMMITTEE.

SIR,—It may interest members of hospital staffs in other counties to know that at a meeting of the members of the medical staffs of hospitals in Kent, held in Maidstone on August 29th at the invitation of the Kent Local Medical Committee for the purpose of forming a hospitals committee for Kent, the following resolutions, and others, were passed by the meeting:

1. That this meeting of members of the medical staffs of hospitals in Kent and of members of the Kent Local Medical and Panel Committees shall form a committee to be known as the "Kent Hospitals Committee."
2. That the members of the Kent Hospitals Committee consist of two representatives from each general hospital and one representative from each smaller hospital, together with three members of the Kent Local Medical and Panel Committees.
3. That members of the medical staffs of the hospitals in Kent meeting at Maidstone on August 29th, 1917, are of opinion:
 - (a) That members of the Kent Hospitals Committee, when formed, and the medical staffs of the hospitals they represent, should not enter into any agreement with the Government, the Local Government Board, or other public body unless and until such agreement has had the sanction of the Kent Hospitals Committee.
 - (b) That the members of the Kent Hospitals Committee and the medical staffs of hospitals they represent should do all in their power to uphold the rulings of the Kent Hospitals Committee, and to abide by its decisions.
 - (c) That no member of the medical staff of a hospital in Kent should agree to attend discharged disabled soldiers as a charity.
 - (d) That no payments should bind members of the medical staffs of the hospitals to sign any certificates, to keep records, or to abide by any new regulations, unless such forms and regulations have been passed and sanctioned by the Kent Hospitals Committee.
 - (e) That when a representative is unavoidably prevented from attending a meeting, his hospital shall have the right to send another member of its medical staff to take his place.

—I am, etc.,

Maidstone, Sept. 3rd.

FRANK COKE, F.R.C.S.Eng.

The Services.

EXCHANGE.

OFFICER in command of a division of stationary hospital near front (Western) would like exchange with officer in similar position at base or elsewhere.—Address, No. 3100, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

THE sixth edition of *Diseases of the Skin*, by Sir Malcolm Morris, K.C.V.O., has just been published by Messrs. Cassell in a revised and enlarged form. The book has been thoroughly revised by the author with the assistance of Dr. Ernest Dore. The chapters on syphilis have been expanded with a view to the needs of those who are carrying out the new official scheme for the diagnosis and treatment of venereal diseases.

Obituary.

ARTHUR EDWARD PATTERSON, M.D., C.M.,

SENIOR ASSISTANT MEDICAL OFFICER, CITY OF LONDON MENTAL HOSPITAL.

DR. ARTHUR EDWARD PATTERSON, for twenty-five years senior assistant medical officer to the City of London Mental Hospital, near Dartford, passed away after a short illness on August 26th. He was the son of the late Major D. A. Patterson, and received his early education in Aberdeen, subsequently proceeding to Aberdeen University, where he qualified M.B., C.M. in 1885; he obtained the M.D. in 1896. After a short period of general practice he entered upon what was to become his life-work as assistant medical officer to the Derby Borough Asylum. He was appointed senior assistant medical officer of the City of London Mental Hospital on January 1st, 1892. A conscientious, painstaking officer he proved himself to be, and his cheery manner and true kindness of heart ensured his popularity with the staff and endeared him to his patients, who were devoted to him.

Dr. Patterson was a member of the British Medical and Medico-Psychological Associations, and published several articles in the medical papers, one of which, "An analysis of 1,000 admissions into the City of London Asylum," appeared in the *Journal of Mental Science*. At one time he took a keen interest in Masonry, and was past master of the Adelphi Lodge No. 1670.

The first part of the funeral service took place in the Asylum Chapel. The Visiting Committee was represented by Sir George Wyatt Truscott, Bt. (chairman) and several other members.

R. H. S.

THE death is announced of Dr. JOHN AITKEN, at Elie, in Fifeshire. Dr. Aitken received his medical education in the University of Glasgow, obtained the M.B., C.M. degrees in 1878, and proceeded to the M.D. in 1886. In 1897 he obtained the D.P.H. of the Edinburgh Royal Colleges. Forty years ago he began practice in Buckhaven, where he had a large practice and was greatly respected. For a time he was M.O.H. for the joint boroughs of Buckhill, Methil, Innerleven, Lochgelly, and Ladybank. Several years ago he retired from practice owing to failing health, and went to live at Elie. He is survived by a widow and daughter.

BRIGADE-SURGEON GEORGE EDWIN SEWARD, Bombay Medical Service (retired), died at Ryde, Isle of Wight, on August 15th, aged 90. He was born on November 29th, 1826, educated at Edinburgh University, where he graduated M.D. in 1855, and entered the I.M.S. as assistant surgeon on August 4th, 1855. He became surgeon on August 4th, 1867, and surgeon-major on July 1st, 1873, retiring with a step of honorary rank on October 12th, 1884. During the Mutiny he was on service in the Indian navy; he was residency surgeon at Baroda at the time of the trial of the late Gaikwar for complicity in the attempt to poison the Resident, Colonel Phayne; and as residency surgeon at Zanzibar he saw Dr. Livingstone start on his last journey into the interior of Africa.

BRIGADE-SURGEON-LIEUTENANT-COLONEL HARRY ARCHIBALD DE LANTOUR, V.D., New Zealand Defence Forces, died at Invercargill, New Zealand, on June 22nd, aged 68. He was the son of the late Edward de Lantour, of the Bengal Civil Service, and was educated at King's College, London, and took the M.R.C.S. in 1874. He had served for long in the Colonial Defence Force, and had received the Volunteer Officers' Long Service Decoration. He had acted as examiner in public health and medical jurisprudence to the New Zealand University.

DR. GEORGE STANCULEANU, who had been in America for several months on a mission on behalf of the Rumanian Government, died at Stamford, Conn., on July 16th. He was laryngologist to the King and Queen of Rumania, and was a very successful practitioner before the war. The German invasion compelled him to leave his native country, leaving everything behind him.

Medical News.

ON July 16th the American Red Cross Fund amounted to £23,604,274.

A THREE months' course of lectures and demonstrations in hospital administration will be given at the South-Eastern Hospital of the Metropolitan Asylums Board, on Tuesdays and Fridays at 5 p.m., by Dr. F. M. Turner, beginning on October 2nd.

MR. W. F. HASLAM, in commemoration of thirty-six years' association with Birmingham General Hospital, was presented on September 10th with an illuminated address and his portrait in oils, while Mrs. Haslam was presented with a diamond and pearl pendant. Mr. Haslam is retiring from the post of honorary surgeon to the hospital, which he has held for the past twenty-six years.

AN urgent appeal for aid is made on behalf of the Joint Committee of the British Red Cross Society and the Order of St. John, for "Our Day," which has been fixed for October 18th. The needs of the Red Cross work were never greater, and they are increasing every day. "Our Day" is everybody's opportunity to contribute to the comfort, care, and well being of the empire's wounded and stricken heroes. Miss C. May Beeman, the organizing secretary, will welcome offers of assistance addressed to 10, West Bolton Gardens, London, S.W.5.

WE have received the first number of the *National Food Journal*, which is issued by the Ministry of Food (H.M. Stationery Office, price 2d.) as a means of giving detailed and official information with regard to the actions and policy of the Ministry. The first number is dated September 12th, and publication will be continued twice a month. Lord Rhondda contributes a prefatory note, in which he states briefly the broad lines upon which his policy of food control is based, concluding with a statement that the general position of our essential food supplies is satisfactory, but that there is absolute need for economy in the use of all foodstuffs.

ON September 7th, at the Liverpool City police court, Henry Virtue Siddons was committed to the assizes on the charge of making a false statement under the Defence of the Realm Act, and on other charges. At the preliminary hearings it was alleged that the prisoner had forged and uttered two notifications of tuberculosis, adding the letters M.D. after his signature, although he had no qualifications in medicine or surgery. At the hearing on September 7th counsel said that subsequent inquiries had enabled the prosecution to present a number of charges against Siddons which were not known earlier in the case. Evidence in support of various charges against the prisoner having been given he was committed for trial, reserving his defence. In opposing an application for bail, counsel stated that in 1913 Siddons was indicted at the Old Bailey, where it was proved that he had personated a medical man, and he went to prison for nine months. Whilst in custody on that charge the accused had leapt out of a railway carriage window, endangering his life. Bail was refused.

A CIRCULAR issued by the Local Government Board on decisions by the Central Tribunal states that in a recent case the applicant, being dissatisfied with his classification (B 1) by the Recruiting Medical Board, was re-examined by the Special Medical Board, who passed him fit for general service. From the evidence of private practitioners, the Appeal Tribunal came to the conclusion that the man could not be fit for general service, and as there appeared to be no further steps which could be taken to verify his classification, the Appeal Tribunal felt bound to give the man exemption, which they did, for three months. The military representative contended that the tribunal were bound by the decision of the Special Medical Board, and the tribunal accordingly gave him leave to appeal to the Central Tribunal on this question. The Central Tribunal held that, although the greatest weight should be given to a certificate of the Special Medical Board, a tribunal is not absolutely bound to decide in accordance therewith, but must consider and decide upon any evidence which may be laid before them relating to the health of the man. The Central Tribunal repeated that a tribunal is not entitled to grant exemption on the ground of ill health or infirmity alone unless they are satisfied that it is such that the man is not fit for any form of military service. The form of military service the man is fit to undergo is not a matter for the tribunals but for the military authorities. The Central Tribunal remitted the case to the Appeal Tribunal to be decided in accordance with these principles.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are (1) EDITOR of the *BRITISH MEDICAL JOURNAL*, *Aitology, Westrand London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the *BRITISH MEDICAL JOURNAL* are devoted will be found under their respective headings.

QUERIES.

W. M. J. asks for suggestions in the treatment of a bad case of nail-biting, in a child 4 years old, in which the ordinary methods have failed. Beyond being rather nervous and excitable the girl is in all other respects well.

LETTERS, NOTES, ETC.

CENTRAL KITCHENS.

MR. CHARLES E. HECHT writes: The executive committee of the National Food Reform Association (14, Great Smith Street, S.W.1) in April last passed a resolution "welcoming the action of the Ministry of Food in recommending communal kitchens as making for individual and national economy and a better nourished population," and received a cordial acknowledgement. Since then the system has been widely adopted, and the saving, both in foodstuffs and in fuel—recently noted with approval by Lord Rhondda—to say nothing of labour, or the opportunity afforded for improving cookery and diminishing waste, is generally recognized. The committee desires to be of service to local authorities and others. It has already been able to assist both public and private promoters of such kitchens.

"A TOO-PUNGENT MOUTH-WASH."

M.D. writes: You have now published two letters from dental surgeons condemning the use for oral purposes of pungent washes, powders, and pastes. A dental surgeon to whom I often send my patients appears almost invariably to advise the use of euthymol tooth paste in cases of pyorrhoea, not only for cleansing the teeth but equally for massaging the gums, after he has himself treated the teeth. The results appear to me to be most satisfactory. I cannot help thinking that the assertion that tooth pastes may cause a marginal gingivitis or interstitial caries is too sweeping.

MEDICAL APPOINTMENTS IN EGYPT.

WITH regard to the paragraphs on medical practice abroad in the Educational Number of the *JOURNAL*, the Director-General of the Egyptian Public Health Department sends us the following note concerning certain medical appointments which occur from time to time in Egypt:

The medical appointments made in the Department of Public Health belong to two main categories:

(a) Temporary Inspectors: Appointment on two years' contract at £600 per annum (with certain allowances, rising to £720 per annum).

(b) Divisional Inspectors: Appointment at £480 per annum (with certain allowances), rising to £600 per annum, with appointment on the pension list after two years' probation if the candidate proves satisfactory.

Candidates for both categories of appointments should be not more than 30 years of age, and should be unmarried.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0 5 0
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An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

THE MENINGOCOCCUS OF WEICHELBAUM.

BY

EDWARD C. HORT, F.R.C.P. EDIN.,

DIRECTOR OF THE CONSTANCE TROTTER RESEARCHES; HONORARY
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The Teaching of Recent Experimental Research.

NOTWITHSTANDING the results of recent experimental research, it is still taught, and it is in consequence widely believed, that the meningococcus of Weichselbaum is itself the direct causal agent of that form of epidemic cerebro-spinal fever which is sometimes spoken of as meningococcal meningitis.

It is also still taught, and the teaching is accepted without question, that the meningococcus, as one of the "lower" bacteria, is an organism with an extremely simple life-cycle, which begins and ends with binary fission into two equal parts. A meningococcus—so runs the legend—always arises directly from a meningococcus, and in no other way.

As regards the first of these propositions—that the meningococcus is itself the direct cause of the disease which bears its name—I showed by experiment in 1915, and this, in conjunction with Captain A. H. Caulfield, I amply confirmed in the following year:

1. That cultures of the meningococcus in cerebro-spinal fluid or in suitable laboratory media frequently contain a minute filterable virus, which is just as pathogenic to monkeys (though not necessarily productive of meningitis) as are unfiltered cultures.

2. That the meningococcus itself appears to be inert, in so far as the production of systemic infection is concerned, whether the cultures be of the so-called epidemic strains, or of admittedly harmless types of carrier strains.

As a result of these experiments, it became clear that the pathogenic results obtained in the past by injection into animals of living cultures of the meningococcus, believed at the time of injection to be pure cultures, are in reality to be ascribed to the injection of impure cultures, the "impurity" consisting in the minute filterable virus described.

It became manifest, in short, as a result of these experiments, that there is no reliable evidence that the meningococcus as such is itself responsible for the disease, mere constancy of presence of the organism, even when combined with agglutinability, being of little value as proof of direct etiological relationship.

Demonstration of the presence of this filterable virus in meningococcal cultures had, moreover, this important result, that it threw grave doubt on the validity of the second proposition to which I have referred, namely, that the reputed causal organism of the disease is a bacterium with a simple life-cycle, which begins and ends with equal binary fission. It unmistakably suggested, in fact, that the meningococcus represents one phase only—the filterable virus representing a second phase—in the life-cycle of an organism which has not yet been described, though, owing to the fact that the experimental method of investigation was mainly employed, it was not then possible to prove by ocular demonstration that this is indeed the case.

Studies in the Morphology of Meningococcal Cultures.

To-day, however, as a result of direct morphological studies of cultures of the meningococcus—studies which are capable of ready verification by the adoption of an extremely simple technique—I am able to confirm and amplify the results obtained already by the experimental method. I am, in short, now able to produce direct morphological evidence that the meningococcus is not a bacterium at all, and that both it and the filterable virus referred to do actually represent different phases in the life-cycle of an ascomycotic organism which has hitherto been believed to be an involution form of the meningococcus. Before, however, presenting the evidence on which these statements are based, I wish to make it perfectly clear that even now the complete life-cycle, in the human host, of the causal organism (of which the meningococcus only represents a saprophytic phase) of cerebro-spinal fever has not been worked out, and that much work on this subject still remains to be done.

This communication deals mainly with the morphological characters of the meningococcus and of its so-called giant forms. It is necessary, therefore, briefly to summarize what is at present known of their chief morphological characteristics.

The Present State of Knowledge of the Morphology of the Meningococcus.

The normal meningococcus of Weichselbaum, say the textbooks, is a Gram-negative coccus, with an average diameter of about 1μ , which may be seen either alone, or in pairs, the latter often showing flattening of the opposed surfaces. When occurring as single cocci it is generally assumed that each living organism will presently undergo equal binary fission, and in the case of many single individuals this, of course, often happens. The meningococcus appears also to be sometimes grouped in triad formation, and sometimes in tetrads. It is said never to appear in chain formation, except as the result of accidental apposition.

In addition to the normal meningococcus, a few of the textbooks—notably that of Heiman and Feldstein—describe the so-called giant forms. These are said to attain to from four to five times the size of the normal coccus, and notwithstanding the fact that they are believed to disappear from solid subcultures in from twenty-four to forty-eight hours, they are usually looked upon as involution forms, or swollen decadent meningococci. These giant forms stain, say Heiman and Feldstein, deeply with the counter-stain employed in Gram's method, as do also some of the single normal-sized "meningococci," in contrast to others of the single normal cocci, as well as the diplococcal forms, both of which take the counter-stain but lightly.

In addition to the normal-sized meningococci, with an average diameter of about 1μ , it has long been recognized that sometimes considerably smaller forms may be seen, with an average diameter of about 0.5μ , and intermediate forms, above the normal organism in size, but below the giant forms, have also been described.

This, then, completes the textbook accounts of the morphology of the meningococcus. It is, however, almost exclusively based on observations of stained fixed films from cultures on solid media, practically no observations having been recorded of the morphology of the organism in stained fixed films from liquid cultures, and none at all of its morphology in wet stained or unstained preparations. And, lastly, no extensive observations appear to have been undertaken of the development of the organism on the warm stage, whether in liquid or on solid media.

In other words, apart from the usual perfunctory examination of the organism in fresh cerebro-spinal fluid, its claim to be considered as a bacterium at all finds its sole justification in the results obtained by the examination of stained dead individuals direct from cultures on solid media.

Now, all deductions as to the botanical position of micro-organisms drawn from the study of stained fixed films are notoriously dangerous unless controlled by direct examination of the living unstained organism, and by observation of development on the warm stage from a single individual. If we add to this statement the reflection that, however convenient artificial solid media may be for the identification of species (by the subsequent application of cultural, fermentative, and serological tests), artificial solid media do not occur in nature, it is not surprising that the application of more scientific methods of study should reveal the fact that the meningococcus is not what it appears.

The Morphological Characteristics of the Meningococcus as Studied in Liquid Cultures.

As I have stated, it is essential, in order satisfactorily to study the morphology of the meningococcus and to determine its real nature, to employ liquid cultures, and to examine therein—

1. Unstained and stained living organisms at room temperature.
2. Development of single individuals on the warm stage.

This should be supplemented, and not replaced, by examination of stained and of unstained fixed films, using for the latter Benians's Congo-red method, or other suitable adsorption method.

Examination of Unstained Living Organisms at Room Temperature.

The method of observation I have found to give the most satisfactory results, allowing of photography with the Pointolite nitrogen lamp, is to make a liquid cell containing a liquid culture under firm pressure between a glass slide and a cover-slip, sealed, to prevent drying and escape, with paraffin. This allows the liquid medium employed to remain liquid at room temperature for at least forty-eight hours. Slide and cover-slip are soaked for twenty-four hours in fuming nitric acid, and are then placed in absolute alcohol till ready for use, when they are finally flamed. The culture is centrifuged before filling the cell in order to enable the observer rapidly to find the various types of organism present in pure cultures of the meningococcus in serum broth or other suitable liquid medium, such as Naegeli's medium containing 2 per cent. glucose and a trace of albumin.

Prolonged examination of, for example, Gordon's strain No. 4 in serum broth, controlled by examination of the same strain (the same sample) in Naegeli's medium, revealed the following types in a liquid cell prepared as above described:

1. Meningococci in diplococcal form of normal size.
2. Giant meningococci in large numbers.
3. Triad groups.
4. Tetrad groups.
5. Short streptococcal groups, the members of the chain being usually unequal in size.
6. Very minute organisms, many being approximately 0.1 to 0.2 μ in diameter, or even less.
7. Intermediate single cocci of every conceivable size between about 0.1 μ and about 4 to 5 μ .
8. One or two bacillary and filamentous forms.

More detailed description of these types is for the moment deferred.

Examination of Stained Fixed Films.

Examination of several hundred Gram-stained films from 46 consecutive acute cases of cerebro-spinal fever in which the meningococcus was isolated and identified, and cultivated in serum broth, gave in every case the same essential results as those detailed in the last paragraph (1 to 8). In all the cases the normal-sized meningococci took up the counter-stain, neutral red or carbol-fuchsin, relatively lightly. In all the cases the giant forms, the triads, the tetrads, and large numbers of the single undivided cocci from about 0.2 μ upwards all took the counter-stain deeply. The occasional bacillary and filamentous forms seen in the majority of the cultures did not as a rule take the counter-stain deeply.

In all cases the outline of the giant forms when stained by Gram's method was relatively blurred as compared with their distinct appearance as living unstained organisms. This also applied to all films stained with Leishman's stain, Jenner's stain, carbol-thionin, methylene blue, Löffler's stain, eosin, carbol-fuchsin, neutral red, or safranin. Previous treatment of the films with iodine tetrachloride vapour, or with saturated solutions of iodine in potassium iodide solution, also failed to render distinct the outline of the giant forms when subsequently stained. Staining of all the kinds tried, in fact, appeared to give an entirely fallacious idea of the true form and structure of these giant forms.

Examination of Unstained Fixed Films: Congo-Red Method.*

This method requires some months' practice in order to obtain familiarity with its fallacies. Once mastered, however, it gives invaluable results, provided always that—as here—these results are controlled by careful examination of unstained living organisms, both at room temperature and on the warm stage. The results obtained are summarized in the accompanying chart of selected giant meningococci from a large number of fields, and are self-explanatory. Endosporeulation and gemination, particularly the latter, are well seen. A large number of excellent photographs of giant meningococci undergoing well-marked endosporeulation have been taken for me by Mr. Martin Duncan, as well as numerous autochromes. Owing to exigencies of space and paper these photographs cannot be reproduced here.

Examination of Living Organisms at Room Temperature and on the Warm Stage.

It is now necessary to describe in fuller detail what may be observed by examination at room temperature of unstained living organisms from liquid cultures of the meningococcus, as well as what may be learnt by observation of development on the warm stage.

To avoid repetition, these may be taken together.

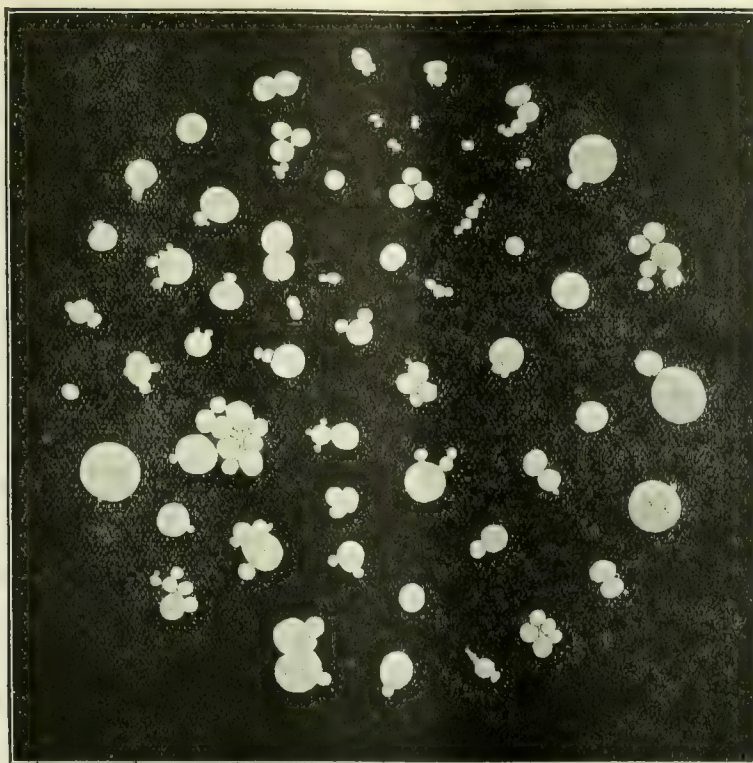
In examining pure cultures of the meningococcus in liquid media by the method of direct observation of unstained living organisms under pressure, the most striking feature—once the attention has been called thereto—is the presence of spheroidal bodies of all sizes up to about 5 μ , with a different refractive index to that possessed by genuine meningococci. To the trained observer this difference in refractive index is alone sufficient to enable a distinction to be drawn between genuine and spurious meningococci, and this applies to the smallest organisms present as well as to the largest. Many of these spheroidal bodies, on careful watching, are seen, in favourable circumstances, obviously to be undergoing unequal binary fission or gemination. Others, again, are clearly undergoing endosporeulation, with or without accompanying gemination. Multiple endosporeulation is in many cases readily to be made out, as also is rapid Brownian movement of what appear to be metachromatic granules, which as a rule can easily be distinguished from the true endospores. Most of the young spheroidal bodies when undergoing gemination, or endosporeulation, or both, have a clearly defined peripheral rim, which serves readily to distinguish them from genuine meningococci (with the ill-defined periphery characteristic of their appearance) when viewed with a good oil-immersion fluorite lens under optimum conditions of illumination. That these spheroidal bodies are genuine asci there can be little doubt, the larger forms being identical with the giant meningococci, as they have hitherto been called.

That the giant meningococcus is not a bacterium is, of course, proved by the facts of gemination and of endosporeulation, the former of which appears to be, from warm stage observation, the main method of its reproduction in young cultures. It is, however, not the exclusive method, as some of the asci divide, radiating from a central space, into three equal segments, and others into four equal segments, the segmentation being holocytous instead of merocytous,* as in the case of the endospore production. This holocytous segmentation of asci into groups of triads and tetrads, and possibly into pairs, though the latter I cannot yet vouch for, is reminiscent of the equal fission observed in the schizogonic saccharomycetes. In the case of meningococcal cultures, however, it appears to be combined in one species with gemination and endosporeulation. The new individuals formed by triad and tetrad formation may be either spheroidal or pyramidal in shape, the latter form apparently being only temporary, and later appearing to assume a spheroidal form.

In the above description I have said that there are minute forms of the "giant meningococcus" as well as large forms, and that this is undoubtedly the case is shown by the fact that even very minute forms may be seen to be undergoing gemination, or endosporeulation, or both, apart from the evidence afforded by differences in refractive index and peripheral outline, as compared with genuine meningococci. We are therefore now in a position to explain the true nature of the numerous single cocci which may be seen in any liquid meningococcal culture. Many of these are undoubtedly meningococci about to undergo equal binary fission; others, on the contrary, will never undergo equal binary fission, but are, in point of fact, young asci, which are capable of undergoing, and often do undergo, gemination and endosporeulation before attaining to their full size. Others, again, while still minute, will split into groups of threes or fours without presenting any evidence of accompanying gemination or endosporeulation. Some asci undergo secondary gemination in rapid succession, the daughter and granddaughter cells still remaining attached, each to its mother cell, and in this way a streptococcal grouping is sometimes formed which is not the result of accidental apposition.

As in the case of recognized ascomycetes, the "giant

* Holocytous signifies cleavage through the entire depth of the cell, as opposed to merocytous, cleavage through a portion of the cell, as in sporulation.



Camera lucida drawing of "giant meningococci." Photograph $\times 1,500$.

WARM STAGE STUDIES IN DEVELOPMENT OF "GIANT MENINGOCOCCI."

(Freehand Drawing.)

CULTURE 1.



A¹ 3.30 P.M.



A² 4 P.M.



A³ 4.30 P.M.



A⁴ 5 P.M.



A⁵ 5.20 P.M.

CULTURE 2.



B¹ 3.10 P.M.



B² 3.55 P.M.



B³ 5.45 P.M.

CULTURE 3.



C¹ 1.45 P.M.

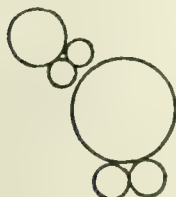


C² 3.10 P.M.

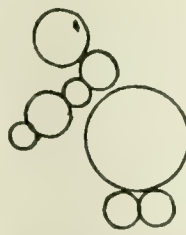
CULTURE 4.



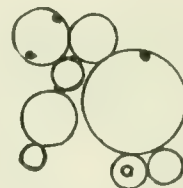
D¹ 11.30 A.M.



D² 1.10 P.M.



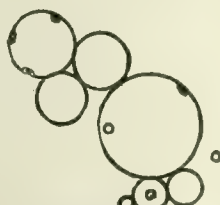
D³ 1.40 P.M.



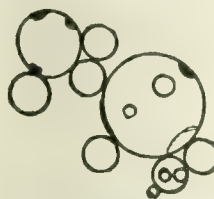
D⁴ 2.25 P.M.



D⁵ 3.30 P.M.



D⁶ 6.50 P.M.



D⁷ 8.50 P.M.



D⁸ 10.20 P.M.

Magnification approximately 3,000.

meningococci," whether large or small, are all potential asci, with the possible exception of those which undergo schizogonic segmentation, and as such all these spurious meningococci, with the exception stated, are potentially capable of undergoing in their turn gemmation and endosporulation. From prolonged warm-stage observation, there is little doubt that genuine meningococci arise by multiple endosporulation from spurious meningococci, or asci, but there is as yet no evidence that the true meningococcus develops again directly into an ascus, as, on the contrary, undoubtedly do the ascus buds. For a time, at least, on solid laboratory media, equal binary fission of the meningococcus becomes stable and fixed, though I have been able to obtain evidence, at present incomplete, that some meningococci (endospores), either before or shortly after escape from the ascus, will show mycelial sprouting in suitable liquid media and so complete the cycle. Considering, however, the tendency to suppression of the mycelial phase in many of the ascomycetes, it is perhaps not to be wondered at that the mycelial aspect is much more difficult to study in laboratory cultures of the meningococcus than is the ascus aspect.

It has been stated above that in serum-broth cultures—and this also applies to cultures of the meningococcus in Naegeli's synthetic medium—very minute organisms can frequently be made out, which I have elsewhere shown to be capable of passing through Chamberland filters. These minute organisms, close to the vanishing point of vision, may, under favourable conditions, be seen in well-developed asci (giant meningococci) and in some cases may be watched in the process of extrusion therefrom. I have not been able to satisfy myself that these will subsequently develop into meningococci, though they do undoubtedly in some cases develop into unmistakable organisms, as seen with monochromatic light, of a globoid nature. Exactly similar bodies, Gram-negative and globoid in form, are often to be seen in incubated meningococcal filtrates (Chamberland F.), though their relationship to genuine meningococci is still a matter of uncertainty. They appear, however, to form a connecting link between invisible filterable virus and Weichselbaum's organism.

It is now necessary very briefly to deal with certain criticisms which might, perhaps not unreasonably, suggest themselves to students who are not familiar with the appearances of meningococci in liquid media when examined in the living state. Both forms of reproduction—gemmation and endosporulation—I have repeatedly watched on the warm stage. Any suggestion therefore that the asci and ascospores are of the nature of artefacts, as from a study of dried preparations alone a casual observer might be pardoned for suggesting, can be summarily dismissed. This applies also to the suggestion that the appearance of gemmation under isotonic conditions has been simulated by plasmolytic changes such as may be observed in red and white blood cells under anisotonic conditions. The further suggestion that the "giant meningococci" (asci) represent involution forms is practically disproved by the facts that they can be sometimes seen in small numbers in cerebro-spinal fluid collected within a few hours of the onset of the disease; that they may be seen in small numbers in 12-hour old primary colonies on solid media if they be diligently searched for, and that they may grow and bud freely in enormous numbers in young liquid cultures, such as serum broth and in subcultures therefrom. And finally, as already stated, quite small young budding forms can be frequently seen undergoing endosporulation, especially after subcultivation from liquid cultures to serum-agar slopes. The term "involution form," in fact, is one that has in the past been much too freely applied to organisms the true nature of which escapes us, and under the optimum cultural conditions obtaining throughout its application here would be worse than unreasonable.

The same criticism applies to the facile suggestion that the organisms here described are contaminants. In connexion with the question of contamination, it is well to remember that it is just as dangerous—provided a good technique has been employed—to assume that a given organism is a contaminant as to assume that it is not. As the appended detailed account of the technique here employed will show, every device known to modern bacteriological science has been employed to prevent contamination. Any doubt remaining as to the adequacy of these devices should be dispelled by the fact that

these organisms were found and cultivated in 46 consecutive cases of the disease, an achievement which, if the organism were a contaminant not deliberately introduced, it would pass the wit of man to reproduce. And, finally, the observations here recorded have only to be repeated for the impartial student to be convinced of their accuracy. In every one of these 46 cases the meningococcus has been isolated and fully identified by its staining reactions, its morphology, its sugar reactions, and its serological reactions, as well as by well-defined cultural reactions. I have not in primary serum-broth cultures found asci in any case apart from the meningococcus, and in no case has the meningococcus been found without asci being also found. I have never been able to cultivate them in serum-broth culture apart from the meningococcus, and in every apparently pure primary culture of the meningococcus the organism has always been found if diligently searched for, and in none of the control culture tubes has any growth been found. The best and most certain method of demonstrating the presence of asci has been, in my hands, by subculture from single colonies of meningococci on serum-agar, itself inoculated with incubated cerebro-spinal fluid. This subculture, however, must be into liquid media, an excellent medium being equal parts of tested horse serum and broth, and there is little doubt but that the real nature of the "giant meningococcus" would have been noted and recorded long ago if the routine use of solid media had not been generally required for purposes of identification of the normal meningococcus.

Details of Technique Employed.

The technique I have mainly employed for detection and cultivation of the asci described is as follows:

1. Cerebro-spinal fluid from a suspected case of the disease is discharged direct into a sterile glass flask with a specially ground glass stopper provided with a sterile rubber cap sufficiently large to come well down over the neck of the flask. In all but six of the cases only samples of fluid withdrawn at first lumbar punctures have been employed.
2. On arrival at the laboratory the centrifuged deposit from a small quantity of the fluid is examined.
3. The remainder of the fluid is then incubated at 37° C. for a period varying from twenty-four to forty-eight hours.
4. A further volume of the fluid is now withdrawn from the flask and is centrifuged and examined.
5. Serum-agar slopes—and sometimes in addition serum-agar plates—are now inoculated, the plates in series, with considerable volumes of the incubated cerebro-spinal fluid.
6. On the following day likely single colonies are picked off and are individually spread on to fresh serum-agar slopes to provide a free confluent growth.
7. On the following day the entire growth of each slope is inoculated into serum-broth tubes, which are incubated for forty-eight hours.
8. From the serum-broth tubes fresh serum-agar and agar slopes are inoculated for serological tests, and lactose, saccharose, glucose, mannite, and dulcitate tubes are also inoculated from the same source.
9. Samples of the serum-broth tubes are at the same time, and subsequently every day, centrifuged and the deposits examined.
10. The filtered serum employed in each case is thoroughly tested, as regards sterility, by complete bacteriological and experimental tests, monkeys being employed for the latter. By taking these precautions and by replating at each stage and retesting from single colonies, both with fermentation and serological tests, as absolute a guarantee as it is possible to obtain by observation of cultures from single colonies is assured.

However useful for purposes of identification and for ensuring the absence of contaminants, cultivation from single colonies nevertheless cannot give an absolute guarantee of purity of culture. To obtain this only two methods are open to us. The first is to pick off single meningococci from a solid culture and to place individual organisms into a separate tube containing a suitable liquid medium in the hope of successful cultivation therefrom.

This, of course, is the classical method, and in theory it is ideal. In practice, however, it cannot be relied on, and for this reason: As I have previously shown, the presence

of the minute filterable virus frequently to be found in meningococcal cultures makes it impossible to be certain that in picking up a normal sized meningococcus one is not at the same time picking up some of this filterable virus. And this objection also applies to the presence of the very minute organisms described above. Now the smallest of these forms—and this is a point I have repeatedly tested—are quite invisible as organisms under a dry lens and the highest compensating ocular that will allow of good illumination. Even with a magnification of 3,000 obtained with a 1.5 mm. apochromatic oil-immersion lens and the appropriate tube length and compensating ocular it is still impossible to be certain that one organism, and one only, has been picked up. The photograph of the camera lucida drawings will illustrate the point of this objection, which applies both to Barber's method and to the fragmented cover-slip method. The only alternative, therefore, is actually to watch on the warm stage growth from a single organism, and even here—on account of these extremely minute forms—the problem is one of great difficulty, which is accentuated by the fact that growth and gemmation of asci is unsatisfactory on solid media, necessary as solid media may be for observing endosporulation. It became necessary, therefore, to use methods of observation of individual organisms in liquid cultures other than the hanging drop method, which is, of course, useless for fine work owing to the curve and depth of drops.

The method I have adopted involves, as stated, the use of shallow cells covered with sterile slips, and the method ensures relative immobilization of the organisms under observation. On the whole it gives satisfactory results.

These results, however, require the greatest care in interpretation, owing to the presence, first, of the filterable virus and of the almost invisible organisms referred to, early gemmation and even endosporulation being often exactly simulated by minute organisms brought into apposition by slight streaming movements still persisting; and owing, secondly, to slow rotatory and dipping movements. These movements lead to error, unless careful and prolonged watch is made, because an early bud, or a minute endospore, under observation may either temporarily vanish from view, or without having been previously seen may come into view for the first time, and simulate either a fresh bud or an endospore.

In all cases, therefore, most tedious and prolonged observation is necessary, which has to be repeated again and again with fresh cultures, as disappointment is frequent owing to death or arrest of growth of an individual organism under observation.

ILLUSTRATIVE FERMENTATION AND SEROLOGICAL TESTS OF THE SERUM-BROTH CULTURES EMPLOYED IN THE ABOVE OBSERVATIONS.

Fermentation Reactions.

In the case of all the fourteen cultures, details of which are here recorded, no reaction was observed in lactose, saccharose, mannite, or dulcitol.

In twelve of the cultures acid was produced quite definitely in glucose, in the remaining two cultures no acid being produced in glucose.

In every case incubation at 37° C. was continued for eight days.

Serum Reactions.

Dilutions:	1:4.	1:8.	1:16.	1:32.	1:64.	1:128.	1:256.	Control.
Culture 1 ...	C	C	C	C	C	C	C	Nil.
Culture 2 ...	C	C	C	C	C	P	Nil	Nil.
Culture 3 ...	C	C	C	C	P	Nil	Nil	Nil.
Culture 4 ...	C	C	C	C	C	Nil	Nil	Nil.

C = Complete agglutination. P = Partial agglutination.

In the case of these four cultures the dilutions were made from undiluted meningococcal serum supplied by the Lister Institute: Titre 1 in 250; No. cl; date of tubing, February 9th, 1916; dates of agglutination, March 8th, 1916; March 4th, 1916; April 29th, 1916; April 29th, 1916.

Incubation at 37° C. was allowed for twenty-four hours before reading, plus one hour at room temperature.

The agglutination tests of the remaining ten cultures were kindly carried out by Dr. Lawes, using Gordon's method for identification of "strains."

The agglutination tubes and their contents were incubated at 56° C. for twenty-four hours before being read.

Serum Reactions.

	Normal.	I.			II.			III.			IV.		
		A	B	C	A	B	C	A	B	C	A	B	C
Culture 5 ...	-	++	++	+	-	-	-	+	-	-	-	-	-
Culture 6 ...	-	-	-	-	++	++	++	-	-	-	-	-	-
Culture 7 ...	-	-	-	-	-	-	-	-	-	-	-	-	-
Culture 8 ...	-	++	++	++	-	-	-	-	-	-	-	-	-
Culture 9 ...	-	++	++	+	-	-	-	-	-	-	-	-	-
Culture 10 ...	-	-	-	-	++	+	-	-	-	-	++	++	+
Culture 11 ...	-	-	-	-	++	++	+	-	-	-	-	-	-
Culture 12 ...	-	-	-	-	++	++	++	++	(+)	-	-	-	-
Culture 13 ...	-	-	-	-	++	++	++	-	-	-	-	-	-
Culture 14 ...	-	-	-	-	++	++	++	-	-	-	-	-	-

Cultures 8 and 9, 11 and 12, 13 and 14, were from three cases.

Cultures 1 to 7, as well as culture 10, being from eight separate cases. A, B, C represent respectively dilutions 1 in 100, 1 in 200, 1 in 400.

Conclusions.

1. The so-called giant meningococcus is not a bacterium. It represents an ascual stage in the life-cycle of an organism allied to the ascomycetes.*

The ascus may be either large or small, or of any intermediate size (0.2 μ to 5 μ).

2. The meningococcus of Weichselbaum is not a bacterium. It is an ascospore, derived from the "giant meningococcus" by a process of endosporulation.

3. The filterable meningococcal virus of my earlier papers probably represents a stage in the life-cycle of the ascomycetic organism described.

4. The true nature of the meningococcus and its alleged giant forms has hitherto been missed because of the practically exclusive use of solid media for purposes of identification, and because direct examination of unstained living organisms, including warm-stage development in liquid cultures, has not been carried out.

An Experimental Investigation

OF

THE SUITABILITY OF THE MORE SOLUBLE SALTS OF QUININE AND CINCHONINE FOR INTRAVENOUS INJECTION.

BY

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PROFESSOR OF PATHOLOGY, CALCUTTA.

THE most soluble salt of quinine—namely, the bi-hydrochloride—has for many years been given intravenously in malaria, although only, as a rule, in very severe infections with cerebral symptoms. The method has gained a reputation for being dangerous, although I have long thought this to be due to the extreme class of cases in which it is generally used rather than to the method itself. Nevertheless, the intravenous route is apparently the most efficacious, as shown by the fact that some cerebral cases of malaria can be saved by it when quinine by the mouth or even subcutaneously would be too slow in its action to be trustworthy. The following experience helped to convince me of this fact. In a case with high continued fever, leading to a suspicion of typhoid, I found very numerous malignant tertian parasites in every field of the microscope, and, recognizing a very dangerous infection, 10 grains of bi-hydrochloride of quinine was at once given intravenously, with the result that the temperature fell finally to normal the next morning.† Some years later I found equally dangerous malignant tertian infections on

* The mycelial or "bacillary" phase is still the subject of study, and will be dealt with separately. Owing to the variable number of ascospores (meningospores) which the ascus (meningococcus) contains, and owing to the absence of perithecia, the organism here described is provisionally placed amongst the hemiascomycetes, instead of amongst the ascomycetes proper.

† See Chart 50, page 227 of my *Fever in the Tropics*.

examining blood slides of two fever cases in another hospital, and advised quinine intravenously. The medical man in charge, however, considered this method to be too dangerous, and gave large doses of quinine up to 50 grains a day by the mouth. One patient became comatose on the following day, and the other no less than three days later, and both died of cerebral malaria, in striking contrast with the above successful case.

At the present time there is urgent need, especially in connexion with military operations in malarial areas, for improvement in the treatment of malaria in the direction of trying to obtain complete elimination of the parasites with consequent prevention of recurrences of the disease, apart from new infections. In January last¹ I recorded having observed the disappearance of crescents from the blood in three consecutive cases following intravenous injections of tartar emetic, but pointed out that the drug had much less effect on the intracorporeal stages of the parasites, and suggested its use during convalescence after the fever had been checked by quinine, in the hope of lessening subsequent relapses. Owing to the malarial season having barely commenced, I have not had any further opportunities of trying this method, but I have heard from two of the three first patients that they had remained free from malarial relapses for some time. On the other hand, Low and Newham² have recorded a failure in a single case, and Brodribb³ a success. The only report of an adequate test which I have yet seen is that of Captain A. J. Orenstein and Lieut.-Colonel W. Watkins-Pitchford, Director of the South African Institute for Medical Research,⁴ to whose courtesy I am indebted for a reprint of their paper. They record a series of 24 crescent cases among soldiers from German South-West Africa treated by quinine, followed by tartar emetic intravenously in accordance with my suggestion. In 10 of them the crescents disappeared after one injection of 0.04 gram, in 6 after two injections of 0.04 and 0.08 gram, and in the remaining 8 after one or two additional doses of 0.12 gram, no single failure having been met with. Quinine had previously been given for from twelve to forty-nine days without any effect on the crescents. Two cases examined one month and sixty-four days later respectively were still free from crescents. No cases had returned with a relapse at the time of their report. These results justify further trials of my method, while it would be of great interest to treat alternate cases during convalescence with tartar emetic, keeping the rest as controls. In benign tertian affections they obtained no such effects.⁵

At the suggestion of Sir Ronald Ross I have turned my attention to the investigation of methods of administering quinine, and, in view of the experience mentioned in the opening paragraph of this paper, I selected the intravenous route with a view to ascertaining in what form and strength the drug can be safely and conveniently administered in sufficient doses to afford hope of completely curing recently acquired infections so that relapses can be prevented. In the present paper I propose to record as briefly as possible the results I have obtained regarding the effects on the blood and the toxicity of the more soluble salts of quinine, and of two such salts of cinchonine in different dilutions when given intravenously in animals, and to mention trials of two of them on fever patients.

The Effects of the More Soluble Salts of Quinine and Cinchonine on Human Blood Serum.

The first point to be determined was the compatibility of different dilutions of the salts with human blood. MacGillchrist,⁶ who has done much work on the cinchonal alkaloids, has expressed the opinion that quinine salts are unsuitable for intravenous injection except in the extreme dilution of a single dose in several hundred cubic centimetres of saline, because he found that even in considerable dilution they caused gelatination or precipitation of blood serum on standing. As, however, solutions when injected intravenously do not stand in the blood, but are very greatly diluted within a few seconds, the immediate effect of given dilutions of the alkaloids on serum appears to be what we want to know. With the help of my friend Captain A. J. Shorten, I.M.S., I have tested this point, and

¹ Since writing the above I have heard from Sir Ronald Ross that no effect had been obtained with tartar emetic on any stage of the malarial parasites in a large number of relapsing cases in England, mainly of the benign tertian variety; so, in spite of the favourable South African results, it is now clear that tartar emetic will not solve the problem of malarial relapses.

have embodied the main data obtained in Table I, which gives the solubilities, quinine content, and the immediate and remote effects of adding the different dilutions noted to an equal quantity of human blood serum.

TABLE I.—*Immediate and Remote Effects of Quinine and Cinchonine Salts on Human Blood Serum.*

Salt.	Solubility.	Quinine Content.	Dilution.	Immediate Effect.	Remote Effect.
Quinine bi-hydrochloride	1-1	81.6 %	1-2 1-10 1-100	Nil Nil Nil	Gelatinous. Ditto. Nil.
Quinine urea	1-1	59.2 %	1-2 1-5 1-10 1-100	Nil Nil Nil Nil	Gelatinous. Slightly turbid only. Ditto. Nil.
Quinine hydrochlor sulphate	1-2	74.3 %	1-2 1-10 1-100	Nil Nil Nil	Gelatinous and precipitated. Ditto. —
Quinine lactate	1-10	78.3 %	1-20 1-100	Thick precipitate Nil	Thick precipitate. Turbidity.
Quinine acid hydrobromide	1-7	60.0 %	1-10 1-20 1-100	Slight precipitate Slightly turbid Nil	Thick precipitate. Marked turbidity. Nil.
Quinine bisulphate	1-11	59.1 %	1-10 1-20 1-100	Slight precipitate Slight turbidity Nil	Thick precipitate. Marked turbidity. Nil.
Hydroquinine hydrochloride	—	—	1-10 1-20 1-100	Thick precipitate Ditto Turbid	Thick precipitate. Ditto. Some precipitate.
Quinine periodide	1-20	48.4 %	1-20 1-100	Thick precipitate Slightly turbid	Thick precipitate. Precipitate.
Cinchonine bi-hydrochloride	1-1	—	1-3 1-10 1-100	Nil Nil Nil	Gelatinous and precipitated. Slightly turbid. Ditto.
Cinchonine acid hydrobromide	1-5	—	1-10 1-100	Nil Nil	Gelatinous and precipitated. Slightly turbid.

The data in Table I allow the more soluble salts of quinine and cinchonine to be divided into three classes. The first have no immediate effect on blood serum even in the strongest solutions, and include the bi-hydrochloride, urea, and hydrochlor sulphate of quinine and the bi-hydrochloride and acid hydrobromide of cinchonine, all of which are highly soluble. The second class produce an immediate turbidity of very slight degree of precipitation in concentrated solutions of 1 in 10, but no immediate or remote change in dilutions of 1 in 100, and include quinine acid hydrobromide and quinine bisulphate. The third class cause an immediate dense precipitate in blood serum in dilutions of 1 in 10 and 1 in 20, and include quinine lactate, quinine periodide, and hydroquinine hydrochloride, the last also producing an immediate turbidity in a dilution of 1 in 100.

As far as the effects on the blood serum are concerned, these data appear to indicate that the three quinine and two cinchonine salts in the first class would be quite safe for intravenous use in dilutions of 1 in 10, or even less, while the two in the next class would probably be safe, in view of their slight immediate effect on the serum in 1 in 10 solutions and their rapid dilution in the blood stream to below 1 in 100, which dilution has no great effect on the serum. The last three would not appear to be suitable for use intravenously as they produce an immediate dense precipitate in blood serum, although hydroquinine hydrochloride has been recommended for this purpose.

Effect of the More Soluble Salts of Quinine and Cinchonine on the Coagulability of the Blood.

This has been tested in order to exclude any possibility of intravascular clotting being produced by the injections. Equal quantities of solutions of different strengths in

normal saline were mixed with equal quantities of fresh finger blood in Wright's tubes and the coagulability times noted. The results showed such a uniform diminution of the coagulability time in the strong solutions and in 1 in 100 dilutions, as compared with controls in which normal saline took the place of the alkaloid solution, that it is unnecessary to give details of the experiments, which appear to exclude any danger of intravascular clotting following intravenous injection of these salts. Moreover, no immediate naked eye change was produced in the colour of the haemoglobin by any of them.

The above preliminary experiments on the action of the more soluble salts of quinine and cinchonine on blood, therefore, indicate that, with the exception of quinine lactate and periodide and hydroquinine hydrochloride salts, all those tested are likely to be safe for intravenous injection in concentrations of at least 1 in 10, which would allow of 1 gram being given in 10 c.cm. and so make the intravenous method quite convenient clinically.

The Toxic Action of the More Soluble Salts of Quinine and Cinchonine on Paramoecia.

A series of experiments has also been carried out with the more promising quinine and cinchonine salts with water paramoecia on similar lines to those I used in testing the alkaloids of ipecacuanha.⁶ MacGilchrist⁶ has recorded experiments on the action of cinchona alkaloids on paramoecia as observed under the microscope. I have found it more convenient, and I believe more accurate, to make the dilutions in small test-tubes and note the strengths which kill all the paramoecia in different times as observed with a hand lens, because some are killed much sooner than others, and as only a few can be watched under a microscope in a small drop of fluid, an accurate end point is difficult to obtain by that method. Table II gives the average figures obtained by four consecutive experiments with dilutions of 1 in 20,000, 1 in 30,000, etc., up to 1 in 70,000. Each set of experiments, including all the seven salts in the table, was completed at one time, so that the culture was exactly the same for each series. The dilutions were made in such a manner that the mixture contained the alkaloid in the strengths mentioned, and the results were noted up to eighteen hours.

TABLE II.—*The Relative Lethal Action of Quinine and Cinchonine Salts on the Protozoal Water Paramoecia.*

Salt.	Average Lethal Strength against Paramoecia.	Quinine Content.	Relative Toxicity against Paramoecia.
Quinine bi-hydrochloride ...	1 in 50,000	81.6%	614
Quinine urea	1 in 30,000	59.2%	507
Quinine hydrochlor sulphate	1 in 40,000	74.3%	537
Quinine acid hydrobromide	1 in 40,000	60.0%	666
Quinine bisulphate	1 in 30,000	59.1%	550
Cinchonine bi-hydrochloride	1 in 30,000	—	—
Cinchonine acid hydrobromide	1 in 37,500	—	—

The percentage of the alkaloid in each salt is shown in the third column of Table II, and by dividing this into the average dilution which killed all the paramoecia the relative lethal action of the different preparations on the protozoa in proportion to their quinine contents is obtained and shown in the last column. As far as this test goes, it shows that quinine bi-hydrochloride is actually, and the acid hydrobromide relatively, the most active of the quinine salts against protozoal paramoecia. Further, the acid hydrobromide of cinchonine gave slightly better results than the bi-hydrochloride. Both the cinchonine salts were weaker than the corresponding quinine ones against paramoecia, but it does not follow that they will prove less active against malarial parasites, which will be worth testing.

The Toxicity of the More Soluble Salts of Quinine and Cinchonine Intravenously in Animals.

A series of experiments was also carried out to ascertain the minimal lethal doses of solutions of these salts intra-

venously in pigeons and rabbits in strengths which would be convenient for administration in the case of man. The results are summarized in Table III.

TABLE III.—*Minimal Lethal Doses of Quinine and Cinchonine Salts Intravenously in Pigeons and Rabbits.*

Strength of Solution.	Minimal Lethal Doses in Pigeons in Grams per Kilo.			Relative Toxicity.	Minimal Lethal Doses in Rabbits in Grams per Kilo.			Relative Quinine Content.	Solubility.
	1-5	1-10	1-20		1-5	1-10			
Quinine bi-hydrochloride	0.065	0.07	0.07	1.26	0.035	0.035	2.57	0.90	1-1
Quinine urea ...	0.13	0.13	—	0.95	—	0.04	3.10	1.24	1-1
Quinine hydrochlor sulphate	0.11	0.11	—	0.90	—	0.0375	3.41	0.99	1-2
Quinine lactate ...	—	—	0.06	1.57	—	—	—	—	1-10
Quinine acid hydrobromide	—	0.13	0.13	0.94	—	0.045	2.73	—	1-7
Quinine bisulphate	—	0.12	0.12	1.03	—	0.0425	2.92	1.24	1-11
Hydroquinine hydrochlor (1)	—	0.10	—	0.90	—	0.035	2.57	0.90	1-2
(2)	0.12	0.13	0.13	—	—	—	—	—	—
Quinine periodide	—	—	0.075	2.03	—	—	—	1.52	1-20
Cinchonine bi-hydrochloride	0.07	0.08	—	—	—	0.035	—	—	—
Cinchonine acid hydrobromide	—	0.11	—	—	—	0.04	—	—	—

The minimal lethal dose in pigeons of quinine bi-hydrochloride in a solution of the strength of 1 in 100 was 0.07 gram per kilo.

A number of interesting points are brought out by the data in Table III. In the first place, it will be observed that the minimal lethal dose in pigeons of quinine bi-hydrochloride was the same, namely 0.07 gram per kilo, whether it was given in a dilution of 1 in 10, 1 in 20, or 1 in 100, but was slightly higher, 0.065, in a 1 in 5 solution. In rabbits the minimal lethal dose was the same in dilutions of 1 in 5 and 1 in 10. These observations confirm the conclusion derived from the absence of any immediate effect of strong solutions of this salt on human blood serum already dealt with, namely, that solutions of a strength of 1 in 10 may be safely injected intravenously.

The figures in Table III, giving the relative toxicity of the different salts in the case of rabbits and pigeons, have been obtained by dividing the minimal lethal doses into the relative quinine content as compared with quinine sulphate, the latter figures being given in the last column but one. Judged in this way, much the most toxic salts in pigeons were quinine periodide and quinine lactate, which I have shown above cause an immediate dense precipitate with blood serum. On the other hand, hydroquinine hydrochloride has one of the lowest relative toxicities in spite of its immediately precipitating blood serum. Possibly this is on account of its much greater solubility (1 in 2) than the lactate (1 in 10) and periodide (1 in 20). Relatively to their quinine contents quinine hydrochlor sulphate, quinine acid hydrobromide, and quinine urea gave the lowest toxicities in pigeons, and quinine bi-hydrochloride and acid hydrobromide in rabbits. I have so far only tried the bi-hydrochloride and acid hydrobromide intravenously in fever cases, and found the bromide salt can be given in from 10 to 15½ grain doses in adults without producing much dizziness, although half that amount of the bi-hydrochloride intravenously commonly produces cinchonism. In all probability the bromide radicle counteracts to some extent the action of quinine in the nervous system, hydrobromic acid having for long been used for that purpose. On the whole, the acid hydrobromide and the bi-hydrochloride of quinine appear to be the most suitable salts for intravenous injection. I had hoped to have been able to test quinine urethane and colloid quinine, but the expected supplies were lost through "enemy action."

Soluble Cinchonine Salts.

Mr. G. E. Shaw, Government of Bengal Quinologist, has very kindly prepared at my suggestion cinchonine bi-hydrochloride and acid hydrobromide, and their toxicities are also shown in Table III, while the data regarding their action on blood serum and on paramoecia have already been

given. Their toxicities are about the same as those of the corresponding quinine salts, while they are highly soluble, so appear to be suitable and well worth trying intravenously in the treatment of malaria. The acid hydrobromide salt is considerably the less toxic, but whether this combination will lessen the well known tendency of cinchonine salts to produce sickness remains to be tested. I am deeply indebted to Mr. Shaw for making these salts and also some hydroquinine hydrochloride (see (1) in Table III) for me at a time he was very short-handed.

Much of the experimental work in this paper was carried out at the Pasteur Institute, Shillong, thanks to the kindness of the director, Captain R. Knowles, I.M.S., and of Colonel H. E. Banatvala, C.S.I., I.M.S.

Suggestions for the Treatment of Malaria.

Owing to the lack of clinical material under my control at the present time I have only been able to try quinine intravenously in a very few cases of malaria, thanks once more to my friend Captain N. H. Hume, I.M.S. So far we have only given the bi-hydrochloride and the acid hydrobromide in $\frac{1}{2}$ -gram doses once a day for three or four days, but without observing more rapid disappearance of the fever and of the parasites than after quinine by the mouth, so larger doses will evidently be necessary if all the parasites are to be rapidly destroyed. As three grains of the bi-hydrochloride contain as much quinine as four of the acid hydrobromide, after commencing with $\frac{1}{2}$ -gram doses to ascertain whether the patient has any idiosyncrasy towards the drug, up to 12 grains of the bi-hydrochloride or 16 grains (approximately 1 gram) of the acid hydrobromide, in $7\frac{1}{2}$ and 10 c.cm. respectively of normal saline (making practically 10 per cent. solutions), may be given once daily for at least four days. It will probably be advisable to supplement the intravenous doses with quinine by the mouth, as the former is likely to be rapidly excreted through the kidneys—a point I am now investigating. In any case prolonged oral administration should follow the more active intravenous medication. Once the resistant relapse producing stages of the malarial parasite have been produced intravenous quinine is not so likely to be so effective, but the vigorous treatment of primary attacks of malaria by intravenous quinine appears to be worthy of careful trial to ascertain if the frequency of subsequent relapses can be reduced. Military hospitals in malarial areas should afford much more favourable opportunities for following up cases sufficiently long to enable this suggestion to be tested than civil practice. A further material advantage of such early intravenous administration is likely to be that dangerously large infections, which may terminate at any moment in fatal coma under oral administration of quinine, are likely to be rapidly controlled, and the present mortality from malaria to be reduced to practically nil.

The following is a very recent successful example of this line of treatment in the most intense malarial infection I have ever seen recovered from:

The patient was admitted at 4 p.m. in a collapsed and semi-conscious state for suspected cholera, but a low specific gravity of the blood, together with an axillary temperature of 99.4° and a rectal one of 105.6°, led to a blood examination, which revealed a malignant tertian infection of such extreme severity that a count actually showed the proportion of parasites to red corpuscles to be 46 per cent.—that is, almost one-half of them were infected. One gram of acid quinine hydrobromide in 10 c.cm. normal saline was at once injected intravenously. On the following morning the patient was conscious and much better, but the infection still amounted to 19 per cent. of the red corpuscles, so the gram dose was repeated morning and evening, and from the next morning no parasites could be found, and the patient is doing well three days later although deeply jaundiced.

Such a case speaks for itself.

Once repeated relapses have become established the only method of treatment which has given me satisfactory results is the daily administration of ten grains of quinine in one or two doses for at least three, and preferably six, months, always continuing until the end of the malarial season if in an endemic area. During the last seventeen years a number of malarial patients so treated by me have apparently lost their infections and remained free for long periods after omitting the quinine. For example, a medical man had suffered from repeated attacks of benign tertian malaria for several years, when I advised him to take ten grains of quinine a day for six months.

I saw him recently, and learnt that subsequently to that course he had remained free from fever for three years. By this plan, whenever resistant forms reproduce the fever-exciting cycle of the parasite, they will be destroyed by the continual dosage of quinine before they can multiply sufficiently to cause an actual attack of fever, and probably before they can form further resisting stages, which may thus be gradually eliminated from the system. However that may be, I believe this plan is at present the best method we have of checking malarial relapses, while it is one which should be feasible even on active service, if an abundant supply of readily-soluble quinine tablets are at hand.

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THE SCABIES PROBLEM ON ACTIVE SERVICE.

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EVERY man incapacitated from duty—it matters not by what means—is a gain to the enemy. From the point of view of the army, and of military efficiency, those diseases ought to rank highest in importance which cause most "casualties." Judged from this aspect, diseases of the skin occupy one of the premier positions, for under the conditions of trench warfare it is inevitable that they are met with in large numbers. The exact extent of the wastage for which they are responsible is known only to the authorities, but it is apparent to all that, since many are contagious, successful efforts directed towards prevention and cure will amply repay by a very large gain of fighting men.

Of the skin diseases found amongst soldiers—excluding pediculosis—scabies is by far the commonest. When uncomplicated its effects incapacitate a man but little; but in consequence of the hard conditions of active service, secondary pyodermic complications are frequent and severe, and these are a very real cause of prolonged sickness. In contrast to the three or four days required for the complete cure of a simple case we have found that when pyodermic complications are established the period necessary is greatly prolonged—the average stay in hospital over a large number of cases being 31.67 days. It should be explained that this figure does not include either treatment elsewhere—which sometimes amounted to many weeks—or the days spent in journeying to the base.

CHARACTER AND DISTRIBUTION OF LESIONS.

Scabies as seen amongst soldiers differs in type from that usually met with in civil practice, and unless the differences are appreciated many cases will not be recognized, leading to dissemination by undetected carriers. The eruption is distributed much in the usual fashion, the sites of election being the wrists, hands, penis, lower abdomen, anterior axillary borders, elbows, and buttocks. The characteristic interdigital burrows, however, are rarely seen; they were present typically in only 13 per cent. of our cases. Vesicles are much more common, though in quite a number of cases the hands are entirely free from lesions of any sort. A correct diagnosis can only be made after inspection of the whole body. In the majority of cases the penis is involved, and the discovery of papules or crusts on either skin or mucous membrane is almost pathognomonic. This serves in doubtful cases to distinguish scabies from the acute pediculosis so frequently seen, and is for this reason an extremely useful diagnostic sign.

Besides the primary lesions of scabies, others due to secondary coccal infection are common and important. They may be so severe as to mask the primary disease

* This figure does not include cases in which one or two indefinite lesions could be found after prolonged search; including these, the percentage would be about 45. It is our impression that lately burrows have been observed with more frequency than some months ago.

and render it liable to be overlooked. Most common is a variety of impetigo distributed in a characteristic manner on the lower buttocks, elbows, and knees. The presence of pustules or crusting on one or all of these regions should at once suggest scabies and lead to search for the more primary lesions elsewhere.

Occasionally the impetigo becomes very widely spread, but even in such cases a correct diagnosis can be made by observing the characteristic grouping on the regions indicated. In numerous cases the impetigo lesion extends more deeply into the dermis and takes the form of an ecthyma. Occasionally a linear variety of impetigo is present.

Boils and other follicular infections of the skin are frequent and tend to recur indefinitely so long as the primary scabies remains uncured. No case should be considered as one of simple furunculosis until itch has been carefully sought for and excluded, or, if found, until the patient has had a thorough course of sulphur treatment.

Some degree of adenitis is the rule in all cases of scabies which have developed any form of coccal infection. The glands of the groin are those most frequently involved, and suppuration in this situation forms a not uncommon and often troublesome complication. In the upper limb severe lymphangitis with foci of suppuration seems to constitute the corresponding lesion. These septic foci usually occur in the upper third of the limb and on its inner aspect.

Dermatitis as a complication of scabies is most frequently the result of unsuitable, misapplied, or too long continued treatment. In these instances the abdomen, thighs, and arms are the commonest sites, and all degrees, from simple erythema to moist weeping or exfoliating eczema, may be observed. Subjects of the seborrhoeic diathesis seem particularly liable to this complication.

Localized dermatitis may originate in a group of vesicles or other scabid lesions, which, together with the intervening skin, have become irritated by scratching; considerable local thickening of the skin becomes superadded, and the result is an area of chronic infiltrative dermatitis, in part scabid and partly artefact. This is most commonly seen in the flexure behind the knee or on the outer aspect of the thigh.

DIAGNOSIS.

Scabies must not only be distinguished from the pyodermic conditions apt to be associated with it, but also from pediculosis, pompholyx, syphilis, and an unusual papular urticaria.

Pediculosis.

From pediculosis the diagnosis is chiefly made by the difference in distribution, and the absence of infection of hands, wrists, and penis. Not only may the two conditions be associated, but the papule common to both can only be distinguished with extreme difficulty.

Pompholyx.

The vesicular lesions of pompholyx are much more deeply seated, more numerous, and more difficult to rupture than those of scabies, and are chiefly limited to the hands and feet.

Venereal Disease.

A single large scabid lesion on the penis may give rise to question as to whether or not the patient is suffering from venereal disease, and the eruption on the body may be mistaken for a secondary rash. The diagnosis is not always so easy as might be supposed, particularly if risks of venereal infection have recently been incurred. Here also the two conditions may occur together.

Papular Urticaria.

A type of papular urticaria which we have not observed in civilian practice may simulate scabies very closely. In this condition small red papules occur over the body generally, but particularly on the abdomen and anterior axillary folds. Wheals, or some degree of dermatographia, may often be found or induced. Again, the wrists, hands, or penis are not involved, and the disease tends to disappear suddenly, while relapse is frequent.

PREVENTIVE MEASURES.

Scabies, it is generally accepted, is rarely contracted excepting after prolonged and intimate contact with infected material, for the acarus does not wander afield like the louse. This being so it is difficult at first sight to explain how the soldier gets the disease. His opportunities for removing clothing and coming into contact with an infected medium are few and are only fully possible when in rest. All the evidence, particularly the occurrence of epidemics amongst officers sleeping in the same dug-out, or amongst groups of men quartered together, points to blankets as the chief means of disseminating infection. Prevention, then, should include frequent disinfection of blankets by such a method as the Clayton sulphur vapour apparatus, or some other accepted form of sterilization. A few cases seem to be contracted from horses, and the protection of the soldier therefore includes efficient treatment of the horse. Great stress is laid by French writers¹ upon the venereal origin of scabies, and this possible source of infection requires to be kept in mind.

Of the greatest importance is the early detection of every case of scabies. Each case undetected acts as a "carrier," and is the potential starting-point of an epidemic. Frequent and thorough inspection of the individual soldier is the only means whereby early diagnosis can be assured. Infected men should be segregated and treated as speedily as possible, for, in addition to preventing dissemination, early diagnosis enables treatment to be instituted while the disease is still uncomplicated, and renders its course short, correspondingly conserving man-power.

CURATIVE MEASURES.

Curative measures should include exposure of the parasite and its ova and their destruction by remedies, short of producing dermatitis. The subsequent disinfection of clothing and bedding to prevent reinfection must never be omitted.

Sulphur, it is generally acknowledged, is the most efficient remedy for the treatment of scabies, and certainly, by reason of its procurability and cheapness, it is that most suited for the extensive requirements of an army. It is a remedy, however, which requires careful and intelligent application, and care must be taken that the patient receives neither too little nor too much treatment, the former leaving him uncured, the latter producing dermatitis, and so increasing his period of unfitness.

How this remedy should be employed is already so well known that a repetition of the details would seem unnecessary had it not been for the recent reintroduction of the sulphur vapour method. This form of treatment, so scathingly condemned by Hebra² in the first half of the last century, seems to have again obtained a certain vogue, in spite of the fact that it was so completely discredited nearly a hundred years ago. Indeed, it has so long been regarded as one of the barbarities of the dark ages that it is rarely mentioned in modern textbooks. We have had opportunity of observing a number of cases treated by this method. Some have suffered from severe dermatitis; numerous others have been uncured. The history given by some of these latter is instructive. After the vapour treatment the itching was relieved, and improvement appeared to take place in the eruption. The patient seemed cured, but after a period of about two weeks the disease again became active, so that it would appear that a false sense of security had here been obtained and a "carrier" discharged to disseminate the infection. That a certain number of cases may be cured by this method is probably correct, but its uncertainty and the special danger of dermatitis, from which it is inseparable, give us no option but to emphatically condemn its use.

Liquid preparations of sulphur, such as Fleming's solution (liquor calcis sulphurata) are undoubtedly efficient agents for the cure of scabies, but they also are particularly liable to cause dermatitis, and considerable experience is necessary for their satisfactory employment.

Sulphur Ointment.

For its simplicity and certainty, no method is so suited for general use as that of simple inunction with sulphur ointment (B.P.), and admirable results will invariably be obtained, if the treatment is conscientiously carried out and with due regard to the necessary details. It must, however, be insisted that the method of application is of

* Pediculosis as usually seen in France occurs in an acute form, and characteristically presents a papular type of eruption.

paramount importance. This may be briefly outlined as follows:

I.

On the first day of treatment the patient is given a hot bath and provided with plenty of soft soap and a large, moderately stiff nail-brush.

(a) Before entering the bath, he rubs himself thoroughly all over with the soap, massaging it into the skin, and paying particular attention to the fingers, toes, wrists, penis, and axillae. This should be continued for at least ten minutes.

(b) He then enters the bath, which should be both long enough and contain a sufficiency of water to permit of immersion to the neck. After first steeping for fifteen minutes, he scrubs himself vigorously all over with the nail-brush for the purpose of opening burrows and vesicles. If the eruption is particularly severe or painful this part of the procedure may be correspondingly modified. After the bath a final inspection should be made, when any unruptured vesicles can be opened with a surgical needle.

The bath is given with the sole object of opening up the haunts of the acarus and exposing it to the action of the parasiticide to follow. It is obvious that shower or steam baths cannot fulfil this purpose, and examination of a patient so treated will reveal the burrows and vesicles still intact.

II.

After removing the soap and drying, a liberal quantity of sulphur ointment (*B.P.*) is provided, with which the patient rubs himself vigorously all over, from the neck downwards, special attention being paid to the affected parts and to the fingers, wrists, genitals, axillae, toes, and ankles. The ointment must be liberally applied and thoroughly rubbed in, so that when finished he should be literally "soaking" in it.

The inunction is to be repeated in this manner twice daily for three days—that is, until the patient has had in all six applications. Each must be complete, and for this it is obvious that all clothing must first be removed. The treatment of limited parts of the body is useless.

III.

Finally, on the fourth day, but not before, a second bath is given, and all the patient's clothing and bedding sterilized to prevent reinfection. Even such articles as wrist-straps, strings of identity discs, gloves, etc., should be included.

The vast majority of cases, unless there be secondary complications, will be found cured after three such days of treatment. Should any doubt exist, 2 per cent. beta-naphthol in vaseline may be used daily for four more days. Only under exceptional circumstances should sulphur ointment be applied for more than three days, since its continued use is liable to cause severe dermatitis. Indeed, in susceptible persons a mild degree may be occasioned by the three-day treatment. This is usually easily cured by zinc ointment or Lassar's paste. At the completion of treatment the existence of some degree of itching is not uncommon; this is due to the remedy, and does not indicate failure of cure; it will rapidly pass off, and should be disregarded. Some days also will probably elapse before all the lesions of scabies have disappeared, although the man is no longer infective. A certain degree of pigmentation may persist indefinitely.

SUMMARY.

1. Scabies in soldiers differs in type from the ordinary form seen in civil practice, particularly in the frequent absence of burrows or other lesions upon the hands, and in the great liability to pyodermic complications.

2. The primary disease is often masked by complications. In every case of impetigo, boils, dermatitis, or inguinal adenitis, scabies must be carefully excluded before the diagnosis is considered complete.

3. Cases of scabies complicated by any of the above necessitate about ten times as long a period in hospital as simple cases, therefore early diagnosis and treatment, before secondary diseases have become established, are of the greatest importance.

4. Regular medical inspection is essential for the detection of "carriers." Infected men should be segregated and treated at the earliest opportunity; horses may also require inspection. Blankets being the chief source of spread should be sterilized as often as possible.

5. Treatment by means of sulphur vapour is a method harmful often to the patient, and at all times dangerous to the community in that it manufactures a class of scabies "carrier." In the interests of the army it should be discontinued.

6. The method of treatment most suitable to service conditions on account of efficiency, simplicity, and cheapness is inunction with sulphur ointment, but this must be carried out in a methodical and thorough manner, and with careful attention to the necessary details.

REFERENCES.

¹Milian, *Paris Médical*, May 6th, 1916, p. 426. ²Hebra on Diseases of the Skin, New Sydenham Society, vol. ii, p. 241.

ON A CONVENIENT METHOD OF PREPARING EUSOL.

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(Report to the Medical Research Committee from the Department of Pathology, University of Edinburgh.)

Eusol may be prepared in the following way:

Take 135 c.cm. of the *B.P.* liquor calcis chlorinatae; dilute with water to 1 litre, add 10 grams of boric acid, and shake up till dissolved. The solution remains clear, and without further treatment is ready for use. If preferred, a saturated solution of boric acid may be stocked at room temperature; this contains 4 per cent. boric acid, therefore 250 c.cm. gives the amount required for 1 litre eusol. In making eusol in this way the 135 c.cm. of liquor calcis chlorinatae should be diluted to 750 c.cm. and the 250 c.cm. of boric acid solution added. This prevents the formation of the precipitate which occurs if boric acid be added to undiluted liquor calcis chlorinatae.

By this method eusol can be prepared at a moment's notice simply by diluting and mixing two stock solutions, both of which are stable.

Should eusol be required for intravenous injection in cases of septicaemia, it is necessary to add sodium chloride in the proportion of 8.5 grams to the litre. In this case, therefore, the 135 c.cm. of liquor calcis chlorinatae would be diluted to 500 c.cm. with distilled water, the 250 c.cm. boric acid solution added, and also a solution containing 8.5 grams of sodium chloride dissolved in 250 c.cm. of distilled water.

The quantities here given are calculated on a chloride of lime assaying 25 per cent. available chlorine, which is about the average obtained from commercial samples at the present time.

In our original paper¹ on the preparation of eusol we described the method of making the solution from dry bleaching powder and boric acid, and this method has been found serviceable where large quantities of the antiseptic are used and the supply has to be constantly renewed. It is less suitable where eusol is required in smaller quantities and at irregular intervals. Since liquor calcis chlorinatae keeps well, the method described above has suggested itself as a simple and convenient way of preparing eusol in any quantity desired.

Liquor calcis chlorinatae is a 10 per cent. solution of bleaching powder in water. It is therefore easily prepared, and its keeping power when tested has given the following results: In April, 1915, a bottle of the solution was made by shaking up 100 grams bleaching powder in 1 litre of water. The mixture was allowed to stand overnight and then filtered. At the time it was made it assayed 2.92 per cent. available chlorine. It was kept in a clear glass-stoppered bottle in a cupboard in the laboratory, with temperature rising in warm weather to 18° or 20° C. Over two years later, on the last day of July, 1917, the solution assayed 2.62 per cent. available chlorine; deterioration had thus taken place very slowly. A similar solution, prepared on July 1st, 1917, stored in the same cupboard during the hot weather of July, has remained at constant assay during the month—namely, 2.57 per cent. available chlorine. This solution, it may be remarked, represents a very poor chloride of lime. Generally speaking, the quality of the chloride of lime manufactured has deteriorated very much during the war.

The use of liquor calcis chlorinatae for the preparation of eusol has another advantage in that the available chlorine in the liquor can easily be determined by titration with N/10 sodium arsenite solution. The testing of the strength of the hypochlorous acid is particularly desirable when it is to be used for intravenous injection.

Standard eusol is a solution of which

- 1 c.cm. = 1 c.cm. N/10 sodium arsenite.
= 0.0035 gram chlorine.
= 0.0026 gram hypochlorous acid.

The following is an example of the application of the test where the chloride of lime is of poor quality.

Take 10 c.cm. of the liquor calcis chlorinatae; dilute to 100 c.cm. 10 c.cm. of this solution = say 0.74 c.cm. N/10 sodium arsenite solution; the end point of the reaction being determined by potassium iodide starch solution or paper. From this a simple calculation shows that 135 c.cm. of liquor calcis chlorinatae per litre is needed to give the standard eusol. When bleaching powder of high quality is used about 125 c.cm. will be found sufficient.

Sodium arsenite solution is more convenient for testing than sodium thiosulphate. Pure arsenious acid can be obtained easily, and the solution keeps indefinitely. The result is not affected by the presence of chlorates. The following method of preparing the solution is described by Cumming and Kay, and we are indebted to these authors for permission to include the description of their method in this paper.

Weigh out accurately in a small porcelain basin 1.237 grams of pure arsenious oxide (previously dried in a desiccator); add 10 c.cm. of sodium hydroxide solution (twice normal); and warm the basin on the steam bath, stirring the mixture gently until the oxide dissolves (about five minutes). Transfer the solution and the rinsings of the basin to a 250 c.cm. standard flask and add 20 c.cm. of dilute hydrochloric acid (twice normal); then add about 8 grams of sodium bicarbonate (or 100 c.cm. of a cold saturated solution), and dilute the solution to the graduation mark.—*A Text-book of Quantitative Chemical Analysis*, by Cumming and Kay. Second edition, p. 94.

Since liquor calcis chlorinatae deteriorates so slowly, a large amount of a standardized stock solution may be made at one time. Each litre of the liquor yields at least 7 litres of eusol. Further, if the test be once applied it need not be repeated till the stock has been exhausted.

REFERENCE.

- ¹ BRITISH MEDICAL JOURNAL, July 24th, 1915.

A NOTE ON THE CARREL-DAKIN-DAUFRESNE TREATMENT.

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The results of six months' experience of the Carrel-Dakin-Daufresne treatment in infected wounds in a general hospital, British Expeditionary Force, may be of interest. It was carried out strictly in accordance with the system employed by Carrel at his hospital. The solution, the operative technique, the appropriate number, calibre, and position in the wound of the tubes are of prime importance; indeed, the number of perforations and their size are not negligible.

The Solution.—The Dakin-Daufresne solution is rich in hypochlorite of soda, but must be neutral or alkaline. It must be tested at least every two days for free hypochlorous acid and the sample rejected if any acid be present. The solution is prepared so readily from abundant and cheap chemicals that free use or rejection is of no importance, and the method of preparation is rapid and free from technical difficulties.

Operative Technique.—Whenever possible, the wound should be converted into a broad-based crater and all damaged tissue detritus and free fragments of bone removed.

Haemostasis is most important, by ligature pressure and hot water. It is faulty technique to introduce the irrigation tubes into an oozing wound. The tubes must be inserted first into the depths and recesses, then more superficially. The tubes are made stable by fragments of one-inch web bandage removed from Dakin-Daufresne solution and arranged lightly in contact with the distal extremities of the irrigation tubes. The irrigation tubes (4 mm. calibre and 30 cm. long) are tied at the distal end

with linen thread. Perforations extend from this point for 5 cm., 10 cm., or 15 cm. along the length of the tube, so as to vary with the dimensions of the wound treated. I usually employ an open tube—that is, one not occluded by tying—for the disinfection of medullary cavities.

The Results.—The cases have in general required a longer period of treatment to secure disinfection than is the rule at Carrel's special hospitals. This is to be attributed to the later stage at which the British cases come under treatment. During the first twenty-four hours after infection of a wound smears show no microbes, although these are present in the retained foreign body—shell, clothing, etc.—from the beginning. Carrel receives and treats his cases during this aseptic period, thereby securing a more rapid disinfection process. Five days appears to be the shortest period of disinfection. This factor of delay must be kept in mind when comparing results. The majority of the cases treated by this method at this general hospital were grave wounds of the extremities with compound comminuted fractures of the long bones, often multiple, and frequently with considerable loss of substance.

Since the inception of Carrel's treatment we have found:

1. Absence of secondary haemorrhage.
2. Absence of amputations except in two classes of wounds—namely, infected wounds of the knee-joint with much bony comminution, and badly comminuted ankle-joints.
3. Septicaemia—one case.
4. Mortality—one; a very dirty comminuted knee-joint.

I may say, in conclusion, that the appearance of the patients is very striking. A clear complexion and good appetite is the rule. This immediate change in the facies of the ward gave us all—I include the nursing staff—confidence in the method long before we were justified by the accumulation of results.

THE CARREL-DAKIN TREATMENT AND A METHOD FOR ITS APPLICATION ON AN EXTENSIVE SCALE.

BY

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AND

CAPTAIN ROBERT McQUEEN, R.A.M.C.

In applying the Carrel-Dakin treatment of wounds it was found necessary that the apparatus used should be obtainable at a minimum cost, and that the labour necessary for the satisfactory carrying out of the original method should be reduced by some means.

For the individual or separate treatment of cases, a bottle (Fig. 1) was devised to replace the ampoules and apparatus recommended by Carrel in his book.

The bottle is hung upside down on a stand or prop, which can be moved to the most convenient place about the side of the bed, and is filled by means of a funnel attached to the glass tube A. The glass tube C is cut short to the rubber cork and is the means of communication with the air; the glass tube B conducts the fluid in the bottle to the wound by rubber tubing fixed with a clip. On the bottle is marked a scale in half-ounces. Every two hours when the wound is flushed, say with two ounces of fluid, the clip on the rubber tubing is released until the column of fluid in the bottle is decreased two ounces (or any other amount found necessary) by the scale.

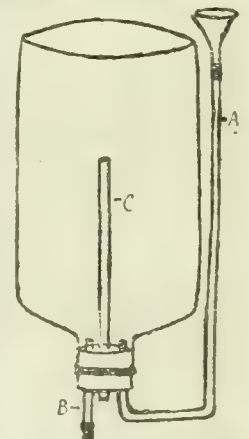


FIG. 1.—Requirements: A wooden stand, a lib. bottle with a narrow neck, a rubber stopper (No. 5) bored with three holes, glass tubing 5 mm. in diameter, rubber tubing, one clip and one funnel.

This system works admirably for individual cases, but when the treatment must be carried out on a number of cases it requires a great amount of attention and labour day and night in order that the patients may obtain two-hourly flushes and the nurses may know the quantity of fluid each patient requires, and the necessary precautions to prevent each bottle running short of fluid.

For the treatment of a large number of patients we devised the system of bottles 2 and 3; neither need be of a greater capacity than four ounces. The system is one of siphonage with automatic flushing and refilling, so that once started no attention is required. The glass tubes A and C in these two bottles are the same, but in bottle 2 the tube B differs in that it has three bends; it produces

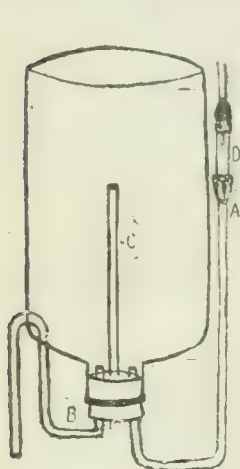


FIG. 2.

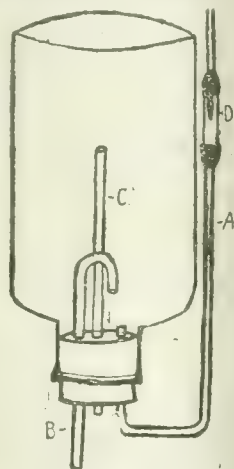


FIG. 3.

a siphon action, so that when the fluid in the bottle has reached a corresponding height to that in the siphon it overflows and flushes the wound. These tubes can be made of different lengths so as to give varying flushes, or this can be arranged by raising or lowering the height of the siphon tube. The various quantities of a flush should be marked on the bottles.

Into the length of tube A, which conducts the fluid from the reservoir to the bottle, is let in by rubber tubing a dropper* to regulate the number of drops required to give

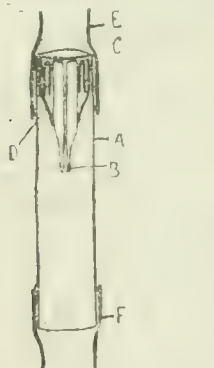


Fig. 4.—Glass dropper. A, glass tubing 4 cm. long by 1 cm. diameter; B, one half of a 2 mm. glass tubing 4 cm. long slightly drawn out in a pin-head and cut in two glass tubing of sizes required in A and B can be obtained from Messrs. Baird and Tatlock, London; C, a small piece of rubber tubing passed over the end and turned back; D, a slightly larger piece of rubber tubing drawn over the doubled rubber tubing and serving to retain the dropper in its position in the glass tube; E, rubber tubing which connects dropper to the tube of the circulating system; F, rubber tubing which connects the dropper to the inlet tube of the bottle.

For the purpose of treating a larger number of patients we have devised the following system. A large reservoir

holding from 2 gallons upwards, preferably of glass (one made of papier maché could be used), is fixed at the end of the ward at a height of about 6 ft. Connected to it by rubber tubing is gas piping 7 mm. in diameter fixed round the ward behind the heads of the beds. At points in this gas piping, corresponding to the heads of the beds, are branches of smaller gas piping, about 5 mm. in diameter and 8 in. in length; to these are attached rubber tubing leading to the tube of each bottle, which is placed on the bracket about 2½ ft. above the level of the patient's body. A screw clip is placed on the rubber tubing leading from the inlet tube of the bottle to the gas piping, which is used to graduate the flow of drops from the dropper.

The end of the gas piping opposite to its connexion with the reservoir should be carried to a higher level than the reservoir, and left with an open end, so as to prevent air locks. The open end is bent in a half circle so that the opening of the gas piping is directed downwards to prevent the entry of dust into the tube.

This method requires only that the reservoir should be kept supplied with fluid. The "automatic flushing" from each bottle every two hours does not require any further supervision.

With this method of automatic flushing any number of patients can be treated without any further trouble or supervision after the requisite dosage to each patient is arranged by the regulation of the screw clip, and could be carried out easily on hospital trains and ships without interfering with the dressing of the patient, as it would require only that the tubes to the wounds be disconnected and attached again to the tubes leading from the bottles.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF INTRAURETHRAL PRIMARY SYPHILITIC CHANCRE.

The patient stated that the last exposure to infection was on January 14th, 1917 (last day of ten days' leave). He noticed a purulent discharge from the urethra on January 16th, reported sick on January 22nd, and was admitted to No. — General Hospital on January 28th, where he was detained and treated for a few days, and transferred to No. — General Hospital on February 4th.

He then had purulent discharge from the urethra in which gonococci were found. He was treated for gonorrhoea and was marked clear on March 4th.

On March 5th he reported that owing to incessant frequency of micturition he was unable to get much sleep during the night. At the same time he noticed a hard lump in the penis, about the level of the anterior part of the corona.

On March 6th he complained of pain and swelling in the right groin. This was treated with hot baths and fomentations until March 17th, but the swelling in the groin gradually got larger. On March 10th he noticed his foreskin was swelling. This gradually increased.

When examined on March 18th there was considerable non-inflammatory oedema of the foreskin, which was of a bluish colour, quite dry, and a little indurated. There was no visible sore present on the penis or in the urethra on opening the external meatus, but there was a brownish sero-purulent discharge from the external meatus.

On palpation of the penis a uniform stony-hard tender swelling of the urethra was felt, commencing half an inch from the external meatus and extending for one and a quarter inches. The swelling was approximately three-eighths of an inch in diameter. On squeezing it a slightly purulent blood-stained discharge could be expressed from the urethra. The lymphatic glands in the right groin were much enlarged, stony-hard, discrete, and painless. There was no adenitis of glands in the left groin. There were no other evidences of syphilis.

The diagnosis of a primary intraurethral syphilitic chancre was made.

A smear taken of the discharge expressed from the urethra and stained by Giemsa's method showed gonococci, spirochaetes (resembling *Treponema pallidum*), some blood and pus cells.

On examination with a small-sized urethroscope, which was passed with some difficulty on account of the pain, an ulcer was seen in the urethra. The nearer edge of the ulcer was about three-quarters of an inch, and the further edge about one and a quarter inches, from the meatus. The edge of the ulcer was sharp, well defined, and not raised above the surrounding normal walls of the urethra. The surface of the ulcer, from which a copious brownish-tinged serum could be seen exuding, was slightly depressed, and was composed of ragged, irregular, greyish-brown granulation.

A glass capillary tube was passed down the urethroscope, and a sample of the serum from the surface of the ulcer was easily collected. Examination of this serum by dark-ground illumination showed numerous active *Treponema pallidum* (twelve to fifteen to a field).

Urethral chancres are not common, and where they do occur one edge of the sore generally presents at the external meatus involving the glans penis. This case is of interest as being an example of a urethral chancre which was wholly intraurethral, and could not be seen without the aid of the urethroscope.

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A SCREEN METHOD OF LOCALIZATION.

THE following fluorescent screen method of using my "ladder" localizer¹ will be found very rapid and convenient.

AB and *CD* are two wires stretched across the back of the screen, at right angles to its front and back edges. The ladder is mounted in the usual way on the back of

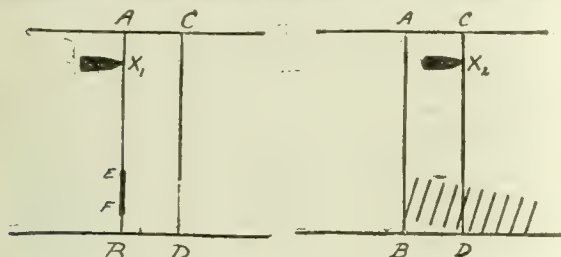


FIG. 1.

FIG. 2.

the screen at *EF*, on the line of *AB*. Thus, with the screen horizontal, the vertical plane through *AB* includes all the wires of the ladder.

The tube is set so that the foreign body whose depth is sought is in the line of the vertical central ray, and the screen is placed horizontal and in such a position that the shadow of a chosen point of the foreign body *X*₁ lies on the wire *AB*. The shadows of all the ladder rungs are then superposed along *EF*, and the screen appearance is as shown in Fig. 1.

The tube is next displaced parallel to the front edge of the screen, so that the shadow of the foreign body moves to the wire *CD*, giving a picture similar to Fig. 2. It is clear that the depths of the foreign body and of that point of the ladder whose shadow lies on *CD* are the same.

In practice it is convenient, with a rectangular diaphragm, to expose first a narrow strip about *AB*, to verify that the bullet and ladder shadows are both exactly on that line; then to change to a narrow strip along the line of *X*₁ and *X*₂, so as to see the foreign body's shadow as clearly as possible in setting it on the line *CD*, and finally to open sufficiently to see the shadows of the ladder rungs. The wire *CD* should be mounted on an adjustable slider, so that it can be set at distances from *AB* suited to foreign bodies of very various depths.

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ABDOMINAL WOUND: FAECAL SMELLING GAS.

AMONG the series of cases of gunshot wound of the abdomen reported in the BRITISH MEDICAL JOURNAL of March 10th an instance of complication by faecal smelling gas in the subcutaneous tissue does not occur; the following case may therefore be of interest.

Pte. N. was admitted to the head quarters of a field ambulance six hours after being wounded. The entrance wound was one inch posterior to the top of the twelfth left rib. A piece of metal was felt lying subcutaneously at the mid point of a line drawn vertically upwards from the left anterior superior spine to the left costal margin. Surgical emphysema was present over the whole of the left side of the abdomen, spreading upwards over the left chest, and reaching as high as the nipple. The patient complained of great abdominal pain on the left side, and examination revealed tenderness and rigidity of that side of the abdomen. The pulse was 140, respirations 20. It was deemed advisable to operate in the field ambulance. An incision was made over the left rectus muscle; the subcutaneous tissues

were oedematous, of a dark red colour, and gave off a strongly faecal odour. Two holes in the descending colon from which faecal matter was escaping were stitched up. The patient recovered from the anaesthetic, but died six hours later. Pressure of work prevented a post-mortem examination being made.

Two suggestions as to the cause of the faecal smelling gas occur: (1) Gas gangrene with superadded *B. coli* infection; (2) escape of intestinal gas from the colon into the subcutaneous tissues.

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British Salonica Force.

LUMBAR HERNIA.

LUMBAR hernia is stated to be comparatively rare; perhaps it is on this account that the textbooks do not give detailed descriptions of the sac as they do for other forms of hernia. The sac has been found on dissection to have been reduced along with the contents. A rare form of "sacless" inguinal hernia of the caecum is described. The following case, in which there was no peritoneal sac, may therefore be worthy of record.

C., a male of the Tonga tribe, aged 55, presented himself with a swelling in the left lumbar region. History and symptoms are not easy to get from natives, but this man volunteered the information that the swelling developed as the result of a fall, and that it gave him pain at the seat of the lesion, and also caused pain and a dragging sensation in the corresponding region on the right side. He was found to have a left lumbar hernia through the triangle of Petit, which protruded to the size of a large fist on coughing. Radical cure was undertaken.

The operation was performed under spinal anaesthesia, the patient lying on the left side with the hips raised two inches; five grains of stovaine were injected through the third lumbar space, the patient was then turned on his back for a minute or two, and then on his right side, with a pillow under the loin. The skin and fascia were divided by the oblique lumbar colotomy incision, the external oblique pulled forward, and the triangle of Petit exposed. Lying in this space there was a quantity of loose areolar tissue and masses of subperitoneal fat. This tissue being picked up search was made for a sac, but none was found; as the dissection progressed there was pulled up through the hernial aperture a loop which from its consistence appeared to be bowel, but no sac had been opened, and the bowel had no peritoneal covering; a finger passed through the opening in the abdominal wall entered a kind of false cavity, but not the general peritoneal cavity. Lest there might be an adherent sac, which might be reduced *en masse* with its contents, an attempt was made to strip the outer coat, but it was at once apparent that it was the coat of the bowel which was being stripped. The question was definitely settled by a small incision into the bowel and the appearance of faeces. The opening into the bowel was closed, and the fibrous covering stitched over it; then the loop of bowel, which could not be pulled out far into the wound, was reduced within the abdominal cavity, redundant masses of subperitoneal fat were removed, and the stumps introduced within the opening to serve as a pad on the inner face. The aperture, less than two fingerbreadths wide, was closed by a mattress suture, muscles and fascia were brought together, and the skin incision closed. Slight sensation returned as the cutaneous stitches were being introduced. The patient made an uninterrupted recovery.

Sac.—It would appear that the descending colon was not completely covered by peritoneum, and that the hernia was from the posterior uncovered portion; thus the peritoneal sac was absent. In the movements of protrusion and retraction the bowel must obviously have loosened its fibrous connexions to the abdominal wall, and this would account for the false cavity felt on introducing the finger.

Closure of the Aperture.—Owing to the fibrous nature of the edges, and their tendinous attachment to the crest of the ilium, difficulty was experienced in closing the aperture as the edges would not approximate, and there was a tendency to tearing or splitting of the aponeurosis by the suture. It might have been possible to make use of some fibres of the quadratus lumborum to close the opening, but this was not attempted.

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In his annual report for 1916, Dr. F. W. Alexander, M.O.H. for Poplar, refers to ophthalmia neonatorum and its notification, a subject to which he has devoted much attention during recent years. In his report for 1910 he urged the compulsory notification of this disease. Since February, 1914, notification has been compulsory in every sanitary district of England and Wales. In Poplar upon the receipt of a notification the case is immediately visited by a health visitor, and is kept under constant observation; if necessary the services of a nurse are procured from one of the nursing associations working within the borough.

¹ BRITISH MEDICAL JOURNAL, July 3rd, 1915, and Journ. Rönt. Soc., vol. xi, No. 65.

Rebuelus.

THE CAUSES OF TUBERCULOSIS.

THE records of experimental research into the life-history and variations of the tubercle bacillus have become somewhat overwhelming in quantity during the last decade. Certain general conclusions have emerged from them, but without that careful weighing of all the evidence which is essential before a fair judgement can be formed. Himself a well-known research student and teacher, Dr. Louis COBBETT of Cambridge has recently set forth at great length, in a bulky volume of over 700 pages, entitled *The Causes of Tuberculosis*,¹ the whole story of modern experimentation, indicating clearly those points which may now be regarded as settled, and contrasting them with the far larger sum of those which require more positive proof than they have yet received. Although his work covers a much larger field, still the main interest to the medical profession turns upon the much discussed question of the relations of the bovine to the human type of the disease. The result of a long and elaborate discussion of the problem, and very careful examination of the evidence upon which his conclusion rests, leads the author to lay down very definitely the view that it is during the first five years of life that the real danger of infection by the bovine type exists. With each succeeding period the liability to such infection grows less and finally disappears with adult years. The obvious deduction from this verdict points directly to raw milk as the carrier of infection. The danger from the ingestion of infected meat is practically negligible, since it is almost invariably sterilized by cooking. These facts are not new. The danger of raw milk has been made known to every one, but the absence of any direct and recognizable evidence of such danger continues to lead to the daily and hourly exposure of infants and young children to the disease which may cut short their lives in the course of their first five years. The tuberculous disease of infancy is not always bovine, and there may be many other channels by which the bacillus can find means of entry, but the bovine type prevails in sufficiently large proportion to call for drastic measures for prevention.

Very careful observations have been made as to the possible conversion of the bovine bacillus to the human type while in the human body, but it seems to be proved that the type remains constant and that the bovine form, recovered from the human subject, retains its former virulence for susceptible animals such as the calf, the goat, or the rabbit, all of which are but little influenced by the presence of the human type.

In the vast multitude of experimental observations which are recorded or referred to in Dr. Cobbett's book, it must happen that errors, leading to puzzling and sometimes contradictory results, creep in, but they are for the most part accounted for by the ever-present risks of accidental infection where large numbers of animals are kept in confinement under laboratory conditions. The relations of the bovine type of the disease to a great variety of animals have been most carefully investigated, and the evidence thus accumulated will prove of the greatest value to every one who may have to deal with tuberculosis in zoological and other collections.

The whole etiology of the disease as it affects the human subject is most carefully analysed. The main conclusion to be drawn from it differs somewhat from a widely accepted opinion as to the relative importance of the bacillus and the soil in which it flourishes respectively. Dr. Cobbett considers that the main danger lies in the size of the dose of the poison rather than in the degree of susceptibility of the recipient. Holding this view, it is natural that he should place the segregation of the advanced case in the forefront of any scheme for suppression of the disease in communities. It is highly probable that massive infection is brought about mainly by the agency of the advanced and disintegrating disease in the human lung. Segregation on a large scale is not possible under present conditions, but might well be put in force to a far greater extent than it is without legislative compulsion.

¹ *The Causes of Tuberculosis*. Together with some Account of the Prevalence and Distribution of the Disease. By Louis Cobbett, M.D., F.R.C.S., University Lecturer in Pathology, Cambridge. Cambridge Public Health Series. Cambridge University Press. 1917. (Med. 8vo, pp. 707. 21s.)

Such a work as Dr. Cobbett's supplies a want, containing as it does the cream of modern knowledge on the subject of tuberculosis, presented in a form which is at once interesting and convincing. A full index and a concise summary of each section of the subject under discussion, renders it easy of reference. The photographic illustrations of the disease in various types of animals are excellent, and add considerably to the practical usefulness of the whole treatise.

ON TWINS AND TWINNING.

WHETHER it be from motives of economy, or as an offset to its unapproachability, or whatever be the cause, the "modest and retiring" armadillo of Texas, with its nine zones of body armour (*Dasypus novemcinctus*), is distinguished above other animals by the fact that from a single fertilized ovum it habitually gives birth to four young. And these four young are "identical" and invariably of the same sex. It is around the study of this phenomenon, which he and Dr. J. T. Patterson have continued for the last eight years, that Professor H. H. NEWMAN, now of the University of Chicago, has built up a useful volume on *The Biology of Twins* in the Science Series of that university.² The volumes of this series differ from the discussions generally appearing in technical journals in that they present the complete results of an experiment, or series of investigations which, if published at all, have previously only appeared in scattered articles. They differ from detailed treatises by confining themselves to specific problems of current interest, and in presenting the subject in as summary a manner and with as little technical detail as is consistent with sound method. Professor Newman's little volume fulfils excellently these aims. He has brought together the observations of himself and others contained in many scattered papers upon the polyembryony of *Dasypus* and allied forms, and describes the embryology of the condition in studiously clear and simple language. With this as a basis, he proceeds to discuss the biology of twinning as it occurs in man and other mammals. As is by now generally acknowledged, among animals which usually produce single young, two orders of twins, triplets and quadruplets may show themselves, namely, the production of paired or plural offspring from plural eggs (*fraternal twins*), and the production of paired or plural offspring from a single fertilized egg or zygote (*duplicate twins*). As to the relative frequency of these two orders in man, the author quotes the analysis by J. B. Nichols, of some 700,000 cases of twin births, from which it appears that "nearly one-half of all same-sexed twins are monozygotic." Such twins are strikingly like each other, are always of the same sex, and, as Professor Wilder has shown, the identity extends to the palm and finger-print patterns, although here, curiously, whereas in some cases there is an almost complete mirror imaging of the two palm patterns of the two individuals, the left hand of *y* corresponding to the right hand of *x*, in other cases this reversal occurs to only a limited extent, but then always in connexion with the pattern of the index fingers. Newman demonstrates a parallel condition in connexion with the bands of armour of the armadillo, the first band taking the place of the index finger in man; and as the demonstration is absolute that in the Texan armadillo the twinning is monozygotic, any last doubts as to the existence of monozygotic twins in man must disappear.

Newman shows clearly that the four embryos in *Dasypus* do not originate each from one of the four primary blastomeres of the fertilized egg; nor does he accept Assheton's theory of budding. His preparations point to a fission or duplication of the apical point of the growth zone, with formation of secondary growing points as the cause of twinning, that is, to the origin of these monozygotic twins at a period when some differentiation has occurred in the embryo, so that the twins are not of necessity absolutely identical in each detail.

One of the most interesting chapters in the book is that upon the "freemartin" which, ever since John Hunter, has been a source of keen discussion. Newman rejects Dr. Berry Hart's Mendelian hypothesis, holding that it is

² *The Biology of Twins (Mammals)*. By Horatio Hackett Newman. Chicago: The University of Chicago Press. 1917. (8vo, pp. 179, with index. 1.25 dols. net.)

based on error, since bovine twins are not monozygotic. Bateson seems to have fallen into the same error. Professor F. R. Lillie has recently solved the mystery by a study of abundant material obtained from the Chicago stockyards (*Science*, N.S., 43, 1916). He shows that in cattle a twin pregnancy is almost always the result of fertilization of an ovum from each ovary. When these are of different sexes and there is fusion of the two chorions *in utero* with vascular anastomosis, since the male reproductive organs develop earlier than the female, the reproductive system of the female is largely suppressed, apparently as the result of antagonistic hormone action due to the circulation of the male blood in the female, whereby the latter becomes and remains sterile from arrested sexual development. "The results are analogous to Steinach's feminization of male rats, and masculinization of female rats by heterosexual transplantation of gonads into castrated infantile specimens."

Altogether the work is of sustained interest and represents a distinct advance in knowledge.

AFTER-WAR PROBLEMS.

IN a volume entitled *After-War Problems*,⁸ the editor, Mr. WILLIAM HARBUTT DAWSON, has brought together a number of essays, written by well-known authorities, on problems which the country will have to face in the altered social situation produced by the war. "The ordeal which the nation has been called to face," says the editor in his introduction, "has evoked an outburst of moral energy without parallel in the history of the British race. Shall the moral forces now in action be demobilized in county and city, in town and hamlet, when the struggle is over?" The articles which follow indicate from widely different points of view how these forces may be preserved and developed for the benefit of the national life. For the sake of convenience the subjects are divided into four broad groups: the first is "Empire and Citizenship," and the authors are the late Lord Cromer, Bishop Welldon, Lord Meath, and Sir H. H. Johnston. The second group, entitled "National Efficiency," contains papers on industrial problems, and the relations between capital and labour, by Dr. W. Garnett, Professor S. J. Chapman, Mr. G. H. Roberts, and Sir Benjamin Browne, together with papers on the land question by Mr. Joynson-Hicks; on the position of women in economic life, by Mrs. Fawcett; on the organization of the national resources, by Sir J. Compton Rickett; and an article by Lord Haldane on national education. The third group—closely related to the second—is headed "Social Reform," and here the medical reader will find matter of special interest to him. Two papers, one by the Bishop of Exeter and the other by Mr. H. R. Aldridge, glance at the housing problem from two distinct aspects. Dr. James Kerr contributes a chapter on national health, in which he argues that beyond what has been done there remain vast possibilities for improvement if the conditions are squarely faced and firmly dealt with. Whilst convinced that all services and commodities necessary for public health should be completely controlled by the community, Dr. Kerr is opposed to the idea of a State service of medicine, which, he says—with a good deal of truth—finds little professional support beyond the officials themselves. Again, in advocating the need for securing the best men as medical officers of health, he knocks aside the notion that the medical officer of health as a kind of professional superman could be otherwise than repugnant to those with actual clinical experience, in which the mental factor plays so great a part. To his mind a general State service of medicine, controlled by bureaucratic supermen, would have a "sterilizing and deadening effect, in which schedules would soon be likely to be more thought of than patients. The true function of a State department in science or medicine is to collate knowledge and distribute advice." Other chapters in this section deal with the care of child life, from the pen of Miss Margaret McMillan, and with unsolved Poor Law problems, contributed by Sir William Chance. The last group contains articles on national finance and taxation, by Professor Alfred Marshall and Mr. Arthur Sherwell.

Taken as a whole, this volume of essays will be found stimulating to patriotic thought and endeavour. To quote once more from the introduction: "Only by the cultivation and co-ordination of all her intellectual and moral forces and vitalities will England come through her final ordeal triumphantly."

INDIAN HYGIENE.

THE importance of teaching the laity the principles and practices upon which the preservation of health depends has been increasingly recognized in India within recent years. Many excellent treatises on hygiene have been published for both general and special use. Among these McNALLY'S *Sanitary Handbook for India*,⁴ of which a fifth edition has recently appeared, holds a high and useful place. Originally published in 1889, it was "addressed primarily to the educated classes and through them to the great uneducated masses of the people, and intended as a guide to personal, communal, and public sanitation." That it has fulfilled its purpose is attested by the fact that "it has become one of the recognized textbooks for the students in the Medical College and for the classes of sanitary inspectors." Written by an officer of the Madras Medical Service, the book, while expounding conditions affecting health in tropical and subtropical countries generally, has special reference to those prevailing in the Madras Presidency. In successive editions careful revision has kept pace with advancing science and accumulating experience. The present (fifth) edition has been ably brought up to date by Captain A. J. H. RUSSELL, who has added an important chapter on Insects and Disease, a subject of very great consequence in tropical countries. The book is well arranged and indexed, and the various topics usually treated of in hygienic manuals are clearly and instructively set forth in language well within the comprehension of those for whose use it is intended. Diagrams and plates, which are stated in the preface to the third edition to have been both "crude and out of date," are omitted. The Madras City Municipal Act, which is very exhaustive, is reproduced *in extenso*. The Madras District Municipalities Act, which embraces all appropriate and necessary sanitary regulations, and the sections of the Indian Penal Code and the Code of Criminal Procedure which relate to public health, are also cited. Altogether this volume is well adapted to fulfil its purpose of instructing the inhabitants of Southern India regarding sanitary perils, precautions, and duties.

"WHAT EVERY WOMAN SHOULD KNOW."

THAT it requires a past master on the subject to write an elementary book is borne in on the reader of some simple and charming lectures given by Professor CHARLES RICHEL⁵ to the French Red Cross helpers on antiseptics, anaesthetics, foods, haemorrhage, fever, and asphyxia. Thanks to antiseptics, the mortality among the wounded, which in bygone days was 80 per cent, or even more, has now fallen to 5 per cent. Four periods of chloroform intoxication are described—(1) analgesia or death of the psychical system, (2) anaesthesia or death of reflex actions, (3) death of the medulla with cessation of respiration, and (4) death of the cardiac nerve cells with syncope and general death. The fatal course of asphyxia runs through the same stages as chloroform intoxication, and an emphatic direction is given always to try artificial respiration, as the heart beats may be so feeble as to be imperceptible. In speaking of local anaesthesia, Professor Richet mentions that in 1855 his father recommended ether for this purpose. In the lecture on foods the calorie value is lucidly explained, and life is defined as the cell's consumption of protein. The descriptions of haemorrhage, fever, and asphyxia are supplemented by brief summaries of the appropriate treatment. The author concludes his genial account of her necessary qualities by remarking that, although the ideal nurse must be superhuman, in practice less must suffice, and that the essential attribute is kindness of heart.

⁴ McNally's *Sanitary Handbook for India*. Fifth edition, revised and rewritten by A. J. H. Russell, M.A., M.D., Ch.B., D.T.M., Captain I.M.S. Madras: Government Press. 1916. (Demy 8vo, pp. xv + 414, 3s. 9d.)

⁵ *Ce que toute femme doit savoir; Conférences faites à la Croix Rouge. Par Charles Richet, professeur à l'Université de Paris. Paris: F. Alcan. 1917. (Po. 168. Fr. 2.)*

⁸ *After-War Problems*. By the Earl of Cromer and others. Edited by W. H. Dawson. London: G. Allen and Unwin, Ltd. 1917. (Demy 8vo, pp. 366. 7s. 6d. net.)

NOTES ON BOOKS.

DR. DAWSON'S *Elements of Anatomy and Physiology for Nurses*⁶ is an excellent book in which the two sciences, usually kept apart, have been skilfully fused into one. It is clearly written, and contains not too much information for the instruction of those for whom it has been composed. It contains, too, a number of excellent illustrations and diagrams; perhaps the student would gain if the magnifications of the microscopic reproductions were inserted. The book may be warmly recommended to both nurses and their instructors.

Vol. III of the *Bombay University Calendar for 1916-17*⁷ contains lists of graduates of the university, a catalogue of its 113 several endowments, and an account of the benefactions it has received. Particularly to be commended is the confidence in the future which prefaces this volume with the observation, "Published every tenth year. The next publication of this volume will be in 1926."

The morality of the public administration in Mexico is not all it should be. *Salus populi suprema lex*, and Mr. A. J. PANI⁸ has written an interesting and well documented volume in which he indicates the many opportunities for improvement in the action of the Mexican sanitary and educational authority. Mr. Pani is a Carranzist, and writes not only as a Carranzist but also as an expert in sanitation and public works. He makes out a good case for the reforms he indicates as urgently necessary even in Mexico City, the most civilized portion of the Federal District. Mr. Pani's political party is now in power, and, as he clearly shows, it has a great opportunity for social amelioration before it.

The *Calendar of the University of Toronto*,⁹ so far as concerns its Faculty of Medicine, is a brief manual containing the information usual in these works of reference. This year, however, it contains a note of more than usual import and moment to the medical student: the Senate of the University of Toronto has determined to increase the length of the undergraduate course in medicine from five to six years, after the close of the war. From the European standpoint it is, perhaps, fortunate that no medical student is likely to be consulted as to the precise date when such a regulation shall become operative.

⁶ *Elements of Anatomy and Physiology for Nurses*. By Percy M. Dawson, M.D. Assistant Professor of Physiology at the University of Wisconsin, etc. New York: The Macmillan Co. 1917. (Cr. 8vo, pp. xxvii + 279; 167 figures. 7s. 6d. net.)

⁷ *Bombay University Calendar, 1916-17*. Vol. III. (Post 8vo, pp. cvii + 473. 2 rupees.)

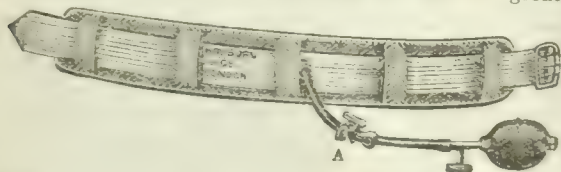
⁸ *Hygiene in Mexico*. A Study of Sanitary and Educational Problems. By Alberto J. Pani, C.E. Translated by Ernest L. de Gogorza. New York and London: G. P. Putnam's Sons. 1917. (Pott quarto, pp. 295.)

⁹ *The Calendar of the University of Toronto*. Faculty of Medicine. 1917-1918. University of Toronto Press.

MEDICAL AND SURGICAL APPLIANCES.

A Pneumatic Tourniquet for Surgical Purposes.

MR. G. GREY TURNER, M.S. (Newcastle-on-Tyne), writes: For some years I have endeavoured to procure a satisfactory pneumatic tourniquet and have experimented with several patterns, home-made and otherwise, but with only partial success. I now find that the initial mistake was in supposing great pressure to be necessary and in endeavouring to devise an apparatus sufficiently strong to withstand it. A few experiments with "Harrison's pneumatic armband" soon convinced me that no greater

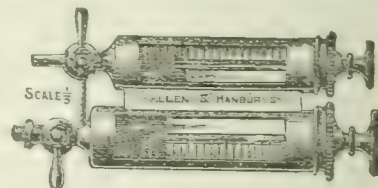


pressure than could be procured by the simple hand bulb of that instrument was necessary, and indeed, with only slight modification, this apparatus makes an excellent tourniquet. To make it efficient for surgical purposes I found it necessary to introduce a clip (A) between the valve and the pad, otherwise enough air escapes to render the tourniquet ineffective within a short time. It is also necessary to use a strap and buckle with loops, to prevent the pad getting out of position when fully inflated, and I have found it an advantage to have the inner surface of the pad covered with soft wash-leather. To get the

best results with any type of tourniquet, the limb should be first emptied of blood, and this is best attained by the application of a rubber bandage after Esmarch's method. The tourniquet is then applied round the limb at the required site, the leather-covered surface being in direct contact with the skin. When compression is desired it is inflated as rapidly as possible by vigorous pressure on the bulb. As soon as no more air can be got to enter, the clip (A) is tightened and the circulation will be found to be completely arrested. Should it be necessary to relax the compression during the course of the operation this is easily done by releasing the clip and the valve, but when it is to be reinflated care must be taken to do so rapidly, and, of course, the result cannot be so good as when the limb has been first exsanguinated. It is necessary to have a longer pad for the thigh in adults, and it will be found convenient to use two sizes, the original armband for the upper extremity, and for the lower extremity in children, and the larger size for the latter purpose in adults. In actual use the apparatus has proved thoroughly efficient and reliable. The Holborn Surgical Instrument Company, Ltd., are the manufacturers and have adapted the pneumatic armband of Lieut.-Colonel Harrison for the purposes of a surgical tourniquet very satisfactorily.

A Double-barrelled Syringe.

MR. J. E. R. McDONAGH (London, W.) writes: This double-barrelled syringe is made in two sizes—one to hold two cubic centimetres and the other to hold twenty cubic centimetres. The object of the smaller syringe is to inject a little saline from one barrel after the drug has been injected intramuscularly from the other barrel, and so prevent a track being made during the withdrawal of the needle. The mercury, or other drug, is thus prevented from getting into the subcutaneous tissues and producing an abscess or an indurated lump. A local anaesthetic can be given before the drug is injected intramuscularly, without having to make two pricks. The larger syringe is for intravenous or for intraspinal work. If the left barrel, to which the needle is attached, is filled with the solution to be injected, after inserting the needle into the vein, blood may be withdrawn into the right-hand barrel and emptied into a receptacle as often as desired, before or after the drug is injected. When injecting colloids, it is a good plan to let the blood mix well with the colloidal suspension before it is injected, a manoeuvre which can be well carried out with this double-barrelled syringe. As the right barrel can always be filled and refilled with a solution from a receptacle underneath, and the contents discharged into the left barrel, a dilute as well as a concentrated intravenous injection may be given. Another advantage is, that the right-hand barrel may be filled with a calcium chloride, glucose and gelatin mixture, which can be injected through the same needle before the contents of the left-hand barrel are discharged, to prevent shock, or after, should symptoms of shock threaten. The syringes can easily be sterilized because the glass can be boiled separately from the metal casing by merely unscrewing the cap to which the piston is attached. They are made by Allen and Hanburs, Limited, 48, Wigmore Street, London, W.1.



A COMMITTEE on war psychology has been formed by the United States Research Council with the approval of the American Psychological Association. Twelve special committees have been appointed to deal with various questions of war psychology, and the chief psychological laboratories of the States have offered their services. Among the problems to be studied are those of shock, emotional stability, fear, and self-control, of re-education and vocational training, of recreation, and of military training and discipline.

A COMMITTEE on industrial fatigue has been formed under the advisory commission of the United States Council of National Defence. The committee is investigating munition factories and other establishments manufacturing war supplies, with the object of showing how avoidable fatigue may be eliminated, and how the great output of war material may be obtained consistently with maintenance of the working power of those employed. The chairman of the committee is Dr. Thomas Darlington of New York, and Professor Frederic S. Lee, Columbia University, is executive secretary.

British Medical Journal.

SATURDAY, SEPTEMBER 22ND, 1917.

CEREBRO-SPINAL FEVER AND ITS TREATMENT.

It is generally recognized—*pace* Dr. Hort and the new meningoascus he describes, in the JOURNAL this week, with microbial forms in many ways comparable to the bacterial gonidia of Löhnis and Smith—that the intracellular meningococcus discovered by Weichselbaum in the year 1897 is the infecting agent in cerebro-spinal fever, and it has long been known that various types of this microbe are met with in epidemics of the disease. From the laboratory point of view several different strains or races of the meningococcus have been recognized and differentiated by their immunological reactions; indeed, forms have been described so different from one another as to deserve the name “subspecies.” The matter is one of great importance from the clinical point of view, and for this reason. The most promising line of treatment in cerebro-spinal fever consists in the administration of the specific antiserum. Experience has shown that the results of treatment with our present antimeningococcal serums have generally been disappointing. The reason for this lies, no doubt, in the fact that the samples of this serum employed have been derived from different types or strains of meningococci in very many instances, and not from the particular type present in the patients under treatment with these particular serums. In other words, there have been many cases in which the “specific” antimeningococcal serum has not been specific for the individual infection against which it has been employed; and so, naturally, it has failed. Practical means for differentiating the various types of meningococci have long been sought, and the recent work of Lieut.-Colonel M. H. Gordon, Mr. E. G. Murray, and Captain W. J. Tulloch¹ goes to show that the differential absorption of agglutinins by the microbes of these various types may afford us the necessary means of distinguishing between them in cases of cerebro-spinal fever. The credit of having placed the whole question on a satisfactory basis belongs to Lieut.-Colonel Gordon. Defining as the meningococcus any Gram-negative diplococcus that causes primary meningitis, he proceeded to investigate the relations existing between them by agglutination, using as material the organisms isolated from the cerebro-spinal fluid of cases of the disease. In the first instance he worked with three such organisms, and with fourteen meningococcus-like organisms isolated from the nasopharynx. His second paper, written in conjunction with Mr. E. G. Murray, dealt with thirty-two further specimens of the meningococcus, and nine more Gram-negative cocci indistinguishable from it by cultural and fermentative tests, isolated from the nasopharynx of contacts or of cases of suspected cerebro-spinal fever. The third paper, written by Captain W. J. Tulloch, summarizes the whole matter, and is based on the examination of 107 strains of the meningococcus. By means of exhaustive tests of their

agglutinating powers it has been found possible to refer all but six of these separate strains to four main types. The agglutinating serums used were obtained by inoculating rabbits with the specific strains of meningococci isolated from spinal fluids. A standardized technique was employed, and is described in detail; it is a matter of some complexity, and depends upon the ability of a meningococcal emulsion to saturate its specific agglutinin, leaving any other agglutinins that may be present in the agglutinating serum more or less unaffected. The general result of these investigations has been to show that out of 101 different strains of meningococcus thus classified, 30 belong to Type I, 41 to Type II, 13 to Type III, and the remaining 17 to Type IV. It should be added that Type II is apparently a complex subgroup, and that there are considerable variations in the behaviour of its individual members on agglutination.

The important bearing that the discrimination of such types of meningococci has upon the treatment of cerebro-spinal meningitis is obvious. If we have an epidemic of the disease produced by a group of organisms, each member of that group should have its specific antiserum; alternatively, a polyvalent antiserum should be prepared for the broadcast treatment of the epidemic. Captain Tulloch suggests that polyvalent antimeningococcal serums should be richest in the antibodies produced by cocci of Types I and II, which seem to occur most often; the ideal method of treating any given case of the disease would be to administer the polyvalent serum in the first instance, when lumbar puncture is performed for diagnosis, and as soon as the type of the infecting meningococcus has been ascertained in the laboratory to continue the treatment by injecting the appropriate specific antiserum. This new classification of meningococci into four main types has also an important bearing on the administrative control of cerebro-spinal fever from the point of view of public health, because it should enable us to draw a clear distinction between true meningococci and the meningococcus-like organisms that are found so often in the nasopharynx that are not pathogenic and may be called pseudo-meningococci. From 6 to 7 per cent. of meningococcus carriers were found in a total of over 10,600 contact cases examined in 1915, some observers even finding as many as 20 per cent. Captain Tulloch proves that as many as 50 per cent. of these carriers may be harbouring only the pseudo-meningococcus; such carriers, of course, require neither treatment nor isolation.

It seems hardly necessary to labour the point that the treatment of cerebro-spinal fever is capable of much improvement by the discovery of truly specific antisera. Additional evidence on this point, however, is furnished by a recent report² on the disease as it occurred in Australia in epidemic form during the year 1915. The report is based on a personal experience of over 450 cases of cerebro-spinal fever treated in the Melbourne and Alfred Hospitals during the epidemic in the State of Victoria; in all there were 644 cases reported, with a mortality of 52 per cent. The authors give a very full account of the methods of treatment employed. They emphasize the point that the best treatment now available consists in the repeated hypodermic or intravenous or intrathecal injection of antimeningococcal serum, using relatively large doses. For intrathecal injections the dose should be about 30 c.cm.; but the patient should

¹ *Journal of the Royal Army Medical Corps*, London, 1915, xxiv, 455; xxv, 411; and 1917, xxix, 66.

² *Cerebro-spinal Fever*. By N. H. Fairley, M.B., B.S., and C. A. Stewart, M.B., B.S. Service Publication No. 9 of the Quarantine Service of the Commonwealth of Australia. Melbourne, 1916.

receive about 200 c.cm. of the serum daily for several days if he is seriously ill, and in all severe cases the initial dose should be 300 c.cm., administered subcutaneously. Whether intrathecal injections of the serum are given or not, lumbar puncture and the removal of 50, 70, or even 100 c.cm. of cerebro-spinal fluid are to be performed daily. As regards the use of anaesthetics here, the authors say that in small children and very occasionally in adults who cannot be restrained, and might cause breakage of the needle, a general anaesthetic may be given, and chloroform is satisfactory. But they add that general anaesthetics are most undesirable here, and should not be given except for the best of reasons; some local anaesthetic may be used at the site of puncture. On this point the authors are in disagreement with Major Michael Foster and Captain J. F. Gaskell,³ who strongly recommend the use of general anaesthesia when lumbar puncture is performed. Discussing the results of the serum treatment, Drs. Fairley and Stewart tabulate 131 cases of cerebro-spinal fever treated with injections of normal horse serum, with a mortality of 50 per cent.; 75 cases treated with antimeningococcal serum, mortality 45 per cent.; and 34 cases treated by lumbar puncture only, mortality 56 per cent. Excluding cases either moribund on admission or over 35 years of age, the three above mortalities worked out at 47, 33, and 26 per cent. respectively; only the fairly mild cases were treated by simple lumbar puncture. It is remarked that the use of antimeningococcal serum quickens the process of recovery and lessens the percentage of acute cases that become subacute or chronic.

A further improvement in the serum-therapy of cerebro-spinal fever consists in the intrathecal employment of antimeningococcal serum reinforced by the addition of human serum taken from convalescent cases of the disease. It is known that cerebro-spinal fever is deficient in antibodies of all sorts, particularly complement; the notion underlying the employment of this reinforced serum is that the human serum added will contain complement, and thereby render the bacteriotropic action of the antiserum more effective. The improved results of this line of treatment are said to be very promising, but not yet (as it is in its infancy) statistically demonstrable. As a rule 5 c.cm. of human serum were injected, together with 20 c.cm. of antimeningococcal serum.

As for other methods of treatment, Drs. Fairley and Stewart recommend the daily washing out of the theca with normal saline, thrice repeated, before the antiserum is injected, in cases where the cerebro-spinal fluid has become thickly purulent and tends to block the needle. The headache and delirium of the acute stage should be treated by lumbar puncture, and by the exhibition of 20 grains of aspirin, combined with ten minims of liquor morphinae hydrochloratis in half an ounce of chloroform water. All subacute and chronic cases of the disease are placed on a vaccine prepared from several stock cultures—here we seem to see the need of some differentiation of the various types of meningococci described by Captain Tulloch—administered in doses increasing from 500 million to 6,000 million microbes, at intervals of four days. The operative treatment of the disease, apart from lumbar puncture, is considered at some length, and the authors conclude that the sudden respiratory failure and death which may occur in the acute stage of the disease are due to acute cerebral hyperaemia, and not, as is commonly thought, to acute hydrocephalus, and are best treated by venesection. The onset of this respiratory failure may

be anticipated if the patient becomes deeply flushed, very restless and delirious, and has intense headache not relieved by lumbar puncture. Ventricular puncture and decompression by trephining were found to be useless in this condition; on the other hand, these operations were performed in nine subacute or chronic cases with signs of internal hydrocephalus. All terminated fatally, but in several instances the patient's life was prolonged. It is noted that three out of nineteen cases of internal hydrocephalus recovered spontaneously. In the final chapter of the report the use of urotropin and helmitol as cerebro-spinal antiseptics is considered in detail. In the absence of adequate supplies of antimeningococcal serum in the early days of the epidemic urotropin was thus used extensively. The authors conclude that both clinically and experimentally it is useless as a cerebro-spinal antiseptic. It can liberate formaldehyde only in an acid medium, and cerebro-spinal fluid is always alkaline; urotropin itself is not an antiseptic agent. The report on helmitol is more favourable. Helmitol, or hexamethylene tetramine anhydromethylene citrate, liberates formaldehyde in alkaline as well as in acid media; *in vitro* it does inhibit the growth of the meningococcus. But it has not proved possible to discover formaldehyde in the cerebro-spinal fluid even after massive intravenous injections of the drug, perhaps in consequence of lack of delicacy of the chemical tests employed for its recognition.

MEDICAL EXAMINATION UNDER THE NATIONAL SERVICE SCHEME.

SIR AUCKLAND C. GEDDES, Minister of National Service, in his statement on September 15th on the general policy of recruiting and the organization of the Ministry of which he is the head, indicated the broad lines upon which the medical department will work.

In the office of the Ministry, with direct responsibility to the Minister, there will be a Chief Commissioner of Medical Services. It is intended also to establish an Advisory Medical Board which will advise the Minister on medical subjects generally, including such specific points as the arrangement of standards for determining the grades of physical efficiency. It is hoped also that a smaller Advisory Board will be attached to the Deputy Commissioner of Medical Services in Scotland, with Edinburgh as the administrative centre. The whole country will be divided into ten recruiting regions, each of them with a Deputy Commissioner of Medical Services and a Director of Recruiting. The Deputy Commissioner for each region will be responsible for the general policy and conduct of the examinations to be conducted by the medical boards throughout his region, carrying out the policy of the Ministry under the control of the head office in London. Each region will be divided into recruiting areas. In each area there will be one or more medical boards, presided over by presidents. The members of the medical examining boards will be appointed from among the medical men of the area considered suitable for such work on account of their professional knowledge and position; they will serve on a rota and will receive remuneration, the amount of which will be governed by the time given to the work. It is hoped to obtain for the office of president of each board a medical man with recent experience of the conditions of military service. The Ministry will be aided in the selection of medical men to serve on the boards by the professional committees acting through the Local Medical Committees throughout

³ See BRITISH MEDICAL JOURNAL 1916, vol. i, p. 592.

the United Kingdom. Care will be taken that the examination and, if necessary, re-examination of men by the medical boards of the Ministry will be as thorough and complete as possible. After examination by these boards a man will still possess the right of appeal on medical grounds if he considers that his examination has not been properly carried out, or that the grade in which he is placed is not correct. His appeal will come before the appeal tribunals throughout the country. In future the appeal tribunals will have attached to them medical assessors selected and appointed by the Local Government Board in England and Wales and by the Scottish Office in Scotland. Re-examination of the men on appeal will be undertaken by these medical assessors if the appeal tribunal considers, on hearing the case, that further examination is desirable. The decision of these medical assessors will be considered as final, inasmuch as it is the considered statement of the man's physical condition and the grade in which he should be placed.

Thus, as Sir Auckland Geddes pointed out, a new principle is introduced. The Ministry of National Service will only be responsible for providing the machinery for the ordinary medical examination. Any appeal in connexion with medical examination will rest with medical men neither appointed nor controlled by the Ministry, but with medical practitioners appointed by the Local Government Board or the Scottish Office, as the case may be. Drawing to the close of his admirably lucid statement, Sir Auckland Geddes made a remark which deserves emphasis: A long-drawn war between nations wholly mobilized (he said) could only be won by living healthily and by employing healthy armies—healthy in body, and with a healthy public opinion in them and behind them, to fight on and on until the enemy nation collapsed.

The plan appears to have been ably constructed, and shows a proper appreciation of the medical position and of the part which medical examining boards should play in the selection of recruits. If it works as well as may be expected from the information so far published, it ought to remove all legitimate causes of grievance.

AMERICAN MEDICAL OFFICERS IN ENGLAND.

DURING the past week or so the medical profession and the public have become aware through the newspapers that many civilian medical practitioners working at military hospitals have been officially informed that their services will no longer be required, as their duties are to be taken over by medical officers from the United States. It appears that notifications to this effect have been issued in most, if not all, the home commands. The decision seems to have been communicated, in some cases at least, in a very curt manner, and not to have been accompanied by any acknowledgement of the services rendered. The matter first came to the notice of the Central Medical War Committee on September 11th, when it was informed by a Local Medical War Committee that ten medical practitioners attached to a local military hospital had been warned that they might be replaced almost at once by whole-time American surgeons. The Committee thereupon addressed a letter to the War Office inquiring whether such changes were in contemplation on a large scale throughout the country, and, if so, whether the American surgeons would be permanently posted for duty or would be liable to be recalled for service with the United States army. The reply of the Army Medical Department stated that the "arrival of a contingent of medical officers of the United States army has made it

possible to release a number of medical practitioners who are now engaged on part-time duty in hospitals, and who will thus become available to meet the needs of the civil population. The question of the withdrawal of American officers from service with the British Forces has been raised with the American authorities, and will form the basis of a further communication to you later. It is hoped, however, that the permanent retention of a certain number will be possible." The Executive Committee of the Central Medical War Committee then inquired whether the substitution had been applied in cases where it had not been ascertained that there was any special need for additional attendance on the civil population, and added that the Local Medical War Committee in one important area had stated that the recent action, particularly as it had been taken without discussion with the Central Medical War Committee, and consequent discrimination between the areas in which such a step is necessary and those in which it is not, imperils the co-operation with the local military authorities, which in the past has proved eminently successful. There has of course been no suggestion from any quarter that the help of American colleagues would not be welcomed in this country. Criticism has been directed against the manner in which the policy has been put into operation and the lack of consideration shown for the medical men displaced at short notice. From inquiries we have made, we understand that the proposal to utilize the services of American surgeons in home commands at short notice was due to the Army Medical Department, through some error in the cables, only receiving intimation that 135 American medical officers were coming to this country when they had already arrived and were on their way to London. The United States medical authorities expressed the wish that these American officers should be posted as soon as possible. Steps were then taken to ascertain from the home commands how many part-time civil medical practitioners could be released, and it was suggested that one American surgeon might often be able to replace two part-time civil practitioners. The American surgeons were accordingly posted to the various commands and we have reason to believe that some misapprehensions arose as to the best manner of their disposal. It is not the intention of the War Office that medical officers performing important work in hospitals should be relieved, and a letter of instruction has been sent out to the commands that if and when it should be considered possible to replace part-time men in hospitals engaged in surgical work, this shall only be done gradually after consultation between the commanding officer of the hospital and the consulting surgeon of command, and only when the latter is of opinion that the American surgeons have received such training in war surgery under a surgical specialist as will fit them for independent charge of military wards. We understand also that a letter of thanks will be addressed to any part-time officers now released, and that in it a hope will be expressed that they will again place their services at the disposal of the War Office should necessity arise. We fear that the incident has produced a very unfortunate impression, and that the hurried action taken has caused much soreness. The War Office no doubt finds justification for the immediate employment of American medical officers in the notification addressed to it by the Central Medical War Committee on August 3rd, in which it was stated "that no more medical men can be called upon to take commissions in the R.A.M.C. without seriously endangering the supply of doctors for the treatment of the civil community." But we think it unfortunate that before actually replacing part-time medical officers attached to hospitals by American medical officers, the War Office did not consult the Professional Committees as to the places where this could be done with the greatest advantage to the civil community and the R.A.M.C. As we have on many previous occasions observed, we believe

that friction would be avoided and the work of the military authorities facilitated if there were closer co-operation between the military medical authorities and the representative bodies of the civil profession.

RECENT RESEARCHES ON TUBERCULOSIS.

UNDER the aegis of the Henry Phipps Institute at Philadelphia a series of experimental researches have been carried out during the last few years. Some of them have already appeared in American scientific periodicals, but have now been published collectively in the Thirteenth Annual Report of the Institute.¹ They cover a wide field, but all have a direct bearing upon the study, treatment, or prevention of tuberculosis. An interesting inquiry into the dietary of the ordinary dispensary patient and the actual food values of the articles consumed daily by the various types has elicited proof that in the great majority of cases the diet did not come up to the accepted standard of calories by one-fifth. The explanation given is twofold. Poverty, on the one hand, may account for a good deal, but ignorance on the part of the housewife is responsible for the greater part. A close investigation as to the purchasing power of 10 cents, as expended by different classes, such as Italians, Russians, negroes, and Jews, showed a marked difference in results. The prevention rather than the treatment of disease, and especially of tuberculosis in connexion with childbirth, is the subject of an interesting account of work carried on at the institute and the Babies Hospital. Prenatal work among the well-to-do, as well as among the poorer classes, is effecting many changes for the better, but the mortality from preventable causes is still appallingly high. A very important, though short, communication on the subject of latent syphilitic infection of the lungs deserves special note. Pulmonary lesions unaccompanied by fever or sputum are almost always attributed to quiescent tubercle, but in many instances the Wassermann test has revealed the specific taint and special treatment has healed the lesion. Salvarsan has proved as effective in such cases as in cutaneous affections due to the same cause. Attempts to destroy or annul the activity of the tubercle bacillus in the tissues have occupied the minds of experimental pathologists in many lands since the selective action of tuberculin was first demonstrated. It has now been found that certain substances, of which trypan-red is thought to be the best, have a definite effect upon the blood vessels surrounding a tuberculous lesion, and that in the laboratory such substances will inhibit the growth of the bacilli when used in sufficient concentration. Details are given of the results so far obtained, and they undoubtedly form a substantial foundation for future work. Many other papers of interest bearing upon difficult chemical questions, and notably as to the presence of iodine in tuberculous and other organic tissues, will be found in the report.

JOHN HUNTER'S SURGICAL INSTRUMENTS.

THE Council of the Royal College of Surgeons of England has just issued a descriptive catalogue of certain Hunterian relics contained in the museum of the College. The preparation of this catalogue was undertaken by Mr. Alban Doran, to whom it has evidently been a labour of love. The Hunterian collection did not originally include the series of surgical instruments which has been accumulated since the Government purchased Hunter's preparations in 1800, and committed them to the care of the Corporation, afterwards the College, of Surgeons. Among the additions to that series is the little group of interesting relics described and annotated by Mr. Doran. These instruments of bygone workmanship were John Hunter's property, and were employed by him in his surgical practice. They include a pair of sharp-pointed scissors and a spatula for

a surgeon's pocket case, the spatula fenestrated for greater lightness; a pair of old-fashioned X-shaped dressing forceps, which look very strange to modern eyes; two surgical needles "of well-tempered steel" in a wooden case covered with shark skin; a sturdy lithotomy scalpel, which is the only instrument in the whole series of relics which was admitted by John Hunter's contemporaries to be of his own design; William Hunter's uterine polypus loop, employed by his younger brother for passing ligatures in the treatment of aneurysm; an early type of flexible silver catheter; a charming tortoise-shell case of lancets; and, lastly, a pair of pocket scales in a solid wooden box hollowed out to receive them. In his compact notes Mr. Doran sets out the evidence showing that each relic belonged to John Hunter, and indicates the relations of each instrument to patterns in vogue among Hunter's contemporaries, based on careful search of old surgical books and plates. The catalogue is worthily illustrated, and forms one more tribute to the memory of the great master.

THE METROPOLITAN ASYLUMS BOARD.

IN common with nearly all such publications the annual reports of the Metropolitan Asylums Board now appear in a greatly attenuated form. Before the war they were substantial volumes of some 260 pages, bound in full cloth and decorated with charts. The reports for 1915 and 1916 are in comparison slender pamphlets of fifty pages or so, in paper covers. The report for 1916, which has just been issued, consists merely of a general review of the year's work, and of statistical tables. The number of war refugees under the Board's care was very greatly reduced during the year, the total number of admissions being little more than a fifth of the total for 1915. Since the beginning of the war three of the Board's hospitals, containing more than 4,400 beds in all, have been handed over to the Government for military purposes; part of the High Wood School has been set aside for the accommodation of soldiers; and soldiers suffering from tuberculosis and other diseases have been accommodated. Further, a number of patients from the London County Council's asylums have been received, with a view to enabling one of the large asylums to be handed over for military purposes, and a similar course has been adopted in the case of sane epileptics from the Belmont Institution. The Board has had great difficulty in maintaining its land ambulance service, which is, of course, one of the chief links in the chain of its activities. The shortage of drivers was largely made good by the employment of women, but the staff of skilled mechanics employed in repairing and overhauling the motor vehicles, and maintaining them in running order, was much depleted, and in spite of every effort the shortage persists. The result would have been serious were it not that during the year the prevalence of infectious diseases in London was unusually low, and this was exactly reflected in the lessened number of patients conveyed to hospitals and elsewhere by the Board's ambulances. The remarkably small number of scarlet fever cases was a great boon in many ways to the managers of the Board, enabling them to carry on with depleted staffs, and to accede to many requests from the military and naval authorities for the removal and treatment of soldiers and sailors with infectious diseases.

A MINISTRY OF HEALTH.

IN several newspapers this week there have appeared more or less detailed accounts of a scheme for the establishment of a Ministry of Health, which is said to have been approved and adopted by the Standing Joint Committee of Approved Societies, by the Emergency Committee of the National Association of Insurance Committees for England and Wales, and by the Faculty of Insurance. This scheme is put forward with a plain hint that the Government is expected to swallow it whole and take the necessary steps

¹ Thirteenth Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis. University of Philadelphia, 1917.

to put it into action without delay. According to one account, the Government is called upon to take in hand the requisite legislative and administrative measures at the beginning of the autumn session, so that the new Ministry may be set up and become a going concern by Christmas. The scheme is comprehensive enough, and the only wonder is that those who put it forward should have been able to reach unanimous decisions embracing such a variety of principles and details. Broadly stated, the proposal is that the new Ministry should begin as a combination of certain public health functions of the Local Government Board, the functions, both medical and financial, of the National Insurance Commission for England and Wales, the maternity and infant welfare functions of the Board of Education (whatever that means), the midwifery functions of the Privy Council office, and certain new functions in respect of the care and supervision of the blind. To these duties are to be added, as soon as may be, certain other public health functions of the Local Government Board, the work of the Registrar-General's office, the factory inspection functions of the Home Office, and the appointment of certifying surgeons under the Factory Acts, together with the functions of the Board of Control. Other functions to be added at a later date are the remaining public health activities of the Local Government Board, notably housing, the supervision of the medical side of the Poor Law, and the supervision of the treatment of discharged and disabled sailors and soldiers. The powers and duties of the National Insurance Commissioners are to be transferred to the Ministry of Health, the Commissioners becoming, with their staff, officials of the new Ministry. Upon this point, however, two specific provisos are made which make the position of the authors of this scheme fairly clear: "In the exercise of the functions so transferred to the Minister, he (and, of course, his department) shall constantly have advice and guidance from a special body, to be appointed for the purpose by Order in Council, comprising persons having practical experience of National Health Insurance work. . . . Secondly, the bill should provide that the judicial and quasi-judicial powers and duties of the Insurance Commissioners shall not be transferred to the Minister, but shall be vested in, and exercised by, a special body, to be appointed for the purpose by an Order in Council, whose decisions on these matters shall be final." The outlined scheme provides for a special administrative office for Wales which could be developed later into a Welsh department of the Ministry; but it is suggested that Scotland and Ireland might prefer to work out their own arrangements in their own way, and set up each its own Ministry of Health. Lastly, we note that in order to make their plan achieve its purpose, the authors in a vigorous peroration demand "that unwilling authorities, obstructive interests and reactionary influences, shall be effectively dealt with"—a sentiment which all reformers will cordially endorse, though they may not agree as to which authorities, interests, and influences merit these epithets.

THE ALCOHOLIC FACTOR IN INSANITY.

DR. H. M. POLLOCK, statistician to the New York State Hospital Commission, has published a paper¹ on the decline of alcoholism as a cause of insanity, based upon an inquiry into the history of the 58,000 patients admitted during the past eight years into the thirteen civil State hospitals of New York State. During this period the habits of every patient were inquired into on admission, and a statistical data card was prepared for each case and forwarded to the Bureau of Statistics. Dr. Pollock summarizes the results of this investigation in tabular form. The first table shows the number and proportion of cases of alcoholic insanity among patients admitted during each year. In 1909 the percentage of alcoholic cases among

all admissions was 10.1; in 1910 9.8; in 1911 9.7; in 1912 9.4; in 1913 9.0; in 1914 7.0; and in 1915 5.4; in 1916 the percentage rose to 5.7. Since the trend of these figures might be interpreted as being due to changes in classification rather than to changes in the use or influence of alcohol, a further table is given showing the number and percentage of cases for each year in which the intemperate use of alcohol was recorded on first admission. This also shows a general decline, as does a third table giving the yearly rates of new cases of alcoholic insanity admitted to the civil State hospitals per 100,000 of general population of the State. The conclusion drawn from these figures is that the alcoholic cases annually admitted to the State hospitals in question since 1909 have decreased both relatively and absolutely, and that intemperance as a contributing factor in causing mental disease has gradually diminished. These results are attributed by Dr. Pollock to improvement in the habits of the general population with respect to the use of alcohol. But in appraising them we may well bear in mind the word of caution sounded by Dr. Maurice Craig in his discussion of alcoholism as a cause of insanity.² "No doubt it is a very potent cause, but it may also be an early symptom of mental disease. The physician must be careful to distinguish between cause and effect. Further, defective control may be the scar left by a former attack of insanity, and it may show itself in a tendency to drink."

MEDICINE IN KOREA.

FROM a summary of the annual report on reforms and progress issued by the Korean Government in July, 1916, which appears in the review of current periodicals by the staff of the Research Department of the Severance Union Medical College, Seoul (vol. ii, part 2), we learn that in the year 1914-15 for the medical care of a population of more than thirteen millions there were one Government general hospital and 18 provincial charity hospitals, and 145 public and private hospitals, including missionary institutions. The number of fully qualified doctors was 641, besides 91 whose licence was limited; 20 dentists; and 323 qualified midwives, and 74 whose practice was limited. In addition to these there were 5,827 Korean practitioners of the old school. The Government medical school at Seoul had 42 teachers and 160 students. Degrees were conferred on 24 students during the year. The staffs of the Government hospital and the 18 charity hospitals numbered 104 physicians, 45 pharmacists, and 358 nurses. The number of cases treated during the year 1914-15 was 443,868. Notification of cholera, typhoid, paratyphoid, dysentery, diphtheria, typhus, scarlet fever, and small-pox is compulsory. Small-pox fell from 2,536 cases with 481 deaths in 1910 to 140 cases with 12 deaths in 1914. The reduction is attributed to vaccination; during the year under review 1,794,438 vaccinations were reported.

By the addition of the party recently organized, the number of American orthopaedic surgeons now available for military orthopaedic work in this country is 87.

MAJOR J. DUNDAS GRANT, consulting surgeon to the Central London Nose, Throat, and Ear Hospital, has been appointed Chairman of the Special Aural Board which has been set up by the Pensions Minister for the purpose of dealing with the cases of deaf discharged soldiers.

SIR ARTHUR WHITELEGGE, K.C.B., for more than twenty years the chief inspector of factories and workshops at the Home Office, is about to retire on reaching the age limit. An arrangement has been made under which Sir Arthur Whitelegge will continue to give his services to the factory department in an advisory capacity on questions of a technical and scientific character.

¹ *Psychiatric Bulletin of the New York State Hospitals*, vol. ii, No. 2, 1917.

THE WAR.

NATIONAL EXPERIMENTAL LABORATORY FOR ARTIFICIAL LIMBS.

THE Minister of Pensions on September 17th received a private deputation from the committee of the Queen Mary's Convalescent Auxiliary Hospital, Roehampton, for soldiers and sailors who have lost their limbs in the war, with regard to the proposal to establish a national experimental laboratory for controlling the design and manufacture of artificial limbs for disabled soldiers. According to the published accounts, the deputation expressed the hope that far better types of limbs than are now being supplied would gradually be evolved if experiments were carried on and the experience of patients was made full use of. Mr. Hodge, in reply, stated that immediate steps would be taken to raise the funds for the establishment of such a laboratory, which might eventually develop into a national factory for manufacturing artificial limbs. For the present, however, he expressed himself as opposed to the establishment of such a national factory. He considered that the managing committee of the national experimental laboratory should be a small body representative of surgeons and mechanical experts, and should be distinct from any committee of management of special hospitals. It would be directly responsible to the Ministry of Pensions, and would be equipped with sufficient powers to make sure that the improvements recommended should be applied to the manufacture of artificial limbs.

HONOURS.

THE name of Captain Noel Godfrey Chavasse, R.A.M.C., heads the list of honours announced in the *London Gazette* of September 14th, as having won the great distinction of a bar to the Victoria Cross. This gallant officer had previously received the Military Cross on January 19th, 1916, and the Victoria Cross on October 26th, 1916. He has unfortunately since succumbed to his wounds, as recorded in our issue of August 18th, 1917. He was one of the four sons of the Bishop of Liverpool, all of whom have served with distinction in the army during the war. The heroic acts for which the bar is awarded are thus described:

Bar to V.C.

Captain Noel Godfrey Chavasse, V.C., M.C., R.A.M.C., attached Liverpool Regiment.

Though severely wounded early in the action whilst carrying a wounded soldier, Captain Chavasse refused to leave his post, and for two days not only continued to perform his duties, but in addition went out repeatedly under heavy fire to search for and attend to the wounded. During these searches, although practically without food during this period, worn with fatigue, and faint with his wound, he assisted to carry in a number of badly wounded men over heavy and difficult ground. By his extraordinary energy and inspiring example he was instrumental in rescuing many wounded who would otherwise have undoubtedly succumbed. This devoted and gallant officer subsequently died of his wounds.

Special supplements to the *London Gazette* issued on September 17th contain lists of awards for distinguished services in the field. The lists include the following medical officers:

To be Companions of the Distinguished Service Order.

Temporary Captain Lewis Anderson, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He carried out his duties for forty-eight hours without relief, attending to over 100 cases and working under the most adverse conditions. He was exposed throughout to intense and heavy fire of shell and gas shells, which rendered it necessary for him to work in a mask. The following night, after his battalion had been withdrawn, he returned to search for wounded in the front line, which was still in close contact with the enemy, and, after working for several hours under heavy shell fire, he collected and evacuated all his wounded, having displayed magnificent devotion and the utmost contempt for danger throughout.

Major Robert Archer Lloyd, M.D., I.M.S.

Lieutenant (Temporary Captain) Arthur Frederick Isbell Patterson, R.A.M.C.

Captain (Temporary Lieut.-Colonel) Norman Cecil Rutherford, M.B., F.R.C.S., R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. He worked continuously under heavy shell fire, evacuating the wounded from the forward area, and it was owing to his splendid example of devotion that the work was efficiently carried out.

Military Cross.

Captain John Ernest Affleck, C.A.M.C.

For conspicuous gallantry and devotion to duty. He crawled along a shallow and much exposed trench to rescue a very severely wounded officer, whose life depended upon an immediate operation.

With the assistance of a stretcher-bearer he managed to get the wounded man out on a blanket to a place where he could be evacuated. The task was a very slow and dangerous one, by reason of their being completely exposed to enemy snipers, but Captain Affleck did not hesitate to risk his life in order to do all that was humanly possible for this wounded officer.

Captain John Arthur Bell, R.A.M.C.

For conspicuous gallantry and devotion to duty during a heavy bombardment. He proceeded along a road which was exposed to the most intense shell fire in order to attend to four wounded officers. He dressed their wounds and remained with them until they were evacuated by motor ambulance, which was only accomplished with the greatest difficulty owing to the heavy shelling. His absolute disregard of danger and devotion to duty amidst terrific shell fire were exceptionally splendid and beyond all praise.

Captain John Bernard Cavanagh, M.B., R.A.M.C. (S.R.).

For conspicuous gallantry and devotion to duty when in charge of bearers. He exposed himself to shell fire for forty-eight hours with splendid fearlessness, keeping all the time in touch with aid posts in the captured line, thereby ensuring a rapid evacuation of the wounded.

Captain Clarence Hamul Denyer, R.A.M.C.

For conspicuous gallantry and devotion to duty when in command of divisional bearers. It was due to his fearless and capable handling of his party that the evacuation of the wounded was carried out with rapidity and success.

Temporary Captain Charles Dundee, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He worked for three days, bandaging the wounded under fire, and successfully evacuating every case in his battalion almost as soon as it occurred. Over five hundred cases passed through his hands, and he displayed a splendid spirit of energy and devotion.

Temporary Lieutenant David Hammond Fraser, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. Whilst his battery was under very heavy gas bombardment a shell wrecked the officers' mess dug-out and buried two officers and five men. Lieutenant Fraser, helped by a corporal, most gallantly assisted to rescue the buried men and restore respiration, entering the dug-out several times, until he eventually collapsed from the gas. On recovering consciousness he again attempted to enter the dug-out, but was prevented from doing so. Later, he collapsed again and remained unconscious for a long time. It was due to his promptness and energy that no more than two of the gassed men succumbed.

Temporary Captain Augustus Joseph Hickey, R.A.M.C.

For conspicuous gallantry and devotion to duty when in command of an advanced dressing station. He worked with the utmost energy and disregard of danger for forty-eight hours under shell fire, during which time he passed through more than 700 wounded. His skill and devotion saved many lives.

Temporary Captain William Bird Loveless, R.A.M.C.

For conspicuous gallantry and devotion to duty in tending the wounded under heavy shell fire. Although wounded in the face early in the day, he did not leave his post, but continued with his work until he came out of action with his battalion, displaying splendid keenness and devotion to duty.

Temporary Captain Anthony John McCreadie, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty under heavy shell fire and in most trying circumstances. He worked alone and incessantly for thirty-six hours in the open attending to the wounded, and on two occasions he carried men under cover and dressed them. He evacuated all the wounded with admirable rapidity and efficiency, and his coolness and disregard for personal safety under fire afforded a magnificent example to all ranks. He has displayed similar gallantry on other occasions.

Captain John Morrison Milne, R.A.M.C.

For conspicuous gallantry and devotion to duty. When a dug-out containing combustion products was blown in and the inmates buried he procured oxygen cylinders and played them into the dug-out, thereby saving their lives. He also assisted most untiringly in digging out the men, who owe their lives to his promptness and gallantry under heavy shell fire.

Temporary Captain Samuel Ernest Picken, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in going forward under heavy shell fire and attending to the wounded in advanced trenches and shell holes. He remained in the shelled area for a long period, working incessantly and efficiently at the dressing and evacuation of the wounded. He has always shown the same gallant spirit and devotion to duty.

Captain James Calvert Spence, M.B., R.A.M.C. (S.R.).

For conspicuous gallantry and devotion to duty in proceeding to a battery that was suffering heavily from intense enemy shell fire, and continuing to search blown-in dug-outs and tend the wounded under heavy fire. He displayed exceptional coolness and gallantry on this occasion, and on many previous occasions he has carried out his duties with magnificent devotion.

Temporary Captain Hugh Frederic Wickens, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded whilst the camp was being heavily shelled. The dressing station was totally unprotected, and when it was eventually destroyed by enemy shell fire he showed splendid initiative and coolness in re-establishing his station elsewhere, continuing to clear the wounded and do his work in the most gallant and devoted manner. He has on several previous occasions displayed conduct of the same high order.

To be Brevet Lieut.-Colonel.

Major (temporary Lieut.-Colonel) R. M. Carter, F.R.C.S., I.M.S. (with effect from April 26th, 1916, inclusive).

Sergeant-Major L. J. Richardson, R.A.M.C., has been awarded the Military Cross. One acting lance-corporal of the R.A.M.C. receives the D.C.M.; one sergeant of the R.A.M.C. is awarded a bar to the Military Medal; eight non-commissioned officers and twenty-three privates of the R.A.M.C., two non-commissioned officers and one private of the A.A.M.C., and two

nursing sisters, and one staff nurse of the Queen Alexandra Imperial Military Nursing Service Reserve, receive the Military Medal, and four privates of the R.A.M.C. receive the Meritorious Service Medal.

OFFICERS COMMENDED.

The names of the following medical officers have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war:

Surgeon-Generals: W. G. Birrell, J. D. Edge, C.B., W. L. Gubbins, K.C.B., M.V.O.; O. E. P. Lloyd, V.C., C.B. (ret. pay); W. F. Stevenson, C.B.

Honorary Surgeon-General W. R. Smith.

Colonels: G. G. Adams, L. J. Blandford, W. H. Bull, P. C. Burgess, E. Butt, R. Caldwell, Sir J. R. A. Clark, B. B. Connolly, C.B. (ret. pay), A. E. J. Croly, J. H. Daly, J. R. Dodd (ret. pay), H. H. Forman, J. Griffiths, R. I. D. Hackett, S. S. Hoyland, R. Jennings, T. J. R. Lucas, C.B. (ret. pay), W. A. May, C.B., C. H. Melville, L. T. M. Nash, F. P. Nichol, C. P. Oliver, W. J. R. Rainsford (ret. pay), A. F. Russell (ret. pay), H. M. Sloggett, O. Todd, C. A. Webb.

Brevet Colonel E. M. Pilcher.

Temporary Colonel F. Kelly.

Surgeon-Colonel A. Thorne.

Honorary Surgeon-Colonels: W. C. James, W. M. Roocroft.

Lieut.-Colonels: F. H. Appleby, Sir James Barr, F. W. Begbie, J. R. Benson, H. Bramwell, G. A. T. Bray, H. A. Bray, C.M.G., J. F. Brodie, H. E. Bruce-Porter, G. H. Bull, I.M.S. (ret. pay), E. M. Callender, W. P. Carson, I.M.S., C. W. Cathcart, J. Chaytor-White, I.M.S., T. H. M. Clarke, T. H. F. Clarkson, G. J. Coates, W. Coates, C.B., M. A. T. Collie, I.M.S., M. P. Corkery, R. Cottell, Sir W. R. Crook-Lawless, R. O. Cusack (ret. pay), V. G. Drake-Brockman, I.M.S., W. C. Edwards, F. W. Ellis, N. Faichnie, Sir J. Fayrer, G. M. Goldsmith, R. H. Hall, T. W. O. H. Hamilton, L. W. Harrison, M. L. Hearn (ret. pay), F. S. Irvine, C. James, J. B. Jameson, I.M.S., P. H. Johnston, A. A. Lyle (ret. pay), A. W. MacKintosh, J. R. Mallins, J. Mill, L. A. Mitchell, J. M. Moir, A. H. Morris, R. E. R. Morse, C. W. Mansell Moullin, Sir S. F. Murphy, H. K. Palmer, Sir A. Pearce Gould, E. V. A. Phipps, D'A. Power, M.B., W. L. Reade, E. S. Reynolds, B. Riddell, C. F. Routh, W. Rowney (ret. pay), J. V. Salvage, P. C. Smith, W. F. Somerville, M. Swaby, H. Thomson, I.M.S., S. J. Thomson, I.M.S., E. N. Thornton, S.A.M.C., J. Tidbury, T. B. A. Tuckey (ret. pay), C. H. W. Whitestone, S. R. Wills, A. R. Wilson, G. H. Younge (ret. pay).

Surgeon Lieut.-Colonel P. H. Whiston.

Temporary Lieut.-Colonels: G. A. Bannatyne, D. Buncombe, J. B. Byles, A. Carless, A. H. Carter, H. G. Cook, A. P. Dodds-Parker, T. H. Gibbon, E. Goodall, J. Keay, H. A. Kidd, J. R. Lord, S. Mort, Sir B. G. A. Moynihan, C.B., W. T. Prout, F. Romer, A. Simpson, W. Taylor, D. G. Thomson, W. J. N. Vincent, T. B. Winter, J. F. Woodyatt, W. Wrangham, G. A. Wright.

Honorary Temporary Lieut.-Colonel H. Chaffer.

Majors: J. A. Anderson, R. Y. Anderson, W. E. A. Armstrong, I.M.S., R. A. Bickersteth, C. Bramhall, H. A. Bransbury, A. J. Chambers (ret. pay), H. A. Cummins, E. N. Cunliffe, A. C. Farquharson, E. G. French, A. M. Gossage, D. J. Graham, E. Gray, T. W. Griffith, G. P. D. Hawker, R. W. W. Henry, W. A. L. Holland, C. H. Hopkins, J. K. Jamieson, W. Kirkpatrick, J. P. Lynch, W. McConaghey (attached to the Egyptian army), W. G. Macfee, J. N. Macmullan, A. A. W. Merrick, F. W. Mott, A. Mowat, R. C. Rodgers, G. B. Russell, M. S. Skirving, A.A.M.C., C. G. Spencer (ret. pay), G. H. Spencer, H. K. Steele (S.R.), W. S. V. Stock, J. Tait, H. W. M. Tims, W. E. F. Tinley, C. W. Vining, D. Walker, S. G. Webb, W. E. Wynter, A. G. Yates.

Temporary Majors: T. S. Allan, H. W. Bruce, W. R. Dawson, C. B. Dobell, J. H. Hall-Edwards, L. C. V. Hardwicke, D. W. Hume, A. M. Humphrey, J. S. Law, J. R. Lee, D. K. MacDowell, C. V. MacKay, H. G. Magrath, H. C. Marr, J. S. Morrow, E. H. T. Nash, A. Neve, C. Noon, L. Owen, F. C. Purser, T. B. Rhodes, R. G. Riches, N. Roberts, F. M. Rodgers, R. G. Rows, W. Scatterty, G. T. S. Sichel, G. Simpson, H. J. Stiles, J. G. Taylor, F. S. Toogood, J. C. Woods, R. Worth, C. S. Young.

Surgeon-Majors: J. F. G. Dill, F. F. MacCabe (S.R.).

Temporary Honorary Major W. I. de C. Wheeler.

Captains: T. Armour, W. G. Ball, A. S. Barnes, E. C. Bradford, E. A. P. Brock, F. G. Cayley, E. M. Corner, L. Courtauld, C. S. Dean, G. H. Domy, J. S. C. Douglas, G. L. Findlay, N. S. Finzi, W. Gibbs-Lloyd, E. E. Glynn, G. W. Goodhart, A. H. Gosse, F. S. Hawks, T. J. Horder, F. H. Humphries, A. A. Jubb, W. E. Marshall, M.C., M.B., W. Martin, H. L. Munro, C. F. Petley, H. Pinto-Leite, C. F. Read, C. H. Rook (S.R.), H. A. Scholberg, H. R. Sedgwick, S. G. Vintner, F. J. Wethered, J. A. L. Wilson (S.R.).

Temporary Captains: J. Bowes, C. W. J. Brasher, R. H. Brenridge, F. W. Broderick, R. Buchanan, J. Burnford, W. K. Carew, J. E. Carruthers, E. Chambers, A. Compton, W. B. Cosens, S. E. Denver, J. R. Dickson, E. D. Dobson, J. D. Duncan, N. M. Falkiner, W. Fell, W. T. Finlayson, A. A. Forty, A. Griffiths, W. Griffiths, J. P. Helliwell, S. L. Hinde, A. C. Holden, A. L. Jackson, W. W. Jameson, I. Jones, A. M. Kennedy, A. B. Laidlaw, H. C. T. Langdon, A. Landie, P. W. MacLagan, J. M. MacMillan, J. T. McCullagh, L. W. Mortimer, G. Muir, C. E. Murphy, N. H. Oliver, J. F. O'Malley, R. E. F. M. Pearce, J. H. Peek, A. Phillips, J. R. H. Ross, C. Samut, W. Sansom, W. S. Sprent, W. S. Stalker, L. H. Y. Stephen, C. R. Stewart, A. Stodart-Walker, F. W. S. Stone, R. W. Sutherland, B. Sweeten, R. R. Wallace, G. C. W. Williams, E. W. Witham.

Lieutenant T. Croft.

Temporary Lieutenant A. C. Pickett.

Quartermasters and honorary Majors: J. H. W. Beach, T. F. Brake (ret. pay), J. Gillman, H. Johnson, H. Lockhart, H. Woolley.

Quartermasters and honorary Captains: F. Bruce (ret. pay), R. Hawkey (ret. pay), J. Mathews, A. J. Pilgrim, J. C. B. Whitehorn.

Quartermasters and honorary Lieutenants: T. Gibbs, C. Hayward, E. Janes, L. Matthews, H. H. Ross, S. Sully, A. G. Tod, F. B. Wild.

Temporary Quartermasters and honorary Lieutenants: T. Allen, A. E. Hanrahan, C. R. W. Keefe, J. Ogden, J. Tonkinson, L. W. Whittaker, J. H. Withy.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Wounded.

Surgeon Probationer H. J. Phillips, R.N.V.R.

ARMY.

Died of Wounds.

CAPTAIN B. WOODHOUSE, R.A.M.C.

Captain Bernard Woodhouse, R.A.M.C., died of shrapnel wounds on September 5th, aged 28. He was the younger son of the late Lister Woodhouse, of 3, Berkeley Place, Wimbledon, and was educated at University College, London, taking the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1913. He entered the R.A.M.C. as lieutenant on July 25th, 1913, and was promoted to captain on March 30th, 1915. He was attached to the Welsh Regiment when killed.

D. J. P. PRITCHARD.

Dom John Placid Pritchard, of Erdington Abbey, died on September 4th, aged 22, of wounds received on September 1st at Sultanabad, in Persia, while serving as captain in the Russian medical service. He was the son of W. B. Pritchard, of Glenwood, Eltham Road, Lee, and was a member of the Order of St. Benedict.

Wounded.

Lieut.-Colonel J. Barkley, R.A.M.C. (T.F.).

Captain A. L. Anthony, R.A.M.C. (S.R.).

Captain P. A. Doyle, R.A.M.C. (temporary).

Captain A. H. Falkner, R.A.M.C. (T.F.).

Captain N. J. H. Garvin, M.C., R.A.M.C. (temporary).

Captain H. G. Janion, M.C., R.A.M.C. (temporary).

Captain R. W. Hodson Jones, R.A.M.C. (temporary).

Captain W. C. D. Maile, R.A.M.C. (temporary).

Captain L. J. Moir, R.A.M.C. (temporary).

Captain J. C. Sale, M.C., R.A.M.C. (temporary).

Captain L. R. Shore, M.C., R.A.M.C. (temporary).

Captain G. W. Stanley, R.A.M.C. (temporary).

Captain J. S. Taylor, R.A.M.C. (temporary).

Captain L. M. Weeks, R.A.M.C. (temporary).

Captain T. H. Whittington, R.A.M.C. (temporary).

Captain W. L. R. Wood, M.C., R.A.M.C. (T.F.).

Lieutenant M. J. McAuley, R.A.M.C. (temporary).

Lieutenant W. G. McConnell, R.A.M.C. (temporary).

Lieutenant H. Snape, R.A.M.C. (temporary).

Captain Janion's name has twice recently appeared as wounded in the casualty lists—in that of August 30th, and again in that of September 12th.

DEATHS AMONG SONS OF MEDICAL MEN.

Beckingsale, John Edgar, Second Lieutenant Duke of Cornwall's Light Infantry, only son of Dr. D. L. Beckingsale, at present of Towyn, Merioneth, Wales, killed on August 22nd, whilst leading his platoon into action, aged 30. He was recently living in Southern California.

Eminson, Herbert Luther, Lieutenant 8th Battalion South African Infantry, second son of Dr. and Mrs. Eminson, of Bootle, Liverpool, killed in action in East Africa on July 19th, aged 37 years. He was educated at the Collegiate School, Elsworth, and Atherstone Grammar School. After leaving school he studied mining engineering. He took part in the Boer war, with the Staffordshire Imperial Yeomanry; and at the termination of the war settled down in South Africa, being appointed one of the surveyors of roads for the works department of the Government of Natal. When the present war started, he was engaged in road surveying in Zululand; he gave up the work at once and joined up as a private for duty in the Union of South Africa, or for operations against the German forces in British and German East Africa.

Hill, H. F., M.C., Captain 18th Battalion Middlesex Regiment, died September 5th of wounds received while engaged in superintending trench digging operations. He was the elder son of

Captain A. A. Hill, R.A.M.C., of Wolstanton, Stoke-on-Trent. Captain H. F. Hill was educated at the High School, Newcastle-under-Lyme, and was a scholar of Clare College, Cambridge. He was about to proceed to that university when he responded to the call. He was not 19 when gazetted captain, and besides winning the M.C. had been mentioned in dispatches for excellent work as a pioneer officer.

Rinnell, Thomas Squier, Second Lieutenant Suffolk Regiment, eldest son of Dr. J. S. Hinnell of Bury St. Edmunds, reported missing on August 12th, 1915, now presumed killed on that date, aged 21. His first commission was dated October 31st, 1914.

Humphreys, J. Alan, Second Lieutenant Royal Field Artillery, youngest son of Lieut.-Colonel C. Humphreys, R.A.M.C. (T.F.), county medical officer for Montgomery, killed recently, aged 19. He was educated at Llandoverly College, enlisted a year ago as a gunner in the artillery, and subsequently obtained a commission in the Special Reserve, R.F.A. He went to the front last June.

Jacob, Donald M., Private, Canadian Forces, youngest son of the late Dr. Archibald H. Jacob, of Dublin, killed August 21st.

Lawrenson, Raymond F., Lieutenant Cheshire Regiment, only son of Dr. Harman F. Lawrenson, died September 5th of wounds received August 16th, aged 28.

Procter, George Henry Vincent, Second Lieutenant Lancashire Fusiliers, eldest son of the late Dr. Herbert Procter, of Southborough, Kent, killed September 6th, aged 21.

Ratton, Joseph Holroyd, Major Royal Garrison Artillery, eldest son of Lieut.-Colonel Ratton, I.M.S. (retired), of Blackheath, killed September 2nd, aged 35. He was educated at Stonyhurst College, and entered the artillery from Woolwich in 1901, was promoted to captain on July 23rd, 1914, and to major in July, 1916. On September 1st, 1911, he was seconded for service with the Gold Coast Regiment, in which he was intelligence officer. During his service in Africa he explored the hinterland of the Gold Coast and of the French Ivory Coast, mapped out a hitherto unsurveyed part of the country between the Gold Coast and the source of the Niger, served in the Togoland campaign, held the post of Acting Military Governor at Lorne, commanded a battery in the Cameroons campaign, and took part in the capture of Jaunde. He had since proceeded to another front.

Semple, H. S., M.C., Major Royal Engineers, eldest son of Dr. H. F. Semple of Budleigh Salterton, killed September 5th, aged 24. He became lieutenant on January 23rd, 1914.

Story, George Ernest, Lieutenant Royal Engineers, son of the late Dr. John Story of London, W., died at 3rd London General Hospital, Wandsworth, September 9th, aged 57.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

England and Wales.

THE SUPERSESSION OF THE MILITARY HOSPITAL STAFFS IN MANCHESTER AND SALFORD.

THE summary dismissal of the civilian part-time medical officers of the military hospitals in Manchester and Salford has caused a feeling of intense resentment against the War Office officials who may have been responsible, and this feeling is shared by the Local Medical War Committees, who received no intimation of the proceeding until the new arrangements were practically carried out. The medical officers themselves were generally under the impression that a month's notice would be given when their services were no longer required, but in practically every case only a curt notice was received that at the end of a week they would be "released," and the Local Medical War Committees received from the officer commanding 2nd Western General Hospital at Whitworth Street a note to the effect that owing to United States medical officers having been allocated to this unit, it was possible for a certain number of civil medical practitioners to be released in order to meet the needs of the civil population. In some of the hospitals the Americans have already commenced their duties, and it is only right to say that no blame can be attached to them for thus ousting the English doctors, as they have simply obeyed orders with which at least some of them are not well pleased.

Apart from the injustice thus inflicted on the English civilian doctors, the action of the military authorities is felt to be a distinct slight on the Local Medical War Committees, which, in the interests of all concerned, ought to have been consulted before such a step was taken. The committees have in the past done all that could be done to assist the military authorities. It was through the committees that the medical boards for the examination of recruits were formed, which relieved the authorities

from what they found to be a very difficult task. Moreover, as the committees by their constitution were in the best position to know what civilian doctors could undertake part-time work at military hospitals, the military authorities for some time past had consulted them before making appointments at the auxiliary hospitals. The committees, too, had faithfully carried out their duty of recommending what doctors of military age could be spared to join the forces; and, working as they did in close connexion with the Insurance Committees, they had been able to set free quite a large number of doctors for the army without unduly damaging the proper medical attendance on the civil population. This had been accomplished partly by arranging for the carrying on of the practices of the doctors who were thus set free to join the army. In the case of Salford the panel practitioners had voluntarily agreed to set aside several thousand pounds from the panel practitioners' fund, to be divided in fixed proportions among those panel practitioners who joined the army. In Manchester, too, an arrangement had been made which would provide as far as possible against loss through joining the army. In short, in every possible way the Local Medical War Committees, working with the Panel and Local Medical Committees and the Insurance Committees, had been the means of obtaining for the army the greatest possible number of medical men while at the same time guarding the needs of the civil population. All this purely voluntary work, which the army authorities could not have done, is now required in a way that cannot tend to encourage its continuance.

It has been stated that the appointment of the American doctors is intended to release a still further number of Manchester and Salford doctors to join the army or to attend to the needs of the civil population. This suggestion can only have been put forward by persons who do not fully understand the present conditions, for in the first place the dismissed doctors, with extremely few exceptions, are over military age, and in the second place, the needs of the civil population have already been sufficiently guarded by the Local Medical War Committees. The dismissed medical officers will now simply have to fill up their time with civil work, and any special experience which they may have gained at the hospitals in the treatment of the wounded will be lost to the army, and the wounded will have to depend on doctors who, however well qualified they may be generally, cannot claim the experience in the treatment of the wounded which the displaced medical officers have acquired. If there had been complaints against the displaced doctors, the matter would have borne a different aspect, but no complaints have been heard of. It may well be that the feeling of resentment will not result in any slackening in voluntary efforts to supply the needs of the army and the civil population, but the strongest protest is made against actions such as that in question, which inevitably tend to discourage that whole-hearted co-operation which is so desirable between the military authorities and civil bodies, both working for their country.

Correspondence.

RECURRENCE OF ADENOIDS AND TONSILS.

SIR,—In the JOURNAL of September 15th there is an admirable clinical lecture by Dr. Douglas Guthrie on "Some nose and throat diseases of childhood," but I cannot refrain from taking exception to his rather dogmatic statement in reference to the removal of tonsils and adenoids, that "after a thorough operation there is no such thing as a recurrence." I thought the same myself in earlier days, particularly as I observed that adenoid "recurrences" took place chiefly or entirely on the left side of the nasopharynx, the area most apt to escape the sweep of the surgeon's curette, and that the "regrowth" of tonsils was principally in cases in which the capsule of the gland had been left behind. But a wider experience has afforded me opportunities for watching cases in which I have sometimes on more than one occasion assured myself, both by sight and touch, of the complete clearance of the post-nasal space after operation, and yet I have later on noted the gradual regrowth of adenoid tissue

sufficient to call for a second operation. So, too, in regard to the tonsils. I can produce tonsils which have been enucleated intact in their capsules, and yet their original owners have suffered a regrowth of lymphoid tissue in the fauces, requiring further treatment. These cases have occurred in my own practice, and I have seen them as frequently from the hands of other operators, though some of them were amongst the most skilled in the land. I have at present under observation a boy in whom the adenoids have been twice removed by a leading London laryngologist. I removed them for the third time; at intervals, for nine months, I inspected the nasopharynx and found it smooth and clear. Recently I have observed the gradual regrowth of adenoid tissue in this boy's post-nasal space. It is well to add that he had measles in the spring, and that several of his relatives have required the adenoid operation more than once. The recurrence of tonsillar tissue I have watched whether the tonsils had been enucleated by the guillotine or by dissection.

Incomplete removal is, unfortunately, not uncommon; but true recurrence does take place in a very small proportion of cases. If we all recognized and explained to the public that a recurrence may possibly take place, even after the most thorough operation, parents would have less cause for complaint, and colleagues would be more charitable one to another.—I am, etc.,

London, W., Sept. 18th.

STCLAIR THOMSON.

DYSENTERY AT GALLIPOLI.

SIR,—As one with eight years' experience of dysentery, both from a laboratory and clinical point of view, I would like to endorse the statements put forward by Lieut.-Colonels Ledingham and Wenyon, R.A.M.C., in your issue of July 7th. Having no accurate statistics upon which I can draw, I am unable to speak in quite such an authoritative manner, as regards the proportional incidence of the two main forms of dysentery at Gallipoli, as these two experts are able to do; but I can at least claim first-hand laboratory and a considerable amount of clinical experience of the dysenteries from that theatre of war from the latter part of September till December, 1915, in Mudros; since when up to the present time I have been constantly at work in Egypt on this subject. In my experience the amoebic cases have never exceeded 20 per cent. of the total number—that is, those in whose stools active motile amoebae with ingested red cells were found which could reasonably be regarded as *Entamoeba histolytica*.

In the latter part of September and in the early part of October, 1915, while working in the laboratory at Mudros of Lieut.-Colonel C. J. Martin, F.R.S., the number of stools with active amoebae never exceeded in my experience 20 per cent. of the total examined. During that period bacillary dysentery was rife, as proved both by pathological examination in the *post-mortem* room as well as by isolation of Shiga and "Y" bacilli from the stools during life. With the advent of the cold weather from the middle of October until December I never found active amoebae at all, though *histolytica* cysts were commonly encountered. This tallies exactly with what one would expect from a study of the epidemiology of amoebic dysentery; for the entamoeba is a tropical or subtropical parasite requiring certain atmospheric conditions for its propagation. I am convinced that the practice of diagnosing amoebae in a defunct state, as is sometimes done in stools, where they are supposed to have been rendered non-motile by cold or by the action of emetine, is almost an impossibility, for the dead amoeba undergoes degenerative changes which render it indistinguishable from any other cell in the exudate. The bacillary dysentery stool in the acute stage contains as a rule a large percentage of pus cells and other non-motile refractile cells (10 to 30 μ in diameter), which are liable by the uninitiated to be mistaken for entamoebae. These macrophage cells, as they appear to be, have been described and figured by me in a research I carried out in Fiji in 1910.¹ They have previously been noted by Dutcher² and by Jürgens.³

Lieut.-Colonel Wenyon, R.A.M.C., in his recent papers,⁴ has added to our knowledge of their structure. They

often contain ingested red blood cells and polymorphonuclear pus cells. In microscopic sections of bacillary dysentery intestines I have been able to demonstrate these cells in the submucosa. I have had considerable experience during the last seven years of dysentery epidemics both in the Pacific and in Ceylon, and I am also familiar, through association with the Tropical Diseases Bulletin, with the recent literature on the subject, yet I have never heard or seen an epidemic which was entirely amoebic in origin. It may be that there is a seasonal variation, and that this accounts for the undoubted greater prevalence of amoebic dysentery in Gallipoli during the hot weather, but from the facts I have recorded I cannot believe that the amoebic was the only form of dysentery during the earlier parts of the campaign.

This statement is borne out by the proportionately small number of cases of hepatic abscess and hepatitis of amoebic origin which have occurred since that date.

During the last nine months I have had experience of dysentery as it occurs amongst the Turkish prisoners of war, both from Sinai and from the Hedjaz, and I have proved a large number (some seventy) to be cases of chronic bacillary dysentery by pathological and bacteriological examination, and during that period I have only seen two clinical cases of amoebic dysentery in Turks during life. There have been no amoebic lesions *post mortem*. It would appear, then, that amoebic dysentery is, on the whole, a comparatively rare disease in the inhabitants of the Middle East when subjected to similar conditions, as were our troops at Gallipoli.

As regards Sir R. Ross's advice on the indiscriminate hypodermic injection of emetine regardless of laboratory diagnosis, I consider this practice as an unsound one, and I am convinced that the administration of emetine in large doses as a routine measure to bacillary cases has a prejudicial effect. Acute cases of bacillary dysentery are unfortunately common. They require specific treatment with large doses of polyvalent antidyenteric serum, preferably intravenously administered, to combat the toxæmia in the early stages, and, if necessary, intravenous injection of saline to replace the fluid which is lost by the bowel; all this a too implicit faith in emetine precludes.

Acute and rapidly fatal cases of amoebic dysentery are, in my experience, rare, and die, not from toxæmia, but from perforation of the large bowel and consequent peritonitis.

Whenever an urgent case of dysentery occurs in which no laboratory diagnosis can be obtained, and in which, from a clinical point of view, the diagnosis is uncertain and rapid action is necessary, then there can be no harm, as I have already advocated,⁵ to treat the patient with emetine and antiserum at the same time until the acute stage is passed. The general measure of supplying saline to replace the lost fluid surely applies to both diseases.—I am, etc.,

PHILIP BAHR, M.D., M.R.C.P.,
Captain R.A.M.C.

Cairo, Aug. 8th.

SIR,—My attention has been called to a letter from Lieut.-Colonel Ledingham and Lieut.-Colonel Wenyon in your issue of July 7th. The authors of this letter make definite statements as to the overwhelming preponderance of the bacillary form of dysentery in the Eastern theatres of war; they state that "the extent of the participation of pathogenic entamoebae in the causation of acute dysentery has been very precisely defined" and "that there is no evidence that they (pathogenic entamoebae) have been responsible for more than 20 to 25 per cent. of the acute dysenteries in any area."

These assertions in so far as they refer to the Gallipoli epidemics are not borne out by the published reports. Until these reports are collected and reviewed it would surely be better to avoid making statements which tend to revive the old controversies of amoebic and bacillary schools. Positive protozoological and bacteriological findings are not compatible. I endeavoured to demonstrate this in a paper on the Gallipoli epidemic published in the *Quarterly Journal of Medicine*, April, 1917. This point of view is also referred to in a paper by Captain David Thomson and Captain T. J. Mackie in the *Journal of the R.A.M.C.*, April, 1917. My view that the amoebic ulcers in the colon of the Gallipoli cases were frequently the site

¹ *Dysentery in Fiji during the Year 1910*. Report to the London School of Tropical Medicine. Witherby and Co. 1912. (One plate, pp. 18.)

² *Journ. Amer. Med. Assoc.*, 1903, No. 8, p. 480.

³ *Zeit. f. Exp. Path.*, iv, 1908, p. 769.

⁴ *Journ. of the R.A.M.C.*, No. 2, vol. xxviii, p. 174.

⁵ *BRITISH MEDICAL JOURNAL*, 1914, i, pp. 294-295.

of secondary bacterial infection is strengthened by Ledingham and Wenyon's statement concerning dysentery in Mesopotamia. They state that "in Mesopotamia 15 per cent. only were amoebic, whilst the examination of convalescents in India produced the impression that amoebic was the predominant type in Mesopotamia."

I would suggest that here also amoebic ulceration of the colon is common; that the acute exacerbation of the disease is frequently due to a secondary infection, and that the amoebiasis was not detected, in some of the cases, until the patients were convalescing in India. I have recently, amongst a number of malaria cases from Salonica, come across twelve patients with *tetragena* cysts or vegetative entamoebae in their stools. Their condition of post-dysenteric colitis is undoubtedly due to amoebiasis, though I do not doubt that they were correctly diagnosed at Salonica as infected with "dysentery bacilli." Had they had specific antiamoebic treatment in the early stage of their colic ulceration, it is possible that their colons would not be in their present unhappy condition. I would emphasize that amoebiasis, like syphilis or malaria, is as a rule amenable to specific treatment in its early stages, but is difficult to cure in its late stages. Amoebiasis is unfortunately present amongst the troops on all our fronts. A most interesting "contribution to the study of dysentery" by A. C. Inman and D. G. Lillie appeared in the *Lancet* of April 7th. They found 97 carriers of *E. histolytica* cysts in convalescent dysenterics from France and Flanders; the blood of 26 of these cases agglutinated Flexner's bacillus, and in 9 the blood agglutinated Shiga's bacillus; they got similar mixed infection results in cases from the Mediterranean and Mesopotamia. Findings such as this make one realize that it will be a serious mistake to underestimate the frequency of amoebiasis and mixed infections.

In determining the correct treatment in epidemics of dysentery one point is definite; if amoebae are the infecting organisms, the earlier the administration of the specific treatment the more likely is that treatment to be successful; there must be no delay. I would suggest, therefore, that if amoebiasis is found to be common amongst the troops emetine should be given as a routine procedure in all cases of dysentery.

In spite of the "ever-increasing laboratory organizations on the Eastern fronts," I know that it is impossible for the pathologists of general hospitals to make repeated and thorough examinations for specific amoebae and dysenteric bacilli in all cases of dysentery. If the pathologist's tastes are mainly bacterial he will devote his attention to culturing faeces and agglutination tests; not perhaps fully realizing the truth of Inman and Lillie's conclusion "that a positive bacteriological or serological finding does not preclude the necessity for a careful protozoological examination."

In Egypt, during the Gallipoli epidemic, we found that amoebiasis was extremely common. I found amoebic lesions in colon or liver of 39.4 per cent. of all necropsies. Amoebic lesions were found in 91.8 per cent. of the cases of dysenteric ulceration of the colon which came to the post-mortem room. This frequency of amoebiasis is confirmed by other observers. Captains Archibald and Hadfield state that at Mudros East 362 out of 518 dysenteric stools were amoebic. Captain Campbell at Cape Hellas found 65 per cent. of the stools with blood and mucus contained amoebae.¹ Lieut.-Colonel Wenyon and Captain F. W. O'Connor, investigating "healthy" men in camps at Alexandria some time after the peninsula was evacuated, found 5.3 per cent. of "carriers of *E. histolytica*."² Seeing the frequency of amoebic infection and of amoebic ulceration of the colon we would surely have been rather foolish had we not adopted the routine administration of emetine as part of our treatment of dysentery. One wonders what the critics would have said had we not given it. Lieut.-Colonel Wenyon showed that in Hadra Prison, Alexandria, 13.5 per cent. of the natives were infected with *E. histolytica*; in the event of a dysentery epidemic in that prison would he not give emetine as part of his routine treatment?

I think that clinicians, realizing that there are considerable gaps in knowledge of the pathogenesis of dysentery, will agree that we should not have been justified in with-

holding emetine from the cases in Gallipoli. Ipecacuanha, or its later derivative, emetine, has long been an empirical treatment for dysentery in all parts of the world. The good effects of the early administration of emetine in Gallipoli were, as mentioned in my paper, indicated by the improved condition of the patients on reaching the base after such treatment had been made a routine. Until exact knowledge is obtained concerning the infecting organism or organisms in epidemics of dysentery such empirical treatment is the only rational treatment.

In conclusion, I venture to state that in determining scientifically the relative preponderance of amoebic and bacterial infections the detection of specific histological lesions in the intestines must take precedence of the results of examinations of faeces; further, if conclusions are to be drawn scientifically from serological examinations, serological tests, which are as reliable as those for bacterial infections, must first be discovered for amoebic infection.—I am, etc.,

G. B. BARTLETT,
Captain R.A.M.C.

"THE PSYCHONEUROSES OF WAR."

SIR,—In a review published under the above title in the *BRITISH MEDICAL JOURNAL* of September 15th, p. 361, the following statement occurs: "Out of his cases [Dr. Eder's cases of psychoneuroses] 70 per cent. were without any family or personal nervous instability, whereas in the remaining 30 per cent. there was such evidence; these results agree with those of Elliot Smith, but differ from those of Mott, Forsyth, Roussy, Lhermitte, and others."

I should be glad if you would permit me to point out that I have never given any figures such as your reviewer attributes to me. In a lengthy review of the little book on *Shell Shock*, written by Mr. Pear and me, Sir Robert Armstrong-Jones in *Nature* of September 7th gives somewhat similar figures as his experience—that is, he claimed to have obtained evidence of heredity as a causal factor in 33 per cent. of his cases, as Dr. Eder has done, but unlike him assumed that such a history might have been obtained in a much larger proportion of cases. But it is hardly justifiable to impute to me the opinions and the figures of a hostile critic.

What I have claimed is that any man, whatever his family history or antecedents, can fall a victim to "shell shock," if he is subjected to sufficiently intense, prolonged, and relevant anxieties and emotional disturbances. But this does not mean that I do not realize the enormous importance of a history of nervous instability before the patient's war experience, whether this was due primarily to inherited weakness or to emotional disturbances during childhood. Another point made by Mr. Pear and me was that even in those cases where a history of neurasthenia, insanity, or drunkenness on the part of the patient's parents was obtained, it was not justifiable to assume that the influence of these conditions was in all cases hereditarily transmitted to the patients whose troubles were being investigated. For the detailed examination of the life-histories of many of such cases revealed the fact that the fundamental element in the development of their condition was some definite emotional disturbance, due to the terrible circumstances to which as young children they were exposed in homes constantly disturbed by irritable or drunken parents.—I am, etc.,

G. ELLIOT SMITH.

The University of Manchester,
September 17th.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS.

SIR,—Your correspondent, Dr. Nabarro, asserts that to Castellani goes the credit (1) "of having first observed the trypanosome in the cerebro-spinal fluid of sleeping sickness patients." That is true; no one has ever denied it. (2) "Of having first connected it with the etiology of sleeping sickness." That is not true. (3) "Of having first published it." That is also true, but Sir David Bruce wrote the paper published in Castellani's name, and Lady Bruce drew the illustrations which accompanied it.

Your correspondent also appears to be anxious to claim for himself equality with Sir David Bruce in respect of important discoveries concerning the etiology of sleeping

¹ *Journal of the R.A.M.C.*, June, 1916.

² *Ibid.*, January, 1917.

sickness. Those who will take the trouble to look up the history of the subject as given in the *Times* in 1908 and 1913 will see that the claims referred to are as illusory as those put forward on behalf of Castellani, and that the matter is in fact *res judicata*. My purpose has been simply to draw your readers' attention to that fact.—I am, etc.,

London, S.W., Sept. 17th.

E. RAY LANKESTER.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—It is simply amazing that the chairman of the Insurance Acts Committee of the British Medical Association (Dr. Brackenbury) writing in the *JOURNAL* of September 15th, can make the statement that the new regulations regarding disabled service men are "entirely different" from those applying to temporary residents. It would appear that either he has not read the regulations or does not understand them.

These disabled men are to be paid for at a dividend rate, which will be the same rate as that for temporary residents of the particular area; it will vary in different areas. The only "promise" made by the Government being that if there is not sufficient money for this in the Invalided Soldiers Fund for the particular area, the deficiency shall be made up. But the essential point of this disingenuous scheme is that not a penny of new money is to be put into the general insurance pool, from which 8s. 6d. is to be taken for every disabled man previously insured.

It will be remembered that according to Memo. 229, I.C. no contribution to the central pool is made for men permanently disabled, nor for those who for the first six months of any year do no work. This, if fair (which we have never admitted) before the war, is now obviously and grossly unjust. It means that panel practitioners, although receiving payment at the rate perhaps of 2s. 1½d. a visit for attendance on disabled men, will receive proportionately less for their ordinary panel patients. It means that practitioners not at present on the panel will be paid directly out of the pockets of panel practitioners.

Can any one deny this? If not, no epithet that I can think of can sufficiently stigmatize these proceedings; nor do I know what to think of the astute financiers that negotiated this and advised us to accept it uncomplainingly.

No man ever enriched himself by taking sixpence out of one pocket and putting it in another, especially if twopence is given to a second party on the way.—I am, etc.,

Croydon, Sept. 15th.

G. GILBERT GENGÉ.

SIR,—In your issue of September 15th Dr. H. B. Brackenbury contributes what he describes as an answer to my letter of September 1st.

But may I remind Dr. Brackenbury a controversy is not much furthered by merely stating that your opponent's arguments "are based upon complete misunderstanding and seriously imperfect knowledge" of what he is talking about? I will endeavour to keep clear of any such mistaken methods of controversy, though of course it is temptingly easy to reply by merely telling your opponent he is wrong.

Dr. Brackenbury says I have completely misread the nature of the proposals with regard to the treatment of discharged disabled soldiers and sailors, and in support of his assertion he says "they are not due to the innate wickedness of the Council"—I never said they were—I attributed them quite distinctly to far other causes. He adds, however, that they are "the outcome of specific resolutions of the last conference of Panel Committees."

There I am afraid I must fall for a moment into Dr. Brackenbury's controversial methods and flatly contradict him. They are not the outcome of any resolutions passed at any conference of Panel Committees, and they were never brought before any single Panel Committee; and further, I challenge Dr. Brackenbury to quote any resolution of any conference sanctioning the proposed terms.

His next assertion is "they do not provide that these men shall be attended under the same regulations as those at present applying to temporary residents."

I again assert that they do provide—and that Dr. Brackenbury and everyone else who has read them knows that they provide—that these men shall be attended in all

particulars that affect practitioners—namely, the terms of payment and the furnishing of accounts—under the same regulations as those applying to temporary residents. Further, I do assert, in common with hundreds of others, that the keeping of these accounts has been proved to be, and will be, a hardship. The few remaining panel practitioners will all be overworked in the coming winter, and it will be found to be an almost intolerable hardship to have this heavy amount of additional book-keeping put upon them.

Next comes the touching argument to prove that my remarks are "based upon complete misunderstanding and seriously imperfect knowledge." It would appear that the unfortunate British Medical Association had the awful labour of taking *seven* diplomatic steps, instead of three, as I so cruelly asserted! The seventh of these laborious steps becomes, however, whittled down when we read that it was "the issue by the Commissioners of the regulations"! The first step, by the way, cannot be passed over without remark: "Persuading the Commissioners that there was a case for increased payment for these cases at all"! It would be interesting to know what were the subtle and cogent arguments which had to be employed to convince the innocent and guileless Commissioners that there was a difference in the insurance risk undertaken by practitioners in the case of strong, healthy working men in the prime of life, and in the case of the same men returning ill, broken, and disabled. I think that even one so singularly lacking in apprehension as I would appear to be, might find one or two arguments bearing upon that abuse point.

Dr. Brackenbury ends his letter by saying that the Association hopes to go one better than my suggestion, and ask for a capitation fee of 10s. not for disabled soldiers only, but for *all* insured persons, and he wants to know will I help. I will help—I have helped; but I doubt if I shall wait for Dr. Brackenbury and his friends to get going. Perhaps a circular issued by the Emergency Committee of the Gloucestershire Local Medical and Panel Committee about ten days ago has not met the eye of Dr. Brackenbury? I beg to add a copy of it for his information:

It has been suggested by the Emergency Committee of the Gloucestershire Local Medical and Panel Committee that a demand should be made that the capitation payment for insured persons shall be 10s., exclusive of medicines, and that in the event of this being refused that work under the Insurance Act should be declined by the panel practitioners of the United Kingdom.

That is the circular which has been sent to every Panel Committee in the country, and I would strongly commend it to the notice of Dr. Brackenbury and his friends, who may perhaps be tempted to await the Greek Kalends before they act.

The witty remark of a labour leader last week is not inapplicable; he said, "the time to act is while there are three jobs to one man, not when there are three men to one job," as it will be after the war.—I am, etc.,

Gloucester, Sept. 17th.

J. A. BELL.

SIR,—Dr. Brackenbury says, in his letter to the *JOURNAL* of September 15th, that Dr. Bell has misstated the conditions offered by the Insurance Commissioners, but does not give the correct terms; may I appeal for the publication of the official documents instead of recriminations that are of no interest whatever to the members of the profession? If you have a weak case . . . etc. The note in the *SUPPLEMENT* is quite uninformative.

Dr. Gardner in his letter speaks of ". . . some sentimental talk by Dr. Brackenbury about a continued low rate of remuneration being the contribution of the medical profession to the war." Very kind indeed of him to arrange our charities for us, but some of us may resent it. I was under the impression that the object of the Insurance Committee was other than that of almoner to the profession.

Dr. Brackenbury says the Treasury asked for data, and the inability of the Committee to produce them was against us. Did not the chairman point out that we could not give statistics of the future, but that the Insurance Commissioners had data of the work done in the past, and that if these were consulted we believed they would support fully our desire for better pay for insurance work?

I want all information published, and I want evidence

that our interests are fully looked after; otherwise it is a case of seeking protection from our friends.—I am, etc.,

Mumbles, Sept. 15th.

F. DE COVERLY VEALE.

* * * An explanatory statement on the above subject is printed under Current Notes in the SUPPLEMENT this week.

MINISTRY OF HEALTH.

SIR,—Captain H. B. Morgan's letter in the JOURNAL of September 1st expresses what I believe are the views of the majority of doctors on war service, whether members or non-members of the British Medical Association. The decision of the Representative Meeting cannot voice the calm and deliberate judgement of the medical profession, because one-third are on war service. Those who are not have not been able, owing to excessive claims in doing extra work, to study all the vital matters involved. Why rush matters? Let us wait and have the judgement of those whose futures are most concerned in this matter.—I am, etc.,

Blackpool, Sept. 5th.

JNO. BROWN, M.D.

QUO VADIS?

SIR,—Disputants in the columns of the JOURNAL naturally expect the observance of the accepted conventions of debate. It may, therefore, be hoped that Dr. Rawdon Wood does not mean what is implied in his letter in the JOURNAL of September 15th. In a previous letter he had called on the officials "forthwith" to publish the evidence in their possession as to the truth or falsity of the statement that the Government had ready a whole-time service scheme and were prepared to work it." I have not yet seen any such evidence, which, according to Dr. Wood, "has finally exploded the myth of Mr. Lloyd George's whole-time service scheme." If any such evidence exists, let it be produced forthwith by all means. Until it is produced those of us who have not seen the evidence are led by Dr. Wood to assume that information of the utmost value to members of the Association was withheld by the "officials," and that many of the present panel doctors were lured to a wrong decision in ignorance of the truth. This is hardly fair to the "responsible officials" on whom Dr. Wood relies for the support of his case.

The negotiations between the Government and the Association in 1912 were necessarily of so confidential a character as to require either complete secrecy or such partial divulgence as the circumstances allowed. Each was fencing with the other—the Government to secure the success of its measure, the Association to secure the status of the profession. Of necessity the contest was unequal. Any Government having the support of a large, solid majority in the Commons is, in a matter of this sectional character, omnipotent. This may not be a palatable truth, but it is a commonplace in politics. On the other hand, the medical profession is a composite body without the elements of cohesion even in so vital a matter as the observance of a standard of honour in the everyday relations between its members. This may also be an unpalatable truth, but it is a commonplace in practice. When, therefore, the Council of the Association undertook the task of mobilizing the profession in its own defence, success depended on inspiring universal confidence, on composing divergent interests, and on imposing rigid compliance with its proclamations. Every meeting of the Representative Body showed that none of these conditions had been secured, and divided counsels led through subterfuge to disintegration. This was the Government's opportunity, and Mr. Lloyd George was not the man to lose it. What followed actually occurred in the manner stated in my last letter, but my information having been obtained in confidence nobody shall ever know its source.

There seems to be no sign that the profession as a whole has taken to heart the lessons of past failure. The groupings which resulted from disorder are already causing dissipation of energy. In view of imminent State developments all the members of the profession, whether attached to auxiliary agencies or not, ought to unite in loyal and consistent support of the Council of the Association. That is the only body recognized by Government as in any real sense representative of the profession, and from that body the profession will in future expect no uncertain answer to its question—"Quo vadis?"—I am, etc.,

Cambridge, Sept. 17th.

B. E. FORDYCE.

SIR,—I trust the buttons are still on the foils if I remark that the fact of Dr. Wood's retirement is more commendable than its manner. He must be aware that I have not refused to accept any evidence, for none has been produced. In company with Dr. Fordyce, I should welcome such production.

On the other hand, as Dr. Wood has entered into private correspondence with me on the subject, he knows that the evidence which I did refer to and accept is at least worthy of consideration, and the witness concerned is of high authority.

As I have before said, readers interested must form their own judgement on our letters, and I am quite content to abide by that judgement. In the years of detachment which lie before him, Dr. Wood will do well to bring his mind under the "disciplinary control" of the generally accepted standards of debate.—I am, etc.,

Cambridge, Sept. 18th.

L. GWILLIM DAVIES.

TREATMENT OF VINCENT'S ANGINA.

SIR,—It is no doubt owing to the exigencies of space that, in his short note on the treatment of Vincent's angina (BRITISH MEDICAL JOURNAL, September 15th, p. 360), Captain Emrys-Roberts omits all mention of our work on the incidence of the affection of the throat and gums due to the fusiform bacillus and spirochaete of Vincent, already published in the *Proceedings of the Royal Society of Medicine* and BRITISH MEDICAL JOURNAL for January and March, 1917, respectively.

He writes of the condition as being widespread amongst our troops and as being familiar, and claims great success in the treatment of these conditions by the use of a mixture of hydrogen peroxide, vinum ipecac., and glycerin.

These substances have long ago been extensively tried by us and have been abandoned for the topical application of salvarsan, and we believe if Captain Emrys-Roberts will follow our directions in using this medicament he will obtain even better results than those obtained by the mixture he so warmly commends.—We are, etc.,

FRANK E. TAYLOR, M.D., F.R.C.S.

W. H. MCKINSTRY, Capt. R.A.M.C.

London, W.C., Sept. 19th.

RUPTURE OF UTERUS.

SIR,—Dr. George F. Riden is to be congratulated on the recovery of his patient reported in the JOURNAL of September 1st (p. 289). As a practitioner of many years' standing, I should like to suggest the following line of procedure in such a case as that described. After rupturing the membranes, wait a while; if the uterus does not contract (provided deformity is slight), give pituitrin or ergot. If progress is not made, apply long forceps. Probably the difficulty was due to irregular contraction setting in, the lower segment of the uterus contracting excessively and collaring the neck, which no amount of traction would overcome without endangering a rupture.

At this stage I would chloroform deeply, then proceed with Smellie-Veit method; that failing, apply forceps to after-coming head. Generally speaking, I find this easy. It would be interesting to have a comment on this case by a higher authority than my humble self.—I am, etc.,

H. DAVIES-JONES, L.R.C.P. and S.Ed.

Mountain Ash, Sept. 3rd.

PAY OF SPECIAL RESERVE AND TERRITORIAL OFFICERS.

SIR,—May I briefly summarize the chief causes of complaint of the R.A.M.C. Special Reserve and Territorial medical officers?

1. The difference between the pay of the temporary medical officer and the pay *plus* all possible allowances of the special reserve medical officer.
2. The great difficulty in obtaining prompt payment of these allowances. This refers to home service; during two years in France I had no difficulty.
3. The loss of all allowances when in hospital, and of some allowances when on leave.
4. The deferred bonus. The temporary medical officer receives £60 at the end of each year, while we receive nothing until the end of our mobilized service.—I am, etc.,

CAPTAIN R.A.M.C.(S.R.).

(Three years' service.)

September 1st.

Obituary.

JOHN ROBERTS THOMSON, M.D., F.R.C.P.,

FORMERLY PRESIDENT, AND AFTERWARDS CHAIRMAN OF COUNCIL,
BRITISH MEDICAL ASSOCIATION; CONSULTING PHYSICIAN,
ROYAL VICTORIA HOSPITAL, BOURNEMOUTH.

We announced last week with deep regret, which will be shared by all who knew him, the death at the age of 73 of Dr. Roberts Thomson, of Bournemouth. He was President of the British Medical Association when it met at Bournemouth in 1891, and was Chairman of the Council of the Association from 1899 to 1901, years during which the reconstruction of the Association was the subject of keen discussion. After the termination of his period of office as Chairman of the Council Dr. Roberts Thomson took no active part in the work of the Association, partly owing to failing health; but he remained a loyal member and watched its development with keen, if sometimes critical, interest.

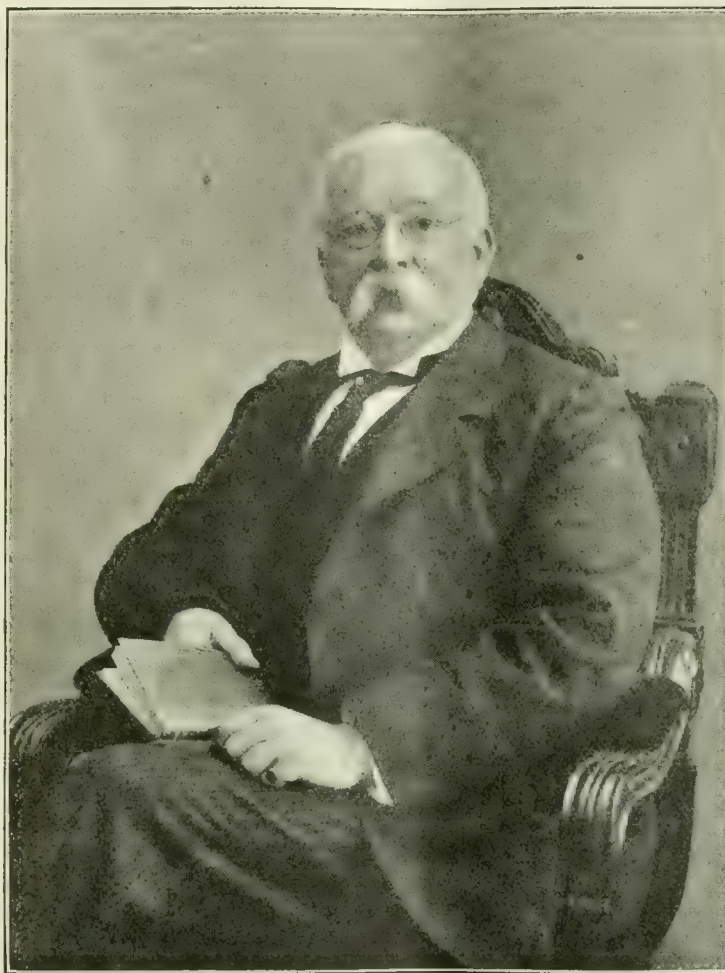
John Roberts Thomson was born at Slateford, a village a few miles from Edinburgh, on August 24th, 1844. He was educated in Edinburgh, took the diploma of L.R.C.S. Edin. in 1865, in 1866 graduated M.D. of the University of Edinburgh, of which his father before him had been a distinguished member, and afterwards held the appointment of house-physician to the Royal Infirmary, Edinburgh. His connexion with Bournemouth began in 1866, when he applied for a post on the staff of the Royal National Sanatorium. Dr. Snow was a candidate at the same time, and as a result of a tie in the voting both were appointed. He retained his connexion with the institution throughout the remainder of his life and was consulting physician at the time of his death.

At the time when Dr. Roberts Thomson went to Bournemouth it was a small place, although it had already attained considerable reputation as a climatic resort. The nearest station was six or seven miles away, and the place was little more than a village. He saw it develop into a large town, which has been for a good many years a county borough. From an early stage he took an active part in the life of the district, and was a member of both the county and the borough bench and an original member of the Hants County Council. The growth of the town called for the establishment of a hospital, and Dr. Thomson himself related the story when, in 1913, the freedom of the borough was presented to him. In 1866 there was a small dispensary in Bournemouth, but no hospital nearer than Southampton or Salisbury. The first step was to establish a cottage hospital, afterwards merged into the Royal Victoria Hospital, built as the town's memorial to the first jubilee of Queen Victoria. Dr. Thomson's interest in the public life of Bournemouth

extended, however, very far beyond hospital questions. He took a deep interest in education, was one of the founders of elementary schools, and for many years president of the School of Science Arts and Technology, now merged in the Municipal College. He was one of the first members of the Hampshire Technical Instruction Committee, and was chairman of the Bournemouth Committee. During his tenure of that office Bournemouth School was established, and he was appointed chairman of the board of governors, and afterwards he established the Thomson scholarships. So lately as last June he presided at the annual speech day. As a young man in Bournemouth he took a great interest in the volunteer movement, joining the force as captain in 1883. On the formation of the 4th Battalion of the Hampshire Regiment he became major, and was in command of the battalion when it was reviewed by Queen Victoria at

Osborne in 1899. He also attended the review at Aldershot in 1897 on the occasion of the jubilee. During the Boer war he formed three active service sections from the battalion, one of which went out in command of his son. He received the Volunteer Decoration, which was a just recognition of his share in the growth of the regiment and the fine spirit with which it is imbued. Dr. Roberts Thomson was a Liberal in politics down to the time of the introduction of the Home Rule Bill, when he became a Liberal Unionist, and might, we believe, easily have obtained the nomination of the Unionist party for election to the House of Commons had he so desired. He was a staunch Churchman, and president of the Young Men's Christian Association in Bournemouth.

Dr. Roberts Thomson would have been unable to attain the position he reached had he not been a sound practical physician who kept himself well informed in all advances of



DR. JOHN ROBERTS THOMSON.
(Photograph by E. Day and Son, Bournemouth.)

medicine. He did not write much, but he was universally looked up to by the profession in Bournemouth and south Hampshire as a physician and as a man. It was natural, therefore, that when, at the suggestion of Dr. Davison of Bournemouth, who pays a tribute to his friend below, and Mr. Watts Parkinson of Wimborne, it was resolved to invite the British Medical Association to hold its annual meeting in Bournemouth, the local profession should turn to him and invite him to occupy the position of president. The meeting took place in 1891, and as those who attended it will remember, it was extremely successful; the arrangements were complete in every detail, the scientific work was of a very high standard, and there was an energy and go about the meeting which was largely due to Roberts Thomson's own influence. Dr. Thomson devoted part of his address to the consideration of the then position of medical officers of health, and urged that the appointment of medical officers by county councils should be obligatory, a reform

adopted after some years; we still await the realization of another aspiration he then expressed, which was that every part of the kingdom should be "brought into sympathetic communication with the Central Board upon which the medical element shall have real and substantial power."

Dr. Thomson's favourite recreation was mountaineering, a sport in which Mrs. Thomson also excelled, but a few years after the meeting in Bournemouth he met with a very serious bicycle accident which laid him up for many months, and left him with a permanent lameness. This did not, however, induce him to give up his public activities, and in 1899 he accepted election to be Chairman of the Council of the British Medical Association. He held this office during anxious times; many members of the Association had become dissatisfied with its machinery for dealing with political questions, and a Constitution Committee was appointed at the Ipswich meeting in August, 1900. Of his work on that Committee a colleague, Dr. J. C. McVail, has at our request written the following note:

"Dr. Roberts Thomson played a very useful and important part in the deliberations of the Constitution Committee, the labours of which resulted in the end in radical change of the Association's organization. Dr. Thomson was not an advocate of sweeping alterations, but rather the opposite. He was Chairman of Council, and I presume had a natural feeling of loyalty to the system of government then represented by the Council. He was therefore rather by way of defending the best features of the old system, and even though his views were not in the main given effect to, he was of great value throughout the discussions, as it was important that all sides of the question should be considered in arriving at conclusions. In all the work of the Committee, whether or not he was getting his own way, Dr. Thomson was a model of courtesy and urbanity. The same fine qualities characterized him as Chairman of Council, and under his kindly rule it was a real satisfaction to take part in the proceedings. I have the pleasantest recollections of our intercourse both in the Council and in the Constitution Committee, and his death must be a cause of much regret to all who knew him even though some of us may not have met him for many years. Of those who carried on the affairs of the Association at that time very many have departed, and Dr. Thomson was among the most prominent of those who had remained with us until now."

Dr. Roberts Thomson was twice married and leaves a widow, three sons, and a daughter to mourn their loss. The eldest son, Major A. F. Roberts Thomson, is in command of a battalion of the Australian Field Artillery now serving in France; the second son, Lieut.-Colonel William

Roberts Thomson, has been in command of a battalion of the Hampshire Regiment in India since an early stage of the war; the youngest son is engaged in Church Army work in Scotland; and Miss Roberts Thomson is the matron of the Westmorland County Hospital at Kendal.

The funeral, which took place at Bournemouth on Saturday, September 15th, was very largely attended by members of the medical profession and by representatives of the numerous organizations with which Dr. Thomson was connected. The coffin, covered with the Union Jack, was borne to the church on a gun carriage supplied by the Royal Engineers. Among others present were Lord Montagu of Beaulieu, and officers and men of the 7th Hants Regiment, and Colonel Perkins, representing the County of Southampton Territorial Force Association. The British Medical Association was represented by Dr. W. Johnson Smyth, a member of the Council of the

Association, and the Dorset and West Hants Branch by Dr. Frank Fowler and Dr. Charles D. Muspratt, lately its president. The Bournemouth Medical Society was represented by Dr. A. McCall. But formal representation was hardly necessary, as most of the members of the medical profession in Bournemouth and the neighbourhood were present to pay their last respect to an acknowledged leader.

We are indebted to Dr. James Davison, of Bournemouth, who was a friend of Dr. Thomson for so many years in Bournemouth, for the following sympathetic tribute to his memory:

"Suffering at the moment from the shock of the great and irreparable loss I have sustained by the death of my old friend Dr. Roberts Thomson, I feel unequal adequately to do justice to his memory.

"On settling in Bournemouth early in 1883 I became acquainted with Dr. Roberts Thomson.

The acquaintance rapidly developed into friendship, and ever since we have worked together in perfect harmony and closest professional relationship. No semblance even of a cloud ever crossed our path or ruffled our intercourse. He was my senior by some two years. No one could have had a nicer leader, a truer friend, and a more faithful colleague than he was. His accomplishments and activities were very numerous, but he was never happier than when conceiving and maturing schemes designed for the betterment of his fellow men, and the improvement of the town of his adoption, which he loved so well. The welfare of his professional brethren was a matter always near his heart. On questions of ethics, which not infrequently arise, he was ever ready to act as mediator. By kind advice, clear reasoning, sound judgement, and just diplomacy, he was able to adjust thorny controversies to the satisfaction of all concerned.

"Professionally he was a man of varied and extensive

education, high attainments, and profound accomplishments. Had his lot as a physician been cast in a more extensive field than a fashionable seaside resort can offer his fame would have shone with bright effulgence. While his health lasted he was extensively sought after as a consultant in this district and for many miles around. By the public generally he was beloved for his kind and cheery disposition, his goodness of heart, and his deep sympathy with suffering. His charity was abounding yet circumspect and discriminating. Few, if any, deserving people ever appealed to him in vain. His memory will live long in the hearts of all who knew him. His death was as calm and peaceful as his life had been serene and beautiful. Let the earth lie lightly on the mortal remains of John Roberts Thomson, for he was a man of noble parts, an eminent physician, a charming colleague, a friend of mankind, and a gentleman."

SURGEON-GENERAL WILLIAM SIMSON PRATT, C.B., R.A.M.C.(retired), died at Bideford, North Devon, on September 8th, aged 68. He was born on January 21st, 1849, educated at Edinburgh University, where he graduated M.B. and C.M. in 1872, and entered the army as surgeon on April 1st, 1874. He was promoted to surgeon-major in 1885, to surgeon-lieut.-colonel in 1893, full colonel in 1902, and surgeon-general on December 29th, 1905, retiring on January 21st, 1909. He served in the Sudan campaign of 1884-85, when he was mentioned in dispatches, received the medal with a clasp and the Khedive's bronze star, and was specially promoted to surgeon-major. He was made C.B. in 1906. He was principal medical officer at Gibraltar in 1900-02, and subsequently held the same post in the Southern Command.

PROFESSOR JULES COURMONT of Lyons died of cerebral hæmorrhage while making his visit at the Hôtel-Dieu the day after returning from a military mission to the British front. He was born at Lyons on January 26th, 1865, began the study of medicine in 1882, and graduated at the university of his native city in 1891. In 1892 he became *agrégé* and in 1896 physician to the hospitals. He worked for many years at microbiology and general pathology as chief assistant in Arloing's laboratory. In 1900 he was appointed to the chair of hygiene in the University of Lyons, and from that time gave his attention more and more to social questions. He did valuable service to sanitary reform in Lyons and the whole department of the Rhône. He founded a Pasteur institute and an antituberculosis dispensary at Lyons. In 1912, in conjunction with M. Herriot, mayor of the city, now Minister of State, he began to organize an international exposition at Lyons where everything relating to the welfare of the city was to be represented, but the outbreak of war interfered with the fulfilment of the project. Courmont was mobilized and did important work, especially in organizing the hospitals for contagious diseases in the 14th military district. He was a corresponding member of the *Académie de Médecine*, a member of the *Comité Consultatif d'Hygiène de France*, and vice-president of the Superior Council of Hygiene. He was an officer of the Legion of Honour.

PROFESSOR RAOUL LEFOUR of Bordeaux, who died in November, 1916, was born at Chenerrailles in the Creuse. He studied medicine at Bordeaux and afterwards at Montpellier, where he took his doctor's degree in 1875. In 1880 he won the appointment of *agrégé* in the Bordeaux faculty with a thesis on the relations of uterine fibromata to pregnancy and parturition. He quickly made his mark as a teacher and at the same time gained a place amongst the foremost obstetricians of Bordeaux. He was appointed surgeon-accoucheur to the hospitals, and in 1895 succeeded Lugeol as surgeon-in-chief to the Pellegrin Maternity. On the retirement of Moussous in 1898, Lefour succeeded to the chair of clinical obstetrics, which he held for eighteen years. Although his health had been failing for some years, when the outbreak of war called most of his colleagues to active service he insisted on resuming his hospital work. Lefour was the author of several contributions to the literature of his speciality, including a clinical and experimental study of the influence of knots of the cord on the fetal circulation and chemico-biological researches on the blood of the fetus.

PROFESSOR ANNIBALE SALOMONI, of the University of Messina, who died on April 18th, was born at Cremona in 1854. He studied medicine at Pavia and after graduation worked for some time under Billroth in Vienna, and in various other universities. He was appointed professor of surgical pathology at Messina in 1894 and continued to occupy the chair till his death. He was very popular with his professional brethren and with the people of Messina; after the great earthquake he worked day and night among the sufferers, many hundreds of whom he saved from death. On the entry of Italy into the war Salomoni offered himself for military service, and was director of a hospital at Piacenza, where he worked till disabled by illness. He was the author of many publications on descriptive and topographic anatomy, operative surgery and surgical pathology, and of a valuable report on ankylostomiasis in the Cremona district.

DR. CHARLES LIVON, director of the Medical School of Marseilles, died recently at the age of 67. In 1893 he founded the antirabic institute of Marseilles, and since the beginning of the war he has been head of the auxiliary military hospital of that city. He was the author of a manual of vivisections, and of a large work on experimental physiology in three volumes, published from 1892 to 1910.

PROFESSOR PAUL DUPUY of Bordeaux, who lately died at the age of 90, was born in 1827, took his doctor's degree at Paris in 1857, and was appointed professor in the Bordeaux Preparatory School of Medicine in 1864. In 1878, when the school was transformed into a Faculty, he was appointed professor of medical pathology. He wrote on many subjects—medical, political, social, financial, and philosophical. His last book, published in 1911, dealt with Auguste Comte, the prophet of positivism.

The Services.

TERRITORIAL DECORATION.

THE Territorial Decoration has been conferred upon the following medical officers of the East Anglian Field Ambulance: Lieut.-Colonel J. Howard-Jones, M.D., D.Sc.; Major Henry Waite (attached R.E. Signal Service) and Major D. G. Newton, M.B., F.R.C.S. (attached Yorkshire and Lancashire Regiment).

Medical News.

THE Right Honourable Christopher Addison, M.D., M.P., Minister of Reconstruction, will distribute the prizes to successful students of Charing Cross Hospital on Monday, October 1st, at 3.30 p.m.

IN consequence of its declaration of war against Germany the Republic of Cuba has increased its army to 17,000 men. The medical service is being reorganized, and one colonel and twenty other officers of lower rank are to be commissioned.

THE inaugural address at the London (Royal Free Hospital) School of Medicine for Women for the session 1917-18 will be delivered by Dr. Louisa Garrett Anderson, C.B.E., on Monday, October 1st, at 3.30 p.m., at 8, Hunter Street, Brunswick Square. The subject of the address will be Ambition. Academic dress will be worn.

THE opening ceremony of the seventy-sixth session of the School of Pharmacy of the Pharmaceutical Society of Great Britain will be held on Wednesday, October 3rd, at 3 o'clock, at 17, Bloomsbury Square, London, W.C.1, when the Hanbury gold medal will be presented, and Lieut.-Colonel E. F. Harrison, C.M.G., will deliver the inaugural sessional address.

AN announcement by the Ministry of Pensions appears in our advertising columns this week, inviting applications from medical practitioners from Westmorland, Lancashire, and Cheshire, to serve on medical boards for the examination of, and the assessment of pensions for, men discharged from the army for neurasthenia and functional nervous disorders.

SIR FRANCIS LOWE, M.P., and Mr. William Forrest Bowen, President of the Incorporated Dental Society, have been nominated by the Lord President of the Council as additional members of the Departmental Committee appointed

to investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act.

THE New York Board of Health states that the city is apparently free from poliomyelitis. Only 77 cases have been reported this year.

THE *Morning Post* printed on September 19th a translation from an article in the official organ of the Serbian general head quarters, eulogizing the work of the British hospitals on the Serbian front, and expressing gratitude to the British people, who have placed at the disposal of the Serbian army on the Salonica front field hospitals of the most modern equipment with a total of 10,000 beds.

DR. JOHN HENRY BARTLET, senior surgeon and honorary consulting physician to the East Suffolk and Ipswich Hospital, who died on May 27th, aged 87, left estate of the gross value of £272,430, of which £249,709 is net personality. After making provision for a number of legacies he left the residue of his property, exceeding £200,000, to the East Suffolk and Ipswich Hospital for a home of rest for patients recovering from illness.

ACCORDING to the *Medicina Practica* of August 31st, in an air raid over the Romagna the Austrians threw sweet meats, which Dr. Pizzo Zanotti, director of the laboratory attached to the municipal bureau of hygiene at Ravenna, found to contain cultures of pathogenic germs. Most of these were dead, probably owing to desiccation, but in the fresh state they were capable of causing most serious infections.

A FRENCH Society of Urology has been formed under the patronage of Professor Guyon. Its true begetter is Professor Leguen, whose object, as set forth by himself, was to gather together the scattered forces of urology in France into a compact unit which is to fight scientifically, honourably, but energetically against the pretensions of German workers. The society, membership of which is to be exclusively French, will meet once a month in the buildings of the Faculty or at the Necker Hospital.

As the result of a preliminary consideration of the reports on the physical welfare of mothers and children recently presented to them by the special inquirers they had appointed, the Carnegie United Kingdom Trustees contemplate the acquirement or erection of a suitable building in London for the housing of a central institute to serve as a co-ordinating agency for the various organizations connected with infant and maternal welfare in England and Wales, and of a similar central institution in Scotland. As an experiment and to stimulate local effort, the Trustees will select certain urban areas in which they will be prepared to meet the cost of the erection and equipment of model welfare centres to be controlled and maintained by the local authority with the aid of imperial grants. The Trustees will also consider favourably in a few instances applications from local authorities for help toward the initial capital outlay on open spaces for children's playgrounds which the authorities may have acquired and are prepared to maintain. The Trustees hope in these ways, during the next three or four years, to employ the limited fund at their disposal in promoting a few well-devised experiments in organized effort towards the solution of a grave national problem.

KÜSLER AND GÜNZLER (*Centralbl. f. Bakt.*, I Orig., Bd. 78, p. 442) report the results of the employment of the proprietary antiseptic "sano" by inhalation for the treatment of carriers of the meningococcus and the diphtheria bacillus. Its chief active constituent appears to be sodium hypochlorite but it contains borax also. This constitution may be compared with that of Dakin's solution, which contains chlorinated lime, sodium carbonate, and boric acid. The solution was converted into spray by means of an apparatus, superheated steam being employed as the nebulizing agent. From the description and the figure in the text the apparatus would appear to be that of Wassmuth, which Gordon and Flack found to be inferior to their own instrument (*BRITISH MEDICAL JOURNAL*, 1916, vol. ii, p. 673). Küsler and Günzler state that with the apparatus they used a very fine state of division is produced and that the working was economical. Spray derived from a solution containing 2.3 parts of chlorine per 1,000 could be inhaled for several hours without causing irritation; on the other hand, the inhalation of spray of an ordinary sodium hypochlorite solution containing 2.39 parts of chlorine was found to be irritating to the respiratory tract. It was found that in the case of meningococcus carriers, the inhalation of a spray of the solution containing 2 parts of chlorine per 1,000 for one hour on each of three successive days led, in most cases apparently, to a permanent disappearance of meningococci from the nasopharynx. The observations on diphtheria carriers were too limited to be of much value.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Offices, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are: (1) EDITOR of the *BRITISH MEDICAL JOURNAL*, Aitiology, Westrand London; telephone, 2531, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand London; telephone, 2530, Gerrard. (3) MEDICAL SECRETARY, Matiseira, Westrand, London; telephone, 2534, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the *BRITISH MEDICAL JOURNAL* are devoted will be found under their respective headings.

LETTERS, NOTES, ETC.

DERMATITIS FROM UNCLEAN TOOTH-PLATES.

DERMATOLOGIST writes: Skin eruptions are sometimes caused through tooth-plates not being properly cleansed with soap and a suitable brush. Mr. J. G. Turner, in writing on dental sepsis in the *JOURNAL* of June 13th, 1914, said the best brush made, though big and ugly, is well chosen. This brush can be obtained from Messrs. Ferris and Co., Union Street, Bristol.

INFANTILE DIARRHOEA.

A CORRESPONDENT who has had a good many years' experience of general practice desires to impress on all young medical practitioners that in dealing with the worst forms of acute febrile diarrhoea in infants "the cardinal fact is that the poison is usually in the milk given, which in the warm summer months has been bacteriologically contaminated." The cure, he says, consists in cutting off the supply of all forms of milk food for a few days and feeding the infant on bland fluids freed from milk. This is sound teaching. The common belief that an infant will collapse if deprived of nutriment for a few days, though very natural, is erroneous. During the acute stage the digestive processes are wholly, or almost wholly, suspended, and the stomach and intestines need rest. Our correspondent advises resort to mutton tea, made in the same way as beef tea, or white of egg water or barley water, in suitable cases, but pure water will often serve the purpose quite as well. The great point, as our correspondent says, is to avoid milk and all milk preparations. He adds that if a wet nurse can be obtained the infant may usually safely have the breast milk.

BRITISH HEALTH RESORTS.

DR. T. D. LUKE (St. Romans, Venlaw Brae, Peebles) writes: I was asked some time ago to prepare for Messrs. A. and C. Black a guide to British health resorts, endeavouring as far as possible to bring into prominence the many attractions which our own country offers in the way of first class spas and seaside resorts. Apart from the well-known spas, however, there are many wells and springs scattered through the country which have at least a local repute and are of some historic interest. I shall be very grateful to any members of the profession who will send me details of any such wells, etc., in their district so that the chapter on this subject may be as complete and informative as possible. All our big spas had small beginnings, and who knows, some of these at present neglected sources of mineralized water may be of value, and blossom out into health resorts. It is at any rate believed and hoped that once the great war is over most people will think twice before taking a far journey to Germany and leaving money there which could with equal benefit and greater propriety be spent at home. No one who was "caught napping" at Nauberg, Homburg, Kissingen, or Wiesbaden at the end of July, 1914, will willingly enter Germany again in search of health. That is pretty certain.

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NOTE.—It is against the rules of the Post Office to receive *postea* letters addressed either in initials or numbers.

Observations

ON

THE ETIOLOGY AND TREATMENT OF
WAR NEUROSES.

BY

ARTHUR F. HURST, M.D., F.R.C.P.,

TEMPORARY MAJOR R.A.M.C.,

PHYSICIAN AND NEUROLOGIST TO GUY'S HOSPITAL; NEUROLOGIST
TO THE ROYAL VICTORIA HOSPITAL, NETLEY.I.—EXHAUSTION RESULTING IN NEURASTHENIA
AND SOLDIER'S HEART.

ETIOLOGY.

ALTHOUGH it would require a very exceptional nervous system to pass unscathed through twelve months or more of war under modern conditions, uncomplicated neurasthenia due to prolonged physical strain, the utter nervous exhaustion caused by pure physical fatigue, has been comparatively rare since the battle of the Marne. But there were many cases after the retreat from Mons, and it says much for the spirit and discipline of the original Expeditionary Force that there were no more.

Life in the trenches is always accompanied by a state of nervous tension. Danger is ever present, and during periods of activity the night may only bring increased responsibility and anxiety instead of rest. Although most men become gradually accustomed to the sights and sounds, which at first frighten all but the few who do not know what fear is, the nervous system does not wear well, and unless regular periods of rest from the mental strain are given, the majority of men gradually become irritable, restless, and unable to perform their duties satisfactorily.

The sanitation of the army in France has been so efficient that the second great cause of neurasthenia—acute and chronic infections—has been less prominent than in any previous campaign. But comparatively slight toxæmia, such as that due to diarrhoea, trench fever, or influenza, which is not sufficiently severe to make a man go sick, may cause nervous exhaustion, which would have been prevented if sufficient rest had been taken.

The armies in other parts of the world have, unfortunately, not shared the immunity from serious epidemics with the army in France. Few men remained at Gallipoli for more than a month without suffering from chronic diarrhoea or falling victims to dysentery, paratyphoid fever, or epidemic jaundice, and often to more than one of these infections at the same time; added to this was the impossibility of withdrawing the troops from the shell-swept area, for every corner on the peninsula was exposed to hostile fire. In Salonica conditions were more favourable, except during the summer of 1916, when the hot weather and the virulent form of malaria for which the Struma Valley has always borne an unenviable reputation were the chief causes of many cases of neurasthenia. The effect of the numerous infections rife in Mesopotamia and East Africa has been aggravated by the great heat, and at times by the insufficient supply of food. During the autumn of 1916 the majority of uncomplicated cases of neurasthenia reaching England came from Mesopotamia; in several cases there was a history of actual heat-stroke.

The pain, toxæmia, and loss of blood which may result from severe septic wounds often cause neurasthenia, especially if the soldier is already over-fatigued from mental and physical strain.

Mental and physical strain, severe pain, and acute and chronic infections lead to exhaustion by their direct action upon the nervous system, and indirectly by their action upon the suprarenal glands, together with the liver and probably the thyroid. Prolonged muscular exertion and great emotions, especially fear and anger, have been shown to produce chromatolysis of the brain cells, together with definite changes in the suprarenal glands and liver.

SYMPTOMS.

The symptoms of neurasthenia in soldiers do not differ from those of the neurasthenia of civil life. Headache, rapid fatigue on mental and physical effort, and difficulty in concentration are always present. The appetite often remains excellent and the digestion good, but constipation is common. The symptoms described under the name of

"soldier's heart" may be prominent. In most cases the blood pressure is low, corresponding with the fact that the blood pressure of the average tired soldier in front line trenches is slightly subnormal.

TREATMENT.

Complete physical and mental rest are at first essential. The patient must be kept in bed until he no longer feels tired. In slight cases a week or fortnight may be enough, and it is rarely necessary to continue the complete rest for more than three weeks, though in severe cases two or three months may be required, especially after severe infections. In most cases a small dose of bromide, such as gr. v, is given two or three times a day. Opium must be avoided, as it often aggravates the symptoms and increases the excitability and restlessness of the patient. No alcohol should be allowed; it is very badly tolerated by almost all patients suffering from war neuroses, and especially from true shell shock. A quantity which formerly produced no ill effect is often sufficient to intoxicate. Recovery is greatly accelerated by combating insomnia, as the exhaustion cannot disappear so long as the patient sleeps no more than three or four out of the twenty-four hours. I have found sodium diethyl-barbiturate (medinal) with acetyl salicylic acid (aspirin) gr. xv the best combination. The dose of the former should be between 10 and 15 grains the first two nights, after which it should be reduced by 1 grain every other night until only the latter is given, and the dose of this can then be gradually reduced. In intractable cases, especially if nightmares are present, suggestion under hypnosis is very effective.

As soon as the patient is well enough to get up he should begin to help in the ward, and a few days later he should be given light employment out of doors, for

The cure for this ill is not to sit still
And frown with a book by the fire;
But to take a large hoe, and a shovel also,
And dig till you gently perspire.

The amount of exercise should be gradually increased, and the patient should not be discharged from hospital until he can do moderately heavy work, such as digging, without undue fatigue.

II.—EMOTIONS RESULTING IN STUPOR AND AMNESIA,
PSYCHASTHENIA, HYSTERIA, HYPERADRENALISM
AND HYPERTHYROIDISM, AND EXAGGERATED
DEFENSIVE REFLEXES.

The emotion produced by a very horrible incident, such as seeing a friend killed whilst talking with him, is sometimes sufficient to give rise to nervous symptoms. More commonly, however, such an event is only the culmination of a long series of emotional storms. In most cases, indeed, the final breakdown is not due to a definite incident, but is the result of the cumulative effect of fear, which gives rise to symptoms sooner or later or not at all, according to the temperament and the physical condition of the individual. It is often impossible to obtain an accurate history of the onset until the patient is convalescent, as in the early stages of his illness he is generally unwilling to talk about his experiences. Even after complete recovery, a horrible incident which was the exciting cause may remain obliterated from the memory, although it may have returned in dreams, or its nature may have been elicited from the patient during hypnosis.

(a) STUPOR AND AMNESIA.

The stress and strain of active service not infrequently result in a condition of mild confusion, which may merge into deep stupor. The onset is often gradual. A man who has hitherto been alert and efficient becomes more and more dull, slow, and silent, until finally—often after an incident which has caused unusually great terror or horror—he becomes too confused to carry on, and he may wander away from his unit in a condition of stupor with more or less complete amnesia. Exactly the same condition may follow actual shell shock, but many cases which on reaching hospital without any history are at first diagnosed as shell shock later prove to be simply the result of emotion. It may also follow simple exhaustion, or it may represent an epileptic attack. In severe cases the man remains for a time entirely unconscious of his surroundings. He appears not to see or hear, he cannot be induced to speak, and pinching his skin produces no response. The reaction of the pupils to light is impaired or lost. He does

not ask for food, but chews and swallows whatever is given him. He lies inert, and involuntary micturition and defaecation are frequently present during the first few hours. Complete insensibility is often followed by a dazed condition, in which automatic complex acts may be performed. A man may be found several miles away from his unit, but he will never recall how he covered the distance.

The duration of stupor varies from a few minutes to several days, but it rarely lasts more than a week. It may suddenly pass away, the patient having no recollection of what occurred between the onset and the moment of recovery. More frequently improvement is gradual.

(b) PSYCHASTHENIA.

Prolonged mental strain may give rise to the purely mental symptoms, which can be most conveniently grouped together under the name of psychasthenia. The most important and common of these are nightmares and day-dreams; obsessions and phobias are less common; ties are curiously rare. Nightmares are very common, and many men live through their most terrifying experiences night after night in their dreams. In some cases the dream is forgotten, the patient only recollecting that he woke with a start and found himself in a cold sweat. The disturbed nights caused by war-dreams almost invariably result in headache, which is worse in the morning and only disappears towards evening. Many patients resist the desire to sleep during the day, as they fear a recurrence of their dreams, or they think that sleeping in the daytime will make their nights still less restful. A condition of profound exhaustion may ensue, and the patient loses his appetite and feels intensely depressed. In severe cases the dreams may recur during the day whilst the patient is apparently awake.

Unaccustomed responsibility may give rise to obsessions or phobias in men whose resistance has been lowered by the strain of prolonged service at the front, or who are predisposed by having had a mental breakdown, or by having a family history of mental disorder.

I have seen a few cases in which ties have developed during active service; in most instances they have been associated with hysterical symptoms, and the patients have often previously suffered from ties. One man developed a side-to-side movement of his head, the original object of which had been to relieve the pain caused by concussion of his cervical spine. He could only control it for two or three seconds, and it persisted during light hypnosis, but not during sleep.

Treatment.

The general treatment of a man suffering from psychasthenia is identical with the treatment for neurasthenia. In slight cases nothing more is required, but special treatment is generally necessary for the more prominent psychasthenic symptoms.

In some cases a nightly dose of acetyl salicylic acid with medinal, the dose of which is gradually reduced, as described in the treatment of neurasthenia, will lead to the cessation of nightmares. But when a dream has persisted for any length of time, nothing but hypnosis will remove it. This should, if possible, be practised at night, so that the patient can pass from the hypnotic state into natural sleep, the suggestion being repeatedly made that he will not dream. A single treatment is often sufficient, and it is rarely necessary to repeat it more than five or six times.

Phobias and obsessions sometimes disappear after rest and "therapeutic conversations," in which the cause of the symptoms is explained to the patient, and he is encouraged to hope that they will quickly disappear as his general condition improves. It is of the utmost importance that his confidence should be gained, and that he should feel that he can discuss his troubles with perfect freedom and without any fear of being misunderstood. In severe cases, and especially when the phobia or obsession is of a very distressing character, suggestion under hypnosis should be employed without delay. The result is generally very satisfactory, and improvement often occurs with remarkable rapidity.

Ties are more resistant to treatment, as they tend to persist after the other symptoms have disappeared, and though they rarely continue during hypnosis, suggestion has comparatively little effect upon them. Re-education is the most valuable treatment. Regular exercises are

given for the affected muscles, and in order that complete control may be regained over them the patient is made to inhibit the movements several times every day by an effort of will for a certain period, the duration of which should be slowly increased. I have seen several soldiers with aerophagy and eructation ties, who were cured by clenching a stick between the teeth whenever the desire to eructate was felt.

(c) HYSTERICAL SYMPTOMS.

Hysterical symptoms may develop as the immediate result of a strong emotion, the physical results of which become perpetuated and exaggerated by auto-suggestion. Sudden extreme terror causes inhibition of activity instead of the physical preparation for flight, which is produced by the sympathetic and suprarenal stimulation following more prolonged but less excessive fear. The knees give way, the breath is held, and the "tongue cleaves to the roof of the mouth," rendering speech impossible. These are perhaps manifestations of the instinct to hide, as, when flight is impossible, recourse must be taken to concealment.

The inability to move or speak under these conditions is in most cases only momentary. But a man whose nervous system is already suffering from the strain of active service may be so suggestible that the incapacity is perpetuated and exaggerated, when he realizes that he is physically unable to escape from his terrifying surroundings or call for help, and the possibility that this inability may be permanent and not merely a thing of the moment flashes through his mind. True hysterical paraplegia or mutism is the result.

It is much more common for an interval to elapse between the incidents which gave rise to the emotion and the onset of symptoms. It is thus very rare for hysterical symptoms to develop actually in the trenches. They are comparatively common in casualty clearing stations, and still more so at base hospitals. Not infrequently the hysterical symptoms only appear after the patient has arrived in England. In the dazed condition which results from prolonged mental strain a man is abnormally suggestible; his critical faculties are lost and initiative is diminished. As he gradually comes to himself he tends to exaggerate and perpetuate the difficulties he experiences in the performance of the various functions of his body. The absence of movement due to absence of initiative leads to the suggestion of paralysis, the silence due to absence of any desire to speak in his confused mental condition suggests mutism, and the inattention which prevents him hearing what is said to him suggests deafness. Under these conditions hysterical symptoms may be caused by circumstances which rarely if ever lead to them in civil life. Thus I have twice seen hysterical paraplegia follow an operation for acute appendicitis which had developed in the trenches, and develop after an attack of malaria and of cerebrospinal meningitis, and in several cases after muscular rheumatism. Hysterical paralysis of a leg followed trench fever in one case and paratyphoid arthritis of the hip in another, and hysterical hemiplegia which lasted for two years followed an attack of sunstroke. In these conditions the temporary incapacity caused by the pain or the weakness associated with the primary illness was sufficient to give rise to the idea of paralysis.

In their chief characteristics there is nothing peculiar about the hysterical symptoms which occur in soldiers, whether as a sequel of an emotion, true shell shock, an injury due to a wound, or some acute illness. But they are so common that in two years I have seen more cases among soldiers than I had seen in men, women, and children in the previous ten years. It is not surprising, therefore, that hysterical manifestations are occasionally seen in soldiers which differ from anything which one has seen or heard of in civilians, but the one invariable feature of all cases, both in peace and in war, is their production by suggestion, and their curability by suggestion or persuasion.

Treatment.

Hysterical symptoms in soldiers have proved very amenable to treatment. Some cases sooner or later recover spontaneously, but others show no tendency to improve if left to themselves, and I have seen several cases of hysterical paraplegia, dumbness, blindness, and deafness,

which had persisted for many months, sometimes for over a year, and which would almost certainly have remained permanent if vigorous treatment had not at last been instituted. As it is impossible to tell when the patient is first seen whether spontaneous recovery will take place, active treatment should be given immediately. Thus large numbers of men can be sent back to the firing line within a few days of the onset of symptoms if treated at casualty clearing stations, and hysterical symptoms should rarely persist for more than twenty-four or forty-eight hours after admission to a hospital in England. The longer hysterical symptoms are allowed to remain the more difficult they are to cure. Although immediate improvement generally results from correct treatment, even in cases of very long standing, complete recovery is less easy to obtain; a man who recovers from hysterical paraplegia within two or three weeks of the onset often walks normally within an hour of the commencement of treatment, but his gait may remain abnormal and require careful re-education for many weeks if the paraplegia has been present for a longer period. Similarly early treatment of mutism is followed by rapid and complete recovery, but if left too late the patient whispers or stammers when he regains his power of speech, and often needs prolonged re-education before he can talk normally.

It is essential for success in treatment that the medical officer should feel convinced that the patient's symptoms are not organic, or are at most only in part organic. It is sometimes impossible to distinguish with certainty between hysteria and malingering; but the distinction is of no great importance if, when malingering seems possible, the statement is made in the man's hearing that "nervous" cases are cured by the treatment to be adopted, but that "skrimshankers" are not.

Whatever treatment is employed, the encouragement produced by the presence of cured patients in the same ward is most helpful. I have found that deaf-mutism rarely lasts for more than twenty-four hours after a patient's admission to my section, even if he has been in this condition for many months and many forms of treatment have been tried in vain, as there is always a cured deaf-mute present, who at once tells the new-comer by writing or by the deaf and dumb language how he was quickly cured after being unable to hear or speak for five or six or even twelve months, so that his mind is prepared for the treatment which he is told he will have on the following day.

The patient is also made to understand that there is nothing unusual about his case. The extreme interest and sympathy with which he had been surrounded accounted for the numerous cases in which hysterical symptoms had persisted for many months spent in some luxurious auxiliary hospital. He is made to realize that many others have had similar symptoms before and have rapidly recovered, and that his early recovery is regarded as a matter of course.

Hysterical symptoms being invariably due to suggestion, can invariably be cured by suggestion or simple persuasion, and to diagnose a symptom as hysterical can only be justified if the next step is to cause it to disappear.

Simple persuasion, followed, when necessary, by re-education, is all that is required to cure most cases of hysterical paralysis and abnormal gaits, whether associated or not with contractures. Massage is only of use in neglected cases, in which muscular atrophy has resulted from prolonged disuse, and then only as an adjunct to persuasion and re-education. Electricity is quite useless unless employed solely as a means of suggestion; strong faradism applied with the wire brush over paralysed muscles can be used to convince a sceptical patient that the muscles are capable of strong contraction, and the pain produced acts as a powerful means of persuasion for the fortunately rare type of man who appears to prefer to remain paralysed to recovering. On the other hand, massage and electricity employed regularly by sympathetic nurses only help to confirm the patient in the belief that he is suffering from serious paralysis.

A paraplegic man is first helped to move his legs whilst he lies in bed, and he is then made to move them without help. He is told that the movements of his legs are now so strong when he is in bed that there can be no doubt he will walk if he summons up sufficient courage to try.

Without any delay he is made to sit up in bed, then stand up and walk; both hands are held for a moment, then one hand, and then his coat is lightly held, and, finally, he is made to walk alone without a stick; in most cases the whole process takes less than five minutes.

In long-standing cases the patient generally assumes a stiff unsteady gait on first learning to walk; this only disappears as a result of re-education, the patient being made to walk, perform exercises whilst lying and sitting, and swing his legs whilst sitting on a table or holding a chair for at least a quarter of an hour three times a day. Exercise on a rowing machine or tricycle is also useful.

Some cases of long-standing hysterical paraplegia improve to a certain extent with persuasion and re-education, but then become stationary. This is generally due to the occurrence of clonic spasms, when an effort is made to move the legs on lying down or even when they are passively moved; a false ankle clonus is very easily produced, and its occurrence directly the foot touches the ground produces a permanent tremor on sitting, and a very unsteady gait on attempting to walk. We performed spinal anaesthesia on a man with this condition who had shown no improvement for many weeks. As its effects passed off we carried out passive movements of his legs, which had become flaccid for the first time, and then encouraged him to perform similar active movements, and by the evening he was walking normally. We have repeated the treatment in several similar cases; with one exception improvement followed, but not often so rapidly.

When a mute or aphonic man has been told that he will recover so convincingly that he himself feels no doubt about it, it is immaterial what form of treatment is applied so long as it has not already been tried on the patient unsuccessfully. In many cases the introduction of an intralaryngeal electrode is sufficient, but it should previously be connected with a faradic battery in case speech does not return within a few seconds, as the more powerful suggestion caused by the pain and contraction of the muscles of the throat will then succeed. In cases in which electricity has already been used, but has failed owing to being unaccompanied by sufficiently vigorous suggestion, the patient should be given ether so rapidly that he quickly becomes very excited; he almost always talks spontaneously, but an electrode may be introduced into the larynx if there is any delay. He is then made to talk continuously until he has completely recovered from the anaesthetic.

If stammering is treated the moment it develops in the course of recovery from mutism it can often be quickly cured. It is rarely a primary symptom, but often persists for long periods after mutism has disappeared spontaneously or as a result of treatment. Suggestion with the aid of electricity, etherization, or under hypnosis, occasionally produces rapid recovery, but more frequently improvement occurs very slowly as a result of re-education, lessons in breathing and talking being given regularly every day.

Hysterical fits are quite common in soldiers. They can be diagnosed from true epilepsy by inducing one by suggestion under hypnosis, if the history leaves any doubt and no fits have been observed by the physician himself. I always combine this method of diagnosis with treatment by telling the patient before, during, and after the fit that this one will be the last he will ever have. The treatment has proved most successful, as several men, who had been having numerous fits every day in spite of large doses of bromide, have had no more after their hysterical nature had been proved and their repetition contra-suggested in this way, though bromide was discontinued.

In three cases of absolute hysterical deafness seen with Captain E. A. Peters, in whom all simpler treatment had failed, we advised the patients to undergo an "operation," which we told them was quite certain to cure them. They were given enough ether to make them excited, and two small cuts were then made behind one ear; a hammer was banged on a sheet of iron during the "operation," and the moment after the incision had been made the patient jumped off the table with his hearing restored, although in one case he had been deaf for over nine months. The joy shown by the patients on their recovery whilst in the theatre and on return to the ward was so obviously genuine that there could be no possible doubt about the genuineness of the deafness. Moreover, it had been found impossible to

wake them at night by means of the loudest noises, and the auditory motor reflexes were absent in two of the cases.

Six cases of hysterical blindness I saw with Major A. W. Ormond were cured by hypnotic suggestion when all other treatment had failed.

(d) HYPERADRENALISM AND HYPERTHYROIDISM.

Strenuous action is normally rendered possible by the sympathetic nervous system, which is stimulated to great activity by the emotions of fear and anger under conditions which imperil the safety of the individual. Impulses reaching the suprarenal glands by their sympathetic nervous supply stimulate them to secrete adrenalin. It has been shown experimentally that both the injection of adrenalin and the increased secretory activity of the suprarenal glands which occurs in times of stress give rise to all the effects produced by stimulation of the sympathetic nerves. Suprarenal activity thus powerfully reinforces the direct action of the sympathetic nervous system, which enables the individual to respond to the emotions of fear and anger by strenuous action. There are no constrictor fibres to the cerebral and pulmonary arteries, and the sympathetic fibres to the coronary vessels produce dilatation instead of constriction, so that the vaso-constriction produced by adrenalin is confined to the splanchnic system; the blood pressure is thus raised, and the blood is driven to the heart, lungs, brain, and muscles from the abdominal viscera, the activity of which is simultaneously suspended by the inhibitory influence of the sympathetic nerves. At the same time, the heart is stimulated to beat more rapidly and vigorously. The skeletal muscles not only receive an increased supply of blood, but also of the sugar required for their activity, as adrenalin augments the stimulating action of the sympathetic on the production of sugar from the glycogen in the liver. The products of muscular activity, the accumulation of which leads to exhaustion, are neutralized or destroyed by adrenalin independently of any sympathetic action. The central nervous system, the heart, and the muscles of the limbs and trunk, are thus prepared for great activity. The evaporation of sweat, the secretion of which is increased, prevents the rise of temperature, which would otherwise occur with excessive muscular activity, and the deep respiration and the relaxation of the bronchioles allow more oxygen to enter the lungs and excess of carbon dioxide to escape.

Adrenalin acts very rapidly, but for a short period, as it is quickly oxidized. It is consequently of special importance when an emotion calls for sudden activity. When more prolonged activity is required, the internal secretion of the thyroid gland probably helps to maintain the activity initiated by adrenalin, as it acts after a longer latent period, and its action is more prolonged.

The physiological effects of the fury and excitement of battle enable the born soldier to perform feats of strength and endurance which may be in striking contrast to his comparatively feeble physique. But the changes which accompany fear and anger are entirely useless if the emotions are not followed by the associated instinctive activity. So fixed, however, is the primitive association of anger with fight and fear with flight, that when the natural sequels of these emotions are restrained they continue to give rise to suprarenal and thyroid activity. Thus the ceaseless fear felt by the constitutionally timid when exposed to the horrors of war results in constant over-secretion of the suprarenal and thyroid glands, the physiological results of which are not followed by the muscular activity of flight for which they are the preparation. The unexpended energy may be so extreme that the soldier is incapacitated by it. On reaching the safety of a base hospital the hyperactivity of the suprarenal and thyroid glands and the signs and symptoms to which they give rise often disappear. But they may be perpetuated by war-dreams, and in severe cases the mind is absorbed by day as well as by night by pictures of the horrors which the individual has witnessed; every sound reminds him of shells, and every movement suggests the approach of danger. The activity of the suprarenal and thyroid glands is consequently maintained, and the patient presents a picture suggestive of Graves's disease, although hyperactivity of the suprarenal glands is probably of more importance, though less easily recognized, than that of the

thyroid. The pulse is rapid, especially on the slightest exertion, and the heart may be slightly enlarged. The blood pressure of the average soldier in the front line trenches is slightly subnormal, but in these cases it is always raised, and is often still 150 mm. of mercury or more on arrival in England.

I have observed a very characteristic cutaneous reaction in these cases, which is present in no other condition. On moving the finger over the skin of the chest so lightly that in normal individuals no local reaction would occur, a pilomotor reflex is almost instantaneously produced; goose skin is obvious and occasionally the hair can actually be seen to stand on end over the area touched by the finger and for some distance on each side. After about five seconds the pilomotor reflex fades away and is at once replaced by a vaso dilator reflex; the blush, which may have a white border on each side, often lasts for several minutes. As improvement occurs the vasomotor reflex disappears, but the pilomotor reflex generally persists for a few weeks longer. The circulatory symptoms may be so prominent that the case is often diagnosed as "disordered action of the heart." The condition may then be described as the "hormonic type of soldier's heart." Excessive sweating often occurs, sometimes in paroxysms, especially over the palms of the hands and soles of the feet, and the patient loses weight. The hands and occasionally the eyelids are tremulous, and the patient is highly nervous and excitable. The eyes are often slightly prominent, and von Graefe's sign may be obtained. The thyroid gland, though over-active, is generally not obviously enlarged, but in some cases moderate enlargement is present.

Treatment.

The patient must be isolated at first from the other patients in the ward by screens, and should only see such visitors as he believes will allay rather than increase his nervous irritability. He should be protected from any chance of being reminded of what he has passed through by thoughtless conversations or illustrated papers.

Mental activity and restlessness are lessened by small doses of opium, this being the only war neurosis in which this drug can be safely employed, and also by suggestion, especially when nightmares or some special sources of worry are present. The thyroid and adrenal secretion are kept in check by belladonna. The blood pressure rapidly falls to normal and all symptoms gradually disappear. X-ray applications to the thyroid gland have been used with success in some cases, but it is impossible to regulate the destructive action of the rays with sufficient accuracy for perfect safety, and the other ductless glands are not dealt with.

(e) EXAGGERATED DEFENSIVE REFLEXES.

The "flinch reflex," which is caused by the sight or danger approaching, consists in the assumption of a crouching attitude; the arm is raised in front of the face and the eyes blink; it has the object of hiding the individual and defending him from attack. The "jump reflex" consists of a sudden movement of the limbs and trunk, and is associated with blinking of the eyes and dilatation of the pupils; it is caused by sudden sounds, and is really the preparation for the immediate activity which would be displayed if the individual obeyed his instinctive desire to save himself by flight. These responses are true defensive reflexes and have their centres in the mid-brain.

The common exaggeration of the jump reflex in soldiers suffering from certain war neuroses is not therefore correctly described as hyperacusis, for the sense of hearing may be no sharper than normal, and actual hearing need not occur at all, as the reflex occurs when they are asleep and hypnotized as well as in some cases of hysterical deafness. It is simply a part of the general exaggeration of the defensive reflexes, which is a characteristic feature of those war neuroses which are due rather to emotions such as prolonged fear than to the actual concussion of pure shell shock. In one severe case true hyperacusis was present, and Captain E. A. Peters estimated that the patient heard sixteen times more acutely than the average normal individual. It was possible to carry on a conversation with him by whispering in one corner of the ward when he was lying in the opposite corner, although men

with normal hearing who were standing half-way between in the centre of the room could not hear a word of what was whispered. The hyperacusis and exaggerated defence reflexes were quite uninfluenced by the administration of 100 grains of bromide a day.

In severe cases the patient appears to be in extreme terror; he jumps violently, and trembles from head to foot at the slightest sound; he raises his arm as if to protect his face from a blow and hides his head under the bed-clothes when anybody approaches him. After all trace of terror has disappeared as a result of suggestion under hypnosis, and the patient no longer thinks or dreams of the horrors of war, the appearance of terror may continue unabated, the intense emotions to which the patient has been subjected having led to such an increase in the excitability of the central nervous system that the exaggerated jump and flinch reflexes persist after the cause of their exaggeration has disappeared.

Treatment.

Complete physical and mental rest are essential. No visitors should be allowed, and frequent changes of nurses are most undesirable. Severe cases should be kept in bed and isolated until considerable improvement has occurred. The patient should not talk about his experiences, but should try to forget the scenes he has passed through. Nightmares and day-dreams should be treated by hypnosis. Bromides have very little effect, except in mild cases, but medinal and aspirin often helps to produce sleep. When true hyperacusis is present the ears should be plugged with wool, and in severe cases, in which this has little or no effect, large woollen pads should be tied over the ears at night or during a thunderstorm.

III.—SHELL SHOCK.

The term "shell shock" should be reserved for the condition which follows exposure to the forces generated by the explosion of powerful shells in the absence of any visible injury to the head or spine. In all cases there is an organic basis, which consists of the more or less évanescent changes in the central nervous system resulting from the concussion caused by aerial compression, to which is often added concussion of the head or spine caused by the sandbags of a falling parapet, or by the patient being blown into the air and falling heavily on to his head or back. On this organic basis hysterical or psychasthenic symptoms are often superposed.

Post-mortem examinations on men who have died without regaining consciousness after being blown up by high explosive shells in the absence of any external injury, have shown multiple punctate hæmorrhages in the white matter of the brain and the nerve cells show chromatolysis with eccentric nuclei. Mott has pointed out that if a man is buried under sandbags in a heavily shelled trench or dug-out, or if for any other reason he is confined in a small space in which the carbon monoxide produced by an explosion collects without being able to diffuse rapidly away, he will be rendered unconscious, if he is not already unconscious as a result of concussion. The continued inhalation of the gas will cause him to suffer from the effects of carbon monoxide poisoning, although he will not have realized during his period of consciousness that he was inhaling a poison, as the gas is odourless. The pathological changes produced are identical with those found in fatal cases of shell shock, so that carbon monoxide poisoning may perhaps be responsible for some of the symptoms in a small proportion of cases.

Several French observers have found that if a lumbar puncture is performed in a case of shell shock within a few hours of the onset of symptoms the cerebro-spinal fluid is generally under increased pressure, and contains albumin, blood, and slight excess of lymphocytes. If the examination is repeated in forty-eight hours the abnormalities are no longer present. This accounts for the fact that the cerebro-spinal fluid is almost invariably normal when the lumbar puncture is performed at a base hospital.

In such cases it is clear that organic changes have occurred in the central nervous system, which are, however, so slight—consisting probably of minute capillary hæmorrhages and chromatolysis of nerve cells—that they rapidly and completely disappear.

Symptoms.

Two groups of cases may be recognized. In the first the symptoms are due entirely to concussion of the brain and spinal cord; in the second hysterical manifestations are grafted on to this organic basis.

1. PURE CONCUSSION.

(a) *Cerebral Concussion.*

The symptoms of uncomplicated shell shock are identical with those of concussion in civil life. The immediate effect of a high explosive shell is to render a man unconscious. In the severest cases the patient's breathing is stertorous and he may die after an interval of a few hours or days without regaining consciousness. In the more serious of the cases in which recovery ultimately takes place the patient passes into a condition of stupor, which is indistinguishable from that already described as resulting from emotional strain without actual concussion. As a rule the patient soon recovers his memory up to the time of the explosion, and may even recollect that he heard the sound of the shell coming, but from this moment his mind is a blank. Less frequently the memory is perfect up to a certain date, such as the day of arrival at the front, but all subsequent events are forgotten; the patient appears to live over some of the forgotten events—especially those of a terrifying nature—in his dreams, but on waking he remembers nothing of them. In severe cases more or less complete retrograde amnesia may be present. Headache is a constant symptom. It is increased by the smallest mental effort, and is often worse at night, when it may prevent sleep. Lumbar puncture often shows that the pressure is raised, and the removal of cerebro-spinal fluid then relieves the headache, but rarely for longer than a few hours. It is greatly aggravated by nightmares and the recollection of horrors through which the patient has passed. For many months after the severe headache has disappeared, a heavy, full sensation may still be caused by mental concentration or excitement, and sustained attention is impossible, because of the sense of weariness it causes. Mental irritability is a common early symptom and often continues after the patient is otherwise well. He loses his temper for trivial causes and may get himself into trouble for insubordination.

One officer was greatly worried on account of seminal emissions, which had occurred three or four times every night since he was blown up by a shell a month before I saw him. They were always accompanied by war dreams, and disappeared permanently after suggestion under hypnosis on a single occasion.

(b) *Spinal Concussion.*

Spinal concussion may occur as a result of a blow on the back, but it is more often due to an explosion in which the patient is buried under earth or sandbags. The skin and muscles over the spine may be bruised, but often no sign of injury can be found. I have seen several cases in which concussion has resulted from an actual wound, in which the missile passed near the spine without actually injuring it.

Roselle and Oberthur examined a number of men suffering from spinal concussion whilst still in the trenches within a few minutes of their injury. They found that the tendon reflexes were exaggerated and the cutaneous reflexes were absent, except the plantar reflex, which was extensor; extreme hypotonus of all muscles was present.

In slight cases the hypotonus passes off in a few hours, often whilst the patient is still unconscious, the legs becoming slightly spastic with normal or exaggerated knee-jerks, and the plantar reflex is now absent or flexor. In more severe cases the muscular tone is diminished for a longer period, and an extreme degree of flaccidity may be present; the knee and ankle jerks are then weak or unobtainable; in the course of time the tone returns, the jerks become normal, and the paralysis disappears.

When, however, more profound changes have been produced in the cord the flaccidity is replaced by increasing spasticity with increased jerks, ankle-clonus, and extensor plantar reflexes. In most cases complete recovery with disappearance of all abnormal physical signs occurs, but in some cases slight spasticity with exaggerated jerks and occasionally extensor reflexes persists, the concussion having resulted in some permanent lesion of the spinal cord. In most cases the spine is tender; there may be some rigidity, and pain occurs on bending or twisting. **▲▲**

x-ray examination shows that there is no actual injury to the spine.

In many cases faeces and urine are at first passed involuntarily.* The initial incontinence does not last more than a few hours. It may then be replaced by retention for twenty-four hours, and this is sometimes followed by difficulty in micturition for two or three days, but the condition of the bladder is generally normal by the time the patient reaches England.

2. HYSTERICAL SYMPTOMS GRAFTED ON TO ORGANIC BASIS OF CEREBRAL OR SPINAL CONCUSSION.

In the confused mental condition which follows shell shock a man is abnormally suggestible, particularly if he is already exhausted owing to the stress and strain of active service. The organic paraplegia which is the result of transient structural changes in the spinal cord produced by concussion disappears with the return of the cord to its normal condition; it is then often replaced by hysterical paraplegia. Finding that he is unable to move his legs when he first regains consciousness, a man becomes convinced that he is paralysed and makes no further efforts; the paralysis thus produced by auto-suggestion can be removed by persuasion or a counter-suggestion. In the same way, when one side of the brain has been chiefly affected by the concussion, an initially organic hemiplegia merges into hysterical hemiplegia. I have watched several cases, in which all the physical signs of organic paraplegia or hemiplegia were at first present, but have gradually disappeared in the course of a few days or weeks, although the paralysis has remained, until by suggestion or persuasion it has been cured in a few minutes. Sometimes, however, some organic signs remain, and suggestion then can only produce an incomplete cure, a slightly spastic gait or some slowness and lack of accuracy in the first movements of a limb being left as the permanent result of the shell shock.

As complete or almost complete recovery from the organic symptoms occurs in the vast majority of cases, the prognosis can be regarded as good, and an attempt should be made as soon as the initial stupor has passed away to persuade the patient to walk. It is extremely difficult so long as any organic signs persist to judge to what extent the symptoms are organic in origin, but experience has shown that some physical signs of organic disease, such as an extensor plantar reflex, greatly exaggerated knee-jerks and true ankle-clonus, and unilateral absence of the abdominal reflex, may still be present when the character of the gait and its rapid improvement with persuasion and re-education show that the symptoms are almost entirely hysterical.

Apart from the hysterical manifestations which result from the perpetuation of symptoms produced by transient organic lesions of the central nervous system, others may be produced by auto-suggestion without any primary organic condition. These hysterical manifestations are very varied, and it is at first difficult to explain why one man should become blind, another deaf and dumb, and another hemiplegic under apparently identical conditions. From careful inquiry into the history of numerous cases I have come to the conclusion that the variability of the symptoms can best be explained in the following way. As a result of the various factors which give rise to shell shock all the functions of the body are in abeyance for a period which varies in different cases; the patient cannot see or hear or feel, he cannot talk, he cannot move, and his mind is a complete blank. In many cases all these lost functions gradually return in the course of a few hours, though some come back more rapidly than others; the patient is then in much the same condition as a man who has been concussed by falling on his head, with a number of symptoms, such as headache, difficulty in concentration, and lack of energy, but there is no paralysis nor loss of any of the special senses. In other cases, as consciousness returns, the patient's mind becomes fixed on some part of his body which is painful, the pain being the first impression powerful enough to attract his awakening attention; or the temporary inability to see or hear or speak, which generally remains unnoticed when consciousness first returns because of the absence of any desire to see or hear or speak, is suddenly realized owing to a special call being made on one of these functions. The patient's dawning intelligence becomes fixed upon this single missing function, and he suggests to himself that the disability will be

permanent. The fact that the other functions are missing remains unnoticed, and after a time they spontaneously return. The persistent localized loss of function is thus due to auto-suggestion leading to the perpetuation of what would otherwise be a very temporary incapacity; it can thus correctly be described as hysterical.

Less frequently the impressions received by the patient between the moment the explosion occurs and the moment when consciousness is lost give the key to the symptoms. The first thought of a man on regaining consciousness after being deafened by the noise or "struck dumb" with terror when the explosion took place may result in the suggestion of deafness or dumbness.

Treatment.

Rest in bed is required for the symptoms of shell shock which are the result of actual concussion. In civil practice it is a common event to see patients suffering from chronic headache after cerebral concussion, and chronic backache after spinal concussion, both of which might have been prevented by sufficient rest immediately after the injury. The same is true after shell shock and burial, and many men, who pass from one hospital to another for many months receiving all sorts of expensive treatment with little or no benefit, could have been rapidly cured by simple rest immediately after the injury. On the other hand, the rest must not be too prolonged, and it requires considerable experience to judge the right moment when such patients should be allowed to get up. If kept in bed too long, they are very liable to lose their power of standing and walking, as the care taken to keep them at rest may give them the idea that they are severely injured, and hysterical astasia-abasia or paraplegia develops. In order to prevent this, the patient should be made to get up to go to the lavatory and to have a bath from the first day, except when severe stupor is present, in which case he should get up as soon as it has sufficiently diminished. When the patient no longer complains of pain in the head or back, he should be encouraged to take exercise, the amount of which should be steadily increased. Massage often aggravates the pain, and it tends to increase the tendency to introspection.

The associated hysterical symptoms should be treated in the manner already described.

AN INVESTIGATION OF TRENCH NEPHRITIS BY MEANS OF PHENOLSULPHONEPHTHALEIN.

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It is not always a very easy task to exhibit faithfully in tablet form work which has extended over twenty months. Nevertheless, the attempt has been made in this paper without, if possible, rendering the picture incomplete. For many facilities in connexion with the investigation I have to thank the officer in charge, Lieut.-Colonel J. Harley Brooks, M.D., R.A.M.C.

To American workers we are specially indebted for the advances in biochemistry relating to the renal functions which have been a feature of the past six or seven years. Folin and Denis, and Van Slyke, in particular, have done pioneer work, and produced indispensable tests for the various non-protein waste products of the blood and urine. A voluminous literature has already accumulated round this subject, which is steadily being pursued with excellent promise. One of the most fruitful means of investigation was undoubtedly supplied by the introduction of phenolsulphonephthalein as an index of renal function by Rowntree and Geraghty in 1910.¹

The technique of the test may be studied in the original; suffice it to say here that it consists in the subcutaneous injection of an alkaline solution of 6 mg. phthalein after preparation of the patient. The urine is collected after one hour and after two hours. A few drops of 25 per cent. NaHO solution is added to it, and the resulting pink colour, after dilution of all the urine with water up to a litre, or the equivalent of this dilution of a small quantity, is read off in the colorimeter, or against tubes containing

standard colour solutions of the dye. An excretion of 50 per cent. of the amount of dye injected may be set down as the normal average in one hour, and 25 per cent. in the second hour. Both the hourly and two-hourly percentages are usually taken, but after repeated trials I have found that ordinarily the first hour's percentage is sufficient. Indeed, if anything, it is the more searching test, as in the case of defective kidneys the second hour's excretion is often higher than that of the first. It is essentially the slowness of the elimination which characterizes renal defect.

Rowntree and Geraghty consider the phthalein test superior to methylene blue, indigo-carmin, rosaniline, and phloridzin, owing to (1) ease of application, (2) rapidity of action, and (3) reliability. These investigators also found the calculation of the urea output, total nitrogen, total solids, and quantity of the urine passed to be "of no value whatever as indicating the true renal activity." As regards other tests for renal function, besides being much more difficult, and tedious of execution, they are open to certain fallacies. The lactose test of Schlager, and the diastase test of Wohlgemuth have been chiefly used. As regards the first, it sometimes contravenes a result uniformly given by other tests. As regards the latter, recent work of McClure and Pratt² has shown enormous variation both in normal and pathological cases. Wohlgemuth placed the maximum normal limit at 64 diastatic units, but certain of the cases investigated showed anything up to 400 units. The dietary test introduced by Hedinger and Schlager in 1914, and its modification by Mosenthal, is no doubt of high value, if very tedious. Cases of severe anaemia, however, respond to it in the same manner as advanced nephritis.

The Non-protein Nitrogen of the Blood.

Renal efficiency means above all else the power of the kidneys to eliminate adequately the non-protein or in-coagulable nitrogenous bodies—urea, uric acid, creatinin, etc.—which accumulate in the blood not only under ordinary conditions, but also under exceptional circumstances of diet, exercise, etc. Accordingly, a great many investigations have been made with the view of estimating the various movements, so to speak, of these substances, and the significance attaching to them in the various conditions of disease. In health great fluctuations are found in the urea concentration of the blood, diet being an influential factor. But in renal disease also, as shown by Folin, Widal and Javal, and others, the urea of the blood may be made to fluctuate at will by varying the protein intake. A reasonable upper normal limit for urea is 30-40 mg. per 100 c.cm. of blood, for uric acid about 3 mg., and for creatinin about 2.5 mg. For the total non-protein nitrogen about 30 mg. per 100 c.cm. of blood is a reasonable upper normal limit, the urea nitrogen being about half the total, or 15 mg. In acute or far-advanced cases of nephritis the urea of the blood may mount up to hundreds of milligrams per 100 c.cm., but in the earlier chronic stages the figures may easily approximate to normal, and continue so indefinitely under appropriate diet. No information as to the state of the kidneys would be obtained in such cases from an examination of the blood alone, yet renal deficiency would certainly be indicated by the phthalein test. A notable advance was, however, made by Ambard, who arrived at certain laws as to the ratio between the concentration of urea in the blood and the rate of its excretion by the kidney per unit of time. He believed he had found that normally a constant relationship exists betwixt these two factors—the constant or coefficient of Ambard. This law has been subjected to very searching tests, one of the most recent being by Addis and Watanabe,³ who found variations in the constant in health under conditions of increased urea derived either from food or from disintegration of tissue protein, or preformed from the alimentary tract. Apart from this, however, in renal disease there is a relative increase in the urea concentration in the blood and a relative decrease in the rate of excretion. There is a general consensus of opinion that in nephritis Ambard's coefficient and the phthalein test give fairly parallel results, and of the two the phthalein is the more reliable.

Phenolsulphonephthalein has also been used in this investigation as an indicator for the hydrogen ion concentration of the blood and the alveolar carbon dioxide tension after the method of Sørensen, using acid and

alkaline phosphate mixtures as standard solutions. The phthalein is specially adapted for this purpose, as, according to Levy, Rowntree and Marriott, it is the best indicator for minute differences in the H ion concentration between $10^{-6.4}$ and $10^{-8.4}$ (passing through neutrality). Full instructions for carrying out the tests have been given by Marriott.⁴

In the case of the blood it is necessary to indicate the H ion concentration in terms of the reserve alkalinity of the serum after driving off the CO_2 by a current of air. This is expressed (after the notation of Sørensen) as R p H. The serum is dialyzed through a celloidin sac into a saline solution of the indicator, the CO_2 is driven off, and the colour compared with those of standard tubes. The process requires to be done most carefully, owing to the great delicacy of the reagents.⁵ Normally, the reserve alkalinity is R p H 8.5 or very nearly. I examined eight cases in the earlier chronic stage of the disease, and obtained values from R p H 8 to normal. On the other hand, the estimation of the alveolar CO_2 is very easily performed, and for routine ward work most handy. The air is collected by the Plesch method, the respirations into the bag (containing 1,000 c.cm. air) occupying twenty-five seconds. The expired air is then bubbled through a standard alkaline phthalein solution, and when the change of colour is complete, the tube is compared with a graded series of standard phosphate-phthalein tubes.[†] The entire test may be completed within five minutes, but the patient must first be taught to breathe properly.

In the nephritis cases no low tensions were found except in a few presenting either pulmonary or circulatory disturbance. Thus a case with cardiac dilatation (right sided) gave a reading of 30 mm. Hg (the normal being 40-45). But little evidence of acidosis is forthcoming from the renal condition in the post-acute stages.

General Results of the Phthalein Test.

The cases herein referred to were young soldiers discharged from hospitals abroad after the acute symptoms had subsided. Acute cases occurring at home, either in the young or middle aged, are not included. As a matter of fact, the test is useless in acute cases. The number of cases has been large, an entire ward being utilized in connexion with this investigation. The complete results are based on 42 selected cases. The routine consisted in making the test soon after the patient's admission, and repeating it at intervals of about three weeks. Concomitantly the blood pressure was recorded. The examination of the urinary sediment, tube casts, blood cells, etc., was conducted by the pathologist, Dr. Rowlands.

In what may be termed the second state of trench nephritis the urine is usually abundant, often considerably in excess of the normal, with a rather low specific gravity, though in some the specific gravity is normal. Albumin may be present in high percentage or but slight. At first blood is very frequently present, but it generally disappears a long time before the albuminuria. Tube casts are almost constantly found, generally of the granular or hyaline varieties. As recovery proceeds, the quantity of urine diminishes. Perhaps the most striking thing about the phthalein test is that it bears no relation whatever to the quantity of albumin or the presence of tube casts. A patient with slight albuminuria *minus* casts may give only an excretion of 20 per cent. in the hour, whereas a case in which the urine is loaded with albumin and containing numerous casts may give a 50 per cent. excretion. At first this was a very puzzling phenomenon, but the progress of the case always justified the verdict of the phthalein, given thus early, as to the ultimate result. As soon, therefore, as such patients are admitted to hospital we can make a prognosis from this test without reference to any other factor in the case. It is needless to expatiate on the value of this.

Certain observers—Pepper and Austin, Baetjer, Sellards—have alleged that cases of severe parenchymatous nephritis are occasionally encountered in which there is hyper-permeability on the part of the kidney to the substances used as functional tests, including phthalein. Pepper and Austin give two such cases having phthalein excretions of 50 per cent. and 46 per cent. respectively in

* These, with the celloidin tubes, were made by Martindale.

† These were prepared by Baird and Tallock.

one hour. Deficient chloride elimination was observed also. Sellards has one case; Baetjer has four (also with deficient chloride elimination) in which he also noted the fluid balance, the elimination of lactose and potassium iodide, and the percentage of rest nitrogen in the blood. Baetjer adds, however, that a high excretion of phthalein may justify a good prognosis in these, as "none of them have yet come to autopsy."⁶ A very comprehensive study in relation to this point was made by Thayer and Snowden,⁶ who recorded the complete results in 54 cases of chronic nephritis right up to the necropsy, and declared that in not a single instance did they fail to find a material diminution of the phthalein. The progressive diminution of the phthalein excretion with the advance of the disease was definite and striking. They observed, however, that cardiac disease with chronic passive congestion often causes a considerable reduction of the phthalein output. This point is important. I have found a reduced phthalein elimination in cases presenting want of oxygen, howsoever induced, or in which the alveolar carbon dioxide tension was low. Kendall,⁷ in a suggestive paper, records experiments which seem to show that oxygen protects the dye, and that it is destroyed by the reducing substances of the body. So far as trench nephritis is concerned, high excretion of the dye has never been encountered in cases which did badly. On the contrary, they all made good recoveries. The elimination of chlorides and sulphates was normal in all such cases examined.

The cases in the second month of the disease showed phthalein elimination varying from 15 to 50 per cent. or over in one hour. Needless to say, the early high percentage cases do well, and some, though by no means all, also lose their albumin quickly. For the others, which form the great majority, the third month is rather critical. It may be best to summarize the matter, and indicate a classification which is the outcome of long-continued observation of the cases.

1. If, within three months from the onset of the disease, the phthalein excretion rises to 40 per cent. or over in one hour, recovery will be good, even should albuminuria continue for another two months or possibly longer. For part of this time casts may also be present.

2. If, at the end of the third month, the phthalein excretion be under 30 per cent. in one hour, notwithstanding a slight degree of albuminuria, or with intermittent albuminuria, recovery will be protracted, and in some of the cases unsatisfactory.

3. If, at the end of four months, the phthalein excretion reaches 40 per cent. or over, ultimate recovery is the rule, even should the albuminuria last for several months longer.

4. If the excretion remains persistently low (15 to 30 per cent.) up to the fourth or fifth month, the prognosis is unfavourable without reference to the presence or degree of albuminuria. Several such cases which reported themselves after eight to nine months still presented a low index of elimination and slight albuminuria. As to the final issue, it is difficult to say, but the fact that they all had either normal blood pressures, or slightly over, seems to presage in some of these a favourable result.

As regards the distribution of the cases, if we include in Class 1 those showing high elimination in the second month, a total of about 50 per cent. would be represented in this class. The cases in Class 2 proceed either to Class 3 or Class 4, between which the remaining 50 per cent. were fairly evenly distributed, if anything a slightly higher percentage being in Class 3.

A good many cases admitted were relapses after being sent back to active service from other centres. No doubt in these the albuminuria had disappeared at the time, but it is doubtful if the phthalein test (had it been made) would have been satisfactory. Even had it been, one is compelled to doubt if a return to active service is in any case warrantable. It is very probable that in a goodly percentage of the cases some antecedent kidney disability, or a tendency thereto, existed.

The phthalein test also serves as a very good guide to dieting. An excretion under 30 per cent. indicates a milk and vegetable diet; 30 to 35, the addition of fish or chicken; and over 35, ordinary diet with extra milk, provided the albuminuria is moderate and not increased by the diet, and blood is absent. All cases appear to derive benefit from an iron mixture.

Considerations as to the Pathology of the Disease.

What may be termed the clinical impression given by trench nephritis differs materially from that of ordinary parenchymatous nephritis. The subjective feeling of well-being, and the absence of the symptoms of ill health in the

vast majority, are characteristic. The disease may present two very puzzling features. One is the intermittence of the albuminuria which occurs in a few cases, even where the albuminuria is of a high grade. Complete absence of albumin may be recorded one day, and on the next or a few days thereafter perhaps as much as 1 to 1.5 per cent. may be present. Care, of course, must be taken lest an alkaline urine be present which fails to react with heat. The other curious condition is a persistent high degree of haematuria without albumin latterly (except such as is due to the blood). On these conditions speculation is perhaps better avoided. The long persistence of a high grade of albuminuria, with casts in some cases, might seem to create a need for revision of our ideas as to their significance. Again, except in the early stages, the blood pressure is nearly always within normal limits (110 to 135 mm. Hg), and, as we have seen, the kidneys may perform their functions perfectly as soon as the acute stage is over. The disease is doubtless due to an infection. Certain microscopical findings by Dunn and McNe⁸ can hardly be regarded in an etiological sense. I venture to suggest a comparison with acute pneumonia. Just as an entire lung may be involved in the acute stage, so, doubtless, the entire kidney is at first inflamed. When resolution occurs, a district or districts of kidney fail, just as may occur in a section of lung, which continues in the state of delayed resolution—that is, an epithelial overgrowth and desquamation. Such a lung may, of course, be perfectly competent to carry on normal respiration even under average conditions of exercise, and recovery of the damaged area may ultimately be complete. This view of the kidney lesion explains the presence of albumin and tube casts alongside a normal functioning power and a normal blood pressure. As regards the abundant secretion of urine, this would seem to depend on vaso-dilatation of the renal vessels, due to metabolic products.

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THE OCCURRENCE OF SPIROCHAETES IN THE URINE.

BY

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A WIDESPREAD interest in the increasingly numerous group of diseases known to be caused by spirochaetes, and the consequent desire for a rapid and sure means of diagnosis, have brought forward the possibility of recognizing such cases by finding the spirochaetes in the urine.

I.—INTRODUCTORY.

That spirochaetes may actually be excreted by the kidney in diseases of spirochaetal origin is a fact resting on the reliable experimental evidence of the workers on spirochaetosis icterohaemorrhagica. Their animal experiments have demonstrated that spirochaetes occur in the urine which have the same pathogenic effect on guinea-pigs as the organisms found in the blood. Obviously a similar excretion may occur in other diseases, and thus afford an easy means of diagnosis.

Certain observations made recently at this hospital, however, show a source of error in a procedure of this kind. It was found, in brief, that:

1. Spirochaetes are not uncommon organisms in the urethra of men without history or symptoms of relapsing fever.
2. Many different varieties are found.
3. Some of the varieties seen are morphologically closely similar to pathogenic varieties.
4. The spirochaetes occur so definitely within the urethra that they are an obvious source of contamination in uncatheterized specimens of urine.
5. They are a sufficiently dangerous source of error, even in catheterized specimens, to deserve attention in careful work.
6. It is possible that a staining reaction or some other morphological character may be discovered to differentiate microscopically the common and harmless from the patho-

genic spirochaetes. Since the pathogenic spirochaetes are still in the process of discovery, such methods are not universally applicable.

The facts summarized above are possibly known to a few workers, but they are not to be found in the publications at our disposal. They are new to us, and probably to a majority of those who are likely to make use of them. That a source of error in diagnosis may be pointed out, and possibly time saved for prospective workers in these diseases, the observations made are given herewith.

II.—FREQUENCY.

The work was initiated by the finding of spirochaetes in centrifugized specimens of the urine of a nephritic patient with relapsing fever. The urine was divided into two portions, and the sediment of the first portion passed found to contain ten to twenty times as many spirochaetes as the later portion passed. The obvious intraurethral or periurethral source was investigated by films made with a platinum loop, and spirochaetes of the same variety found in great numbers. It seemed probable that such spirochaetes were a common saprophytic organism rather than a localized evidence of a general spirochaetosis. Consequently other patients with and without relapsing fever were investigated similarly. Spirochaetes were found in the urine and in urethral smears from five out of fourteen men. In only one case were spirochaetes found locally, but not in the urine. That the spirochaetes do not have their ultimate origin in the urine seemed probable because by passing the urine in successive portions a part toward the last could be obtained in which no spirochaetes could be found. Such methods cannot be depended upon, however, to eliminate the intraurethral parasites.

When it was evident that spirochaetes of intraurethral origin could frequently be found in the urine, a study was made of 100 men without history or symptoms of any fever of a relapsing type. Fifty of these, given below in Series I, were hospital patients with miscellaneous medical and surgical conditions; many of them were gassed cases. They were selected entirely haphazard. The other fifty, called Series II, consisted of U.S.A. men who came to France from America in early June or the latter part of July.

In each case films were made with a platinum loop from the distal one-third inch of the urethra and from the region about the urethral orifice. In making the urethral smears as a rule the meatus was parted and the loop introduced with as little contact with the orifice as possible. In several cases the anatomical conditions were such that contamination from extraurethral sources undoubtedly occurred, and in other cases faults in technique may have been present. Consequently no rigid separation of sources is possible. The occurrence in several cases of spirochaetes in the urethral but not in the other smears is evidence of their intraurethral origin, in these particular instances at least. In any case they are an evident danger in urine sediment examinations. Notes were made of the presence or absence of spirochaetes, of the morphology, and of the approximate numbers.

In the following summary of the figures, each series is considered separately, then the 100 men as a whole. The percentage occurrence in urethral films is given first, for the urethra is the most definite source of contamination. In a certain additional number of cases spirochaetes were found near but not in the urethra. It is evident that these also might get into the urethra or prove a contamination in other ways. Figures are therefore given for the total incidence of spirochaetes either in or near the urethra.

The spirochaetes similar in type to those found in the urine of patients with "trench fever" or to Noguchi's description of *Spirochaeta icterohaemorrhagiae* are grouped with other spirochaetes obviously not similar to *S. refringens*. Figures are then given for all spirochaetes, including *S. refringens*. The latter figure is not as significant, for the *refringens* type is so different from the others as to cause little confusion.

In all figures, cases where only a few doubtful organisms were found are excluded.

Series I.—In this first series, consisting of 50 hospital patients, spirochaetes (excluding the *refringens* type) were found in 46 per cent. of the urethral films. If *S. refringens* is included, the total incidence of all kinds of spirochaetes amounts to 56 per cent.

Series II.—In the second series, of fifty well U.S.A. men, intraurethral spirochaetes (excluding *S. refringens*) occurred in 20 per cent. of the cases. The total incidence of all spirochaetes, including *S. refringens*, was 22 per cent.

It is our belief that the smaller percentage in the U.S.A. men is due to the better health and hygiene of the subjects. It is very probable that saprophytic organisms increase on these as on other mucous surfaces in conditions of low vigour (or hygiene). That this is the explanation here is suggested by the correspondingly smaller percentage of occurrence of the *refringens* types.

Since these differences are probably not of great significance, it is of interest to average the figures of the two series to get the incidence in the whole series of 100 men. When this is done it is found that spirochaetes of all types but *S. refringens* occur in 33 per cent. of the cases. Including *S. refringens*, spirochaetes are found in 44 per cent. If the figures for the spirochaetes present near but not in the urethra are added, the percentage of spirochaetes in either one or the other situation becomes 38 per cent. If *S. refringens* is included, the incidence is 46 per cent.

In a large proportion of cases the spirochaetes were present in the film in considerable numbers.

The comparative figures give no conclusive proof as to the real source of the spirochaetes—that is, whether in or near the urethra. They occurred, however, more frequently in the urethra by 50 per cent.

III.—MORPHOLOGY.

In regard to the morphology of the spirochaetes, studies were made principally with the tannic acid carbol-fuchsin method, but the Fontana, the India-ink, Giemsa, and the Leishman and Wright modifications of the Romanowsky methods were tested. As a rule, the stain with carbol-fuchsin was definite, but some slender spirochaetes were found which stained with difficulty. The Fontana stain was usually definite and clear. Loeffler's methylene-blue stained not at all, or very faintly. Carbol-fuchsin, without previous mordant, heated as for tubercle bacillus (but not decolorized), stained moderately well, but less satisfactorily than the mordanted stain. Flagella were not made out, although there was frequently extremely fine tapering of the extremities.

No noticeable difference could be made out between the spirochaetes found in the urine of patients with trench fever and those found in the urethral smears of other individuals.

The smears from the periurethral region were more apt to contain a greater proportion of spirochaetes of the *refringens* type, while slender, closely-coiled spirochaetes were perhaps more apt to be predominant in the urethral smears.

It was soon evident that many different varieties exist. It is not proposed to make an exhaustive study of the different kinds, but merely to point out the limits of variation found, and to describe a few common varieties.

Length.—From $3\frac{1}{2}$ to 22μ . The most common length is $6\frac{1}{2}$ to 9μ , but 11μ is not uncommon.

Spirals.—Closely coiled, rather flat to moderately deep spirals are most common. The organisms may be moderately thick or extremely slender. The length of the spiral is $\frac{1}{2}$ to 1μ . Spirals also occur flatter and longer, averaging $1\frac{1}{2}$ to $3\frac{1}{2}\mu$, but occurring up to 4μ . A frequent type has a spiral of $\frac{3}{4}\mu$ in an organism $7\frac{1}{2}\mu$ long—that is, about 11 turns in $7\frac{1}{2}\mu$. In some cases the spirals were exceedingly close and fine, and almost impossible to count.

Ends.—Often taper, but may be blunt; often end in a hook, such as is described for the spirochaete of infectious jaundice.

Regularity of Spirals.—Very often the spirals are irregular. Flat or close coils may be present in the mid part, while deeper coils may be distinct near the ends. In portions, especially toward the middle, coils may be absent. There may be deep narrow, or deep wide spirals, or flat narrow and flat wide, intermingled in various ways in one organism.

Flexibility.—Almost all the organisms seen were evidently quite flexible, being seen in U or S or other contortions.

Capsule.—In a few, especially some very fine and closely coiled spirochaetes, there is a stain of substance by the carbol-fuchsin method, which lies about the organism in such a way as to simulate a capsule. It seems more probable, however, that it is an artefact.

In one film many different varieties are often present, including frequently organisms similar to the description of *Spirochaeta icterohaemorrhagiae*.

IV.—SUMMARY.

A series of 100 men without history or symptoms of relapsing fever showed intra-urethral spirochaetes in 33 per

cent. of the cases. If spirochaetes of the *refringens* type are included, the incidence rises to 44 per cent.

The spirochaetes occurred in about 1 in 2½ men sick of miscellaneous medical and surgical conditions, and in 1 in 5 of healthy men. This difference is probably to be ascribed to differences in hygiene, and to the variations in amount of flora of mucous surfaces familiar in other regions, in conditions of varying vigour.

The variety of organisms makes it improbable that the mere finding of spirochaetes in the urine can have any diagnostic value in relation to the relapsing fevers until definite morphological or other differences are established between the various normal and pathogenic varieties.

TABLE I.—Incidence of *Spirochaetes* in 50 Hospital Patients.

	In Urethra.	In Urethra or near Orifice.
	Per cent.	Per cent.
Spirochaetes (excluding <i>S. refringens</i>)...	46	52
Spirochaetes (including <i>S. refringens</i>)...	56	62
Spirochaetes (<i>refringens</i> type only) ...	6	10

TABLE II.—Incidence of *Spirochaetes* in 50 U.S.A. Men.

	In Urethra.	In Urethra or near Orifice.
	Per cent.	Per cent.
Spirochaetes (excluding <i>S. refringens</i>)...	20	24
Spirochaetes (including <i>S. refringens</i>)...	22	32
Spirochaetes (<i>refringens</i> type only) ...	2	6

TABLE III.—Incidence of *Spirochaetes* in the Whole Series of 100 Men.

	In Urethra.	In Urethra or near Orifice.
	Per cent.	Per cent.
Spirochaetes (excluding <i>S. refringens</i>)...	33	38
Spirochaetes (including <i>S. refringens</i>)...	44	48
Spirochaetes (<i>refringens</i> type only) ...	11	10

I wish to express my thanks to Lieut.-Colonel R. U. Patterson, M.C., U.S.A., for his aid in enabling me to get a complete series, and to Major R. I. Lee, M.O.R.C., U.S.A., for his suggestions.

SPIROCHAETES OCCURRING IN THE URINE OF CASES OF "PYREXIA OF UNKNOWN ORIGIN."

(Preliminary Note.)

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BEIT MEMORIAL RESEARCH FELLOW.

DURING the past few months I have examined the urine of cases of P.U.O. (pyrexia of unknown origin) for spirochaetes, using a modification of Renaux and Wilmaers's technique.¹ The results are so suggestive that I venture in this preliminary note to call attention to the necessity for a systematic examination of the urine in certain clinical types of P.U.O. which may ultimately turn out to have a common etiological origin.

Since in March, 1917, Garnier and Reilly² suggested that in certain cases of icterohaemorrhagic spirochaetosis the chief incidence of the disease may be upon the kidney, I have examined a number of cases of trench nephritis and found a spirochaete in a fairly large proportion. Further, in what I regard as a definite clinical type of P.U.O. (appendicular, or abdominal—described below), which is probably a mild form of icterohaemorrhagic spirochaetosis, I have found a spirochaete almost constantly present in the urine. Again, in the relapsing type of P.U.O. (trench fever) a spirochaete can frequently be found in the urine during and immediately after the exacerbations of temperature.

Methods.

The method I have been using is as follows:

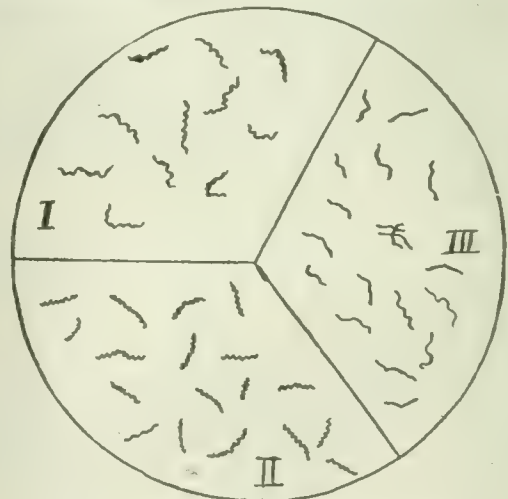
At first the specimens of urine were obtained in the ordinary way, and brought to the laboratory in clean

bottles; but later precautions were taken to try to avoid contamination of the samples. After drawing back the foreskin, the prepuce and meatus were swabbed with a 1 in 1,000 mercury perchloride solution; the patient then passed urine, and a sample towards the end of the act of micturition was caught in a large sterile test-tube. The urine was centrifuged and at first, after pouring off the supernatant fluid, the deposit was washed with sterile water and recentrifuged. Control experiments showed, however, that the spirochaetes seemed to be of comparatively low specific gravity, requiring, therefore, prolonged centrifuging (ten minutes at least, and the longer the spinning is kept up the greater the number found), and care not to remove the lowest layer of supernatant urine before recentrifuging. So it was easier, once one learnt the morphology of the organism, to pick it out in greater quantity even amongst a certain amount of debris, rather than to hunt for isolated spirochaetes on a comparatively clean slide; and the deposit was not washed.

Dark-ground illumination not being available, the following methods of dealing with the deposit were adopted:

1. Indian Ink.

Some of the deposit was mixed intimately with a drop of "Chin-Chin" liquid pearl ink (Watson) on a clean slide, and a film made by drawing along the slide a small piece of cigarette paper wetted in the drop. The film so made soon dried and could be examined directly with the oil-immersion lens. Spirochaetes, if numerous, showed up readily by this method, but the debris of the urinary deposit sometimes caused confusion and difficulty. This method, however, probably shows the spirochaetes in a more natural condition than when mordants and dyes are used.



- I. Spirochaetes of Type 1, abdominal P.U.O.
II. Type 2, relapsing P.U.O.
III. Spirillar form from urethra.

2. Tannic Acid and Carbol-Fuchsin (Renaux and A. Wilmaers).

Films are made of the deposit and fixed for ten minutes in absolute alcohol; then covered with 5 per cent. tannic acid solution and warmed till steaming; then well washed with distilled water, and, without drying, stained with carbol-fuchsin, steaming for half a minute, washed, dried, and examined. This is a very simple and rapid method, but does not give such a clear-cut picture as silver nitrate.

3. Tannic Acid and Silver Nitrate (Fontana).

The films are fixed with repeated washes of fixing fluid (acetic acid 1 c.cm., formalin 20 c.cm., aq. dest. 100 c.cm.), then washed well with distilled water; flooded with mordant (tannic acid 5 grams in 100 c.cm. carbolic acid solution 1 per cent.) and warmed for thirty seconds; then well washed with changes of warm distilled water, flooded with 1 per cent. silver nitrate, and warmed gently for half a minute, washed and mounted in balsam.

Spirochaetes.

The spirochaetes have the following characters:

They are about one to one and a half times the diameter of a red blood corpuscle, and are very thin, the ends tapering.

They show five to eight more or less regular turns, and may be straight, bowed, or lying in a semicircle.

The spirals are not so fine as in *Spirochaeta pallida*, nor so coarse as in the spirochaete of Obermeier.

The organisms are very resistant to staining, being uncoloured by Leishman, Romanowsky, or Giemsa's stains, and requiring a mordant method, but may be demonstrated by Indian ink methods.

They occur in the urine, often abundantly, during and immediately after the rise of temperature, but in the intervals may be so scarce as to be practically absent.

Like McNee³ and others, I have been unable to find any organism by direct examination of the blood of these patients, and I have not had an opportunity of determining *post mortem* at what part of the urinary tract the spirochaetes originate.

Results.

The following are the cases in which I have found spirochaetes in the urine:

Trench nephritis...	...	...	3 cases.
Pyelonephritis, with abscesses of lungs...	...	...	1 case.
Relapsing P.U.O....	...	...	15 cases.
Myalgia following P.U.O....	...	...	1 case.
N.Y.D. appendicitis...	...	...	5 cases.

Whether in these different cases we are dealing with the same spirochaete I am unable to state at present.

Clinical Aspect.

These observations suggest that we may be able to bring into line at least two clinical types of "P.U.O." (pyrexia of unknown origin).

1. A disease with acute onset with chills and vomiting, pain in the abdomen, usually more marked in the right upper quadrant, with continued fever for several days, often with enlargement of the spleen and herpes of the lips. The pulse-rate is not increased, and is usually slowed to 50 or 60 beats a minute in convalescence. There is a leucocytosis of 12,000 to 25,000 with relative increase in the large mononuclears. The cases, if an attempt is made at diagnosis, come to the base as "appendicitis," or "N.Y.D. abdominal"—the initials "N.Y.D." standing for "not yet diagnosed." I recognize that these are the cases which presented nothing but abnormal temperature, malaise, and slow pulse, and were evacuated to England. In three such cases last year I remember a note coming from Captain Stokes⁴ to the effect that the guinea-pigs into which the blood of the patients had been injected had died on the ninth or tenth day with signs of spirochaetosis. In his published cases he notes that the urines of the patients were examined with negative results. In these cases I now find spirochaetes almost constantly in the urine. French authors have suggested that cases of icterohaemorrhagic spirochaetosis may have almost their whole incidence upon the kidney, and so one finds spirochaetes in cases which cannot be distinguished from acute (trench) nephritis, except perhaps by the long continuance of much albumin and kidney debris in the urine.

2. The relapsing type of P.U.O. (trench fever) with the characteristic periodic rises of temperature, myalgic and periosteal pains, and leucocytosis with or without enlargement of the spleen, in which an improving technique has enabled me more and more frequently to find a spirochaete in the urine during and immediately after the exacerbations of temperature.

I wish to thank Lieut.-Colonel C. J. Martin, A.A.M.C., for his advice and interest in this work, which is being continued.

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A FEAST of flowers is held annually in various cities in Spain for the purpose of raising funds for the campaign against tuberculosis. This year the sum of £5,640 was collected in this way in Madrid.

ACCORDING to official statistics recently published, the birth and death rates in Sweden during 1916 were the lowest ever recorded for that country. The birth-rate was 21.14 and the death-rate 13.55 per 1,000.

THE late Privy Councillor Dr. Albert Neisser, Professor of Skin Diseases and Syphilis in the University of Breslau, left his estate, valued at nearly £80,000, to the city of Breslau. He directed that his villa with its collections should be maintained as a museum for contemporary works of art, and that the rooms should be used by the municipality for high class concerts.

ACUTE SYPHILITIC MENINGITIS.

BY

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THE invasion of the central nervous system by the organism and toxin of syphilis leads to pathological changes curiously diverse in their clinical manifestations. To take the cord only, they may range topographically from the lightning pains of a dorsal root ganglion infection, the ataxia of a dorsal column atrophy, the spastic paraplegia of a lateral sclerosis, to the pure amyotrophy of involvement of the ventral cornua. Again, from the standpoint of the time factor, they may include on the one hand an absolutely acute meningitis within a few weeks or months of infection, or on the other a chronic parenchymatous degeneration years, sometimes many years, after the original invasion.

The fact that the majority of syphilitic nervous affections are generally conceived of as running a semichronic if not actually chronic course may have thrown somewhat into the background the idea of a syphilitic infection of the meninges as acute, as abrupt, and as serious as that of any other toxic-infective condition. It is no doubt better recognized than formerly that meningeal irritation is of common occurrence in the secondary period of syphilis in the shape of rachialgia, paraesthesiae in the limbs, muscular tiredness and weakness, and increased activity of the cutaneous and deep reflexes, possibly also some slight irritability of the bladder. There may also, however, develop an actual acute meningitis, a clinical entity due appreciation of which is of prime importance from a therapeutic point of view. So well established may be the usual symptoms and signs of acute meningitis that its distinction from acute tuberculous or acute cerebro-spinal meningitis becomes a matter of considerable clinical and pathological interest.

Acute syphilitic meningitis may be regarded as appearing under three phases or at three periods in the course of syphilis.

1. It may occur as an acute exacerbation in cases of congenital syphilis.

2. It may develop during the secondary period, either with or very soon after the cutaneous exanthem, or even at a preroseolar stage.

3. It may be an episode in the tertiary stage, arising in the course of a chronic gummatous syphilis, long after infection, and sometimes when the lesions in the nervous system have appeared to be latent or quiescent.

In the first and third of these the meningeal syndrome occurs along with other symptoms or signs of syphilis, whereas in the second the clinician may be faced with the picture of an acute meningitis *per se*, and he must depend for his diagnosis on the history, or an examination of the cerebro-spinal fluid, or on certain variations in the clinical symptom-complex.

The purpose of this communication is to direct attention to the occurrence shortly after infection of this acute syphilitic meningitis by itself, as an acute fever, and to describe a striking instance which has come under our observation, in which differential diagnosis presented problems of some practical importance, and in which a complete cure resulted by means of intraspinal injections of mercurialized serum.

Hitherto most of the work that has been done on this subject we owe to the French school of neurology.

Boidin and Weill¹ have recorded the case of a youth aged 18 who developed a chancre in the middle of June; on July 15th he began to suffer from headache, and by August 5th an acute meningitis made its appearance, with headache, vomiting, rigidity of the neck, Kernig's sign, slight rise of temperature, and the attitude *en chien de fusil*. Only seven days later, on August 12th, did the roseolar eruption make its appearance. Recovery followed under treatment.

Laubry and Giroux² have published the case of a young woman of 24, with no history of syphilis, who suddenly developed violent headache, tinnitus, nausea and vomiting.

This was followed by contracture of the neck and trunk muscles, and diplopia. Kernig's sign was present. The spinal fluid on lumbar puncture showed a marked lymphocytosis, and under injections of mercury recovery ensued.

Ballet and Barbé's³ case was that of a female aged 21, who developed severe headaches, stiffness in the neck and mild delirium while the roseola was still present. Kernig's sign was obtained. In the spinal fluid was an enormous lymphocytosis. With three months' steady treatment improvement set in, but a subsequent relapse ended fatally. Generalized syphilitic meningitis was found at the *post-mortem* examination.

In a case recorded by Audry and Lavau⁴ the patient was a man of 25, in whom a chancre had appeared one month previously. There was a sudden onset of violent headache and vomiting, with neck rigidity and Kernig's sign. In the spinal fluid was a pronounced lymphocytosis. The symptoms subsided in a fortnight.

Achard and Desbouis's⁵ case concerned a female of 20, who two months previously had developed a vulvar chancre. This was only discovered subsequently, for the first symptoms were those of acute meningitis, diagnosed as tuberculous; lumbar puncture, however, and a more careful history, revealed the true nature of the condition, which rapidly improved under injections of mercury binioidide.

In a different group is the case reported by Jeanselme,⁶ where a female of 22, who had had syphilis three years previously, suddenly developed all the symptoms of acute meningitis, with violent headaches, delirium, generalized rigidity, strabismus, and the presence of Kernig's sign. The spinal fluid was remarkable for an enormous lymphocytosis. In spite of urgent antisymphilitic treatment, death followed.

Apart from such fulminant cases a large number have been reported where the symptoms of meningitis, though unmistakable, were not so severe or so widespread. Thus Ellis⁷ has published six cases of meningeal involvement from one to four months after the chancre. Similarly Lavau⁸ has reported nine cases of metachancral and pre-roseolar meningitis in syphilis, but in some at least of these the symptoms were less subjective than objective. As we are concerned only with such cases as are liable to be confused with fully-developed acute meningitis of other origin, these incomplete examples need not be further alluded to.

As instances of the unexpected appearance of acute meningitis in congenital syphilis there is the case observed by Ravaut and Darré,⁹ and in the course of chronic syphilis those of Claisse and Joltrain,¹⁰ Oettinger and Hamel,¹¹ de Caux,¹² and others.

It is perhaps too much to expect, with Bronstein,¹³ that the term acute syphilitic meningitis should be reserved for cases occurring during the secondaries, either before, during, or soon after the cutaneous eruption, but were this to be done it would bring the condition more into line with the more familiar varieties of acute meningitis.

The case that has come under our own observation is that of a patient in Fulham Military Hospital, and we desire here to record our indebtedness to Captain Carnegie Dickson, R.A.M.C., the pathologist to the hospital, for his examinations of the spinal fluid.

A. B., aged 24, was sent into Fulham Military Hospital on November 11th, 1916, by Captain Flack, bacteriologist to the London district, as a case of cerebro-spinal fever. He had complained of increasing headaches, pains in the neck, and nausea, and there was a history of syphilis some months previously. On the same afternoon Captain Flack made a lumbar puncture; clear fluid was withdrawn under pressure; films showed excess of lymphocytes and a few polymorphs, but no cocci.

On examination the next day the patient was found to be quite rational and the temperature was normal. He showed, however, all the typical symptoms of acute meningitis, intense headache, nausea, rigidity of the neck; Kernig's sign was present, and a *tache cérébrale*. It was noted that the pupils were small and unequal, but they reacted to light; the cutaneous reflexes were active, the deep neither increased nor diminished.

On the same day (November 12th) 90 c.cm. fluid was withdrawn under considerable pressure and 27 c.cm. antimeningococcal serum administered. Captain Dickson reported as follows: "A predominantly polymorphonuclear exudate with a moderate number of mononuclears, chiefly medium and small. . . . A very few degenerated 'granules,' probably cocci, but not definite. From the cytology, almost certainly cerebro-spinal meningitis."

For the next five days the patient was treated daily by lumbar puncture and antimeningococcal serum. Meanwhile it was

clear to one of us (A. C. E. G.), under whose care the patient was, that the clinical course of the case was different in several respects from the usual course of cerebro-spinal meningitis; in particular—

1. There was no pyrexia.
2. The mental condition was unusual. The cerebro-spinal fever patient is actively complaining or noisily delirious, whereas this patient was depressed and quiet.
3. The tongue was almost clean, whereas the mouth in the average cerebro-spinal fever case is characteristically foul.
4. There was no sphincter trouble and until later no vomiting.
5. There was little or no definite progress in either direction, whereas the average case of the other condition would have been getting much worse after a week or responding steadily to treatment.
6. The naked eye character of the cerebro-spinal fluid was unusual, as it was much clearer by the fourth day than could be expected except in a mild case of rapidly recovering cerebro-spinal fever.

Further, the cytology of the fluid had changed. On the fourth day it was reported that the mononuclears, chiefly small, greatly outnumbered the polymorphs; on the next day the two varieties were present in about equal numbers; at the end of the first week the lymphocytes were definitely in a considerable majority. A thick film stained for tubercle bacilli proved completely negative. No meningococci were discovered at any time.

In view of these important data the exact diagnosis was still not clear, and on November 18th one of us (S. A. K. W.) saw the patient in consultation.

On that date there was slight but definite papilloedema of both optic discs, the pupils were small and unequal, and their reaction to light was not brisk, the tendon reflexes were active, and the plantar response flexor. The other signs of acute meningitis remained as before. A diagnosis of acute syphilitic meningitis was then made, and a Wassermann test in the fluid was regarded as imperative. This was done the next day at Rochester Row, and to our surprise the result was reported as negative.

For the next ten days the patient's condition varied but little. He still complained of splitting headaches, was occasionally sick, and looked very ill. He lay in bed indifferent to his surroundings, was irresponsive, depressed, almost sullen, and only occasionally irritable when roused. The meningeal symptoms and signs remained as before.

In view of our increasing conviction of the syphilitic nature of the case, notwithstanding the negative Wassermann on November 19th, we determined to have the test repeated on December 1st, both in the blood and the fluid, which was done. Captain Carnegie Dickson reported a strongly positive Wassermann in both. Direct antisymphilitic treatment was at once commenced. On December 2nd 80 c.cm. of clear fluid were withdrawn by lumbar puncture, and 30 c.cm. of Mulford's mercurialized serum, containing the equivalent of $\frac{1}{10}$ gr. Hg, were injected intrathecally.

On the following day the patient was if anything more ill, was mildly delirious with an occasional meningeal cry; there was marked paresis of the left external rectus; ankle clonus and an extensor response were present on the right side. The right optic disc showed 5 D. of swelling, the left 4 D. Mercurial inunction was commenced in addition to the intrathecal method.

From that time, however, the case unmistakably began to change for the better. The mercurialized serum injections were continued at intervals of approximately a fortnight, and six in all were given, the last on February 16th, 1917. The Wassermann test in the fluid, and the cell and globulin tests were by that date completely negative. Corresponding to this improvement was a steady amelioration in the clinical symptoms. By the beginning of January practically the only signs in the nervous system were diplopia and slight paresis of the left external rectus, as already noted; the subjective symptoms had all but disappeared. By the beginning of February the optic discs showed no trace of the previous neuritis, while the diplopia and rectus paresis had vanished.

On February 22nd the mercurial inunction was stopped, and on March 5th the patient was discharged from hospital cured.

Before he left an accurate account of the onset of his symptoms was obtained from the patient himself, and this may be summarized in a few words. He contracted syphilis on or about August 10th, 1916, and though the signs were minimal, a Wassermann blood test was positive on August 15th. Some seven intravenous injections of kharisvan were administered, and a number of intramuscular injections of mercury, and by the end of September the Wassermann test in the blood was negative, and the patient felt perfectly well. At the end of October or beginning of November he noticed slight headache over the left eyebrow, which he associated with the strenuous clerical work he was then undertaking. In the course of one week this headache became persistent and severe. On November 8th a blood test was made, but we have not been able to trace the result. On November 10th the headache became unbearable, and that night he was kept awake by agonizing pains in the back of the neck, shooting up and into the left ear. On the 11th he was unable to get up; he felt very sick but did not vomit, and in the afternoon he was admitted to Fulham Military Hospital as above.

To summarize the salient features of this case: A previously healthy young man of 24 contracts syphilis and is

treated systematically without delay by accepted methods. The Wassermann reaction is positive in the blood; apparently no secondaries develop. In less than two months the reaction is negative, and the patient feels perfectly well. Almost exactly three months after infection he suddenly begins to suffer from severe headaches, and in the course of a few days develops the characteristic symptoms of acute meningitis. The case is diagnosed as cerebro-spinal meningitis, and is treated for a week with antimeningococcal serum in full doses. Doubts are cast on the diagnosis by the course the disease pursues and by the cytological findings in the fluid, as well as by a consideration of the history of the case. On the eighth day after admission syphilitic meningitis is diagnosed and the fluid subjected to the Wassermann test, which is, however, reported as negative. A fortnight later both in blood and fluid the Wassermann test is found to be strongly positive, and by energetic treatment with mercurialized serum and mercurial inunction the patient makes uninterrupted progress to complete recovery. He is discharged cured not quite four months after admission.

A case of this description presents several features of interest.

1. On clinical grounds a suspicion of the inaccuracy of the original diagnosis was not long in crossing our minds. There was not at any time any pyrexia; there was no vomiting till quite late in the course of the case; sphincter troubles were conspicuously absent; no rash was observed. Further, in the average case of cerebro-spinal fever the patient either sinks into coma with comparative rapidity, or becomes quickly cheerful as he improves; in other words, by the close of the first week there is usually adequate indication of the course the case is going to take. Yet in ours the patient remained for some weeks practically in the same state as on admission. He had neither restlessness nor delirium, except for a few hours at a late stage, and was perfectly rational throughout. Where cerebro-spinal meningitis becomes chronic the meningeal signs—retraction, rigidity, etc.—are as a rule very marked; emaciation is pronounced and incontinence of common occurrence. None of these phenomena was present in our case.

It may be regarded as certain, then, that the clinical aspect of the case was from the outset felt to be anomalous for cerebro-spinal meningitis.

There is a conflict of opinion as to the possibility of differentiating acute syphilitic meningitis clinically from other varieties. Desnos¹⁴ thinks it is not to be distinguished; Bronstein says the ordinary meningeal symptoms are less developed and less marked; little change in pulse or respiration occurs; the evolution is irregular, with exacerbations and remissions. De Coud holds that the symptoms are those of an ordinary diffuse meningitis, resembling tuberculous meningitis. We have already commented on the features of the case here recorded, which in our opinion separate it clinically both from cerebro-spinal and tuberculous meningitis; whether these are pathognomonic or not, whether they are exceptional in acute syphilitic meningitis or not, whether they were conceivably modified or not by the first week's treatment with antimeningococcal serum, we are not able to determine.

2. The findings in the fluid call next for remark. In none of the many examinations were cocci ever found; on the first occasion there was an unmistakable excess of lymphocytes, with a few "polymorphs." It has been shown that thereafter the fluid varied, becoming predominantly polymorphonuclear, and later again markedly mononuclear. In this connexion it is of interest to note that in Claisse and Joltrain's case the fluid was at first typically lymphocytic, after two intraspinal injections of colloidal mercury it became polymorphonuclear, and subsequently lymphocytic again. The question thus arises whether the injections of antimeningococcal serum exercised a modifying influence on the cytological content of the fluid, notwithstanding their non-specific action in this case. It is our opinion that the polymorphonuclear character of the exudate was due to the administration of antimeningococcal serum, as in our experience every case in which, owing to the suspicion of cerebro-spinal fever, this serum has been administered, has shown this polymorph reaction even when the suspicion has subsequently proved to be groundless.

The lymphocytosis is not of itself different from what is

found in the tuberculous variety. De Coud holds that in cases where the acute form of syphilitic meningitis occurs as an exacerbation from the chronic invasion of syphilis a lymphocytic finding may change to polymorphonuclear. Di Porto¹⁵ says the fibrin reticulum constantly found in tuberculous meningitis is not got in the acute syphilitic type, but we have no information on this point.

When the Wassermann test was first done in the fluid on November 19th, the result was negative; a fortnight later it was strongly positive. The sole comment we feel justified in making is that owing to unavoidable exigencies the examinations were made by different pathologists.

As far as treatment is concerned we desire to record the satisfactory results of the use of Mulford's mercurialized serum by the intraspinal route.

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THE TREATMENT OF WOUNDS INFECTED WITH *BACILLUS PYOCYANEUS*.

BY

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AND

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INFECTION of wounds by the *Bacillus pyocyaneus* is comparatively common. Sometimes the patients arrive with the wounds already infected; on the other hand, the infection often develops some time after admission. Infection may be from some previously infected wound, or it may arise from the use of infected instruments or apparatus, especially arm baths. There is also reason to suspect that some wounds are already infected with this bacillus, but owing to the presence of other organisms its growth is impeded and the characteristic appearances of the pus are not present until the local conditions of the wound become favourable for its free growth. The virulence of the organism appears to vary considerably.

Characters of an Infected Wound and Condition of Patient.

1. The suppuration is profuse, and it has a characteristic bluish-green colour which varies considerably in shade, and which stains the dressings and also very often the patient's skin.

2. There is a characteristic offensive, musty odour.

3. When this infection appears it tends to extend to other wounds in the same ward, although careful precautions are taken.

4. When it has once appeared in a wound it is very difficult to eradicate, and the healing of the wound is often greatly impeded.

5. There may be an intractable diarrhoea due to infection of the intestinal tract, presumably of septicaemic origin, and in one case recently *B. pyocyaneus* has been isolated from the blood.

6. As a result of the prolonged suppuration there may be considerable weakness and anaemia.

Owing to the above facts wounds infected with this organism have been in some hospitals isolated and treated in separate wards. The infection is not dangerous to life, and as a rule eventually the cases do well. Indeed it would appear in most cases that the wound must be granulating and showing signs of repair before the organism can grow sufficiently freely to produce the characteristic pus. Many cases in which routine bacteriological examination of pus shows *B. pyocyaneus* without clinical signs of infection have later quite suddenly discharged pus of characteristic colour and odour. Hence the infection frequently appears in wounds that are regarded

as doing well, but in which the local condition is favourable for the growth of the *B. pyocyaneus*.

Treatment of Wounds infected by Bacillus pyocyaneus.

In the autumn of 1915 cases of "blue pus" were isolated at the hospital in which we are serving, and in September there were between thirty and forty. Eusol had just been generally adopted as an antiseptic, and was used systematically in the form of baths, soaks, and for syringing in these patients. The results were disappointing; eusol appeared to have no more effect than hypertonic saline, carbolic, and other lotions previously employed.

In June, 1916, I was led to try hot eusol fomentations owing to some successful cases in which a very foul odour had been overcome in this way.

The first case on which this treatment was employed was a case of gunshot wound of the thigh and compound fracture of femur. This man, wounded June 5th, admitted June 9th, was doing very well when, on June 18th, marked and characteristic signs of infection by *B. pyocyaneus* appeared. With four-hourly eusol fomentations the colour and odour had completely gone in twenty-four hours, and the suppuration was very much less profuse. Eusol soaks were then substituted, with the result that on June 26th a faint coloration again appeared; twenty-four hours' treatment with hot eusol fomentations caused this to disappear, and it never recurred. No cultivation was taken before the eusol fomentations were started, but several were taken afterwards, and no *B. pyocyaneus* was ever found.

The second case was a patient admitted on June 3rd to the same ward with a perforating wound of the right shoulder fracturing the acromion and head of the humerus and opening the shoulder-joint. He also was doing very well when, on June 17th (suggesting infection from the preceding case), a marked and characteristic colour and odour of the pus suddenly appeared and a bacteriological examination showed a profuse growth of the bacillus. Here also with eusol fomentations the colour and odour completely disappeared in twenty-four hours and the discharge was much less profuse, but in spite of the absence of clinical signs cultivations still showed a slight growth of the bacillus. The fomentations were continued for a week when a return to eusol soaks led to a reappearance of the characteristic signs, so fomentations were resumed, with immediate disappearance of colour. The pus remained of a creamy colour until the man left hospital, but the organism, as shown by bacteriological investigation, was not completely eradicated.

Since these two cases every case of a wound infected by *B. pyocyaneus* has been promptly treated in this way without isolation. There were not altogether more than about twenty-five cases in the succeeding five months, and never more than two cases at the same time in any ward until recently, when in a small ward containing five wounded German prisoners four cases appeared practically simultaneously. Of these, when treated with eusol fomentations, two rapidly cleared up, one cleared up but recurred slightly on omitting the fomentations, while the fourth, a deep penetrating wound of the knee-joint, though very much improved still showed pus tinged with a slight blue-green colour.

The two cases first mentioned in some detail were both in a ward containing forty-two beds, at the time all occupied by wounded men, and no further cases appeared while they were in hospital. Hence it would seem that when the infection is promptly recognized and treated in this way the tendency to spread is very much diminished.

Clinical Conclusions.

The results of the treatment of these cases by hot eusol fomentations may be summed up as follows:

1. In many cases, especially in superficial wounds and where drainage is free, all clinical signs of infection by the *B. pyocyaneus* disappear within twenty-four hours or even less.
2. In a considerable number of cases a faint coloration of the pus persists for some time, often to such a slight extent that if the wound was not known to have been infected the presence of the organism would not be suspected.
3. In either of the above groups, if the colour should reappear after the fomentations have been omitted, they should be at once recommenced. In any case the fomentations should be continued for some days after all characteristic signs of *B. pyocyaneus* infection have disappeared.
4. Complete disappearance of the clinical signs and eradication of the bacillus is more likely in superficial and widely open wounds. A faint coloration of the pus is more

likely to persist in deep and sinus-like wounds, such as compound fractures; in these complete eradication of the bacillus will be more difficult or impossible.

5. It would certainly appear that the tendency of the infection to spread is very much diminished. This is the case even when a slight tinge of colour persists or when cultivation still shows the presence of the organism.

6. It is quite safe to treat these cases in an ordinary ward with other infected wounds provided that ordinary precautions, such as dressing these cases after other cases, are taken.

The question now arises as to whether the action of hot eusol is merely a bleaching action simply decolorizing the pus, or whether it really has any action in hindering the growth of, or actually destroying, the organism. That it has a bleaching action on the colour is certain, and is easily proved. It is only necessary to take a cultivation in the laboratory, and add a small quantity of eusol which has been heated nearly to boiling point. In a few seconds the colour, except in the deeper parts of the medium to which the eusol takes time to penetrate, completely disappears. Cold eusol does not have this effect. That it has some effect in destroying or diminishing its growth and virulence appears certain from the clinical facts noted above.

The treatment with hot eusol fomentations of wounds infected by *B. pyocyaneus* has a marked effect on the virulence of the organism in question. One point which has been noticed is the difficulty experienced in obtaining any pigmentation of the medium in a culture derived from a discharge of a wound which is receiving hot eusol treatment. Numerous subcultivations are necessary to restore the colour-forming properties of the organism, and one is not always successful in bringing back this characteristic feature of *B. pyocyaneus*.

Another point is that the actual growth of the organism itself is not so profuse after hot eusol treatment as it is after treatment with saline or other dressings, and also that after the former treatment one has sometimes noticed a certain tendency of the organism to die out on cultivation.

Summary of Bacteriological Results.

The results of a large number of bacteriological investigations may be summed up as follows:

1. In some cases the pus may have a bluish-green colour and an offensive odour, and yet no *B. pyocyaneus* can be found even after repeated cultivations. In these cases diphtheroid organisms are found, and it is possible that these are responsible for the colour and odour of the pus. On the other hand, it is very likely that the *B. pyocyaneus* is present but that its cultivation and recognition are prevented by the other organisms present. These cases clear up rapidly when treated with hot eusol fomentations.
2. In many cases the *B. pyocyaneus* has been found on bacteriological examination of a wound which shows no clinical signs whatever of the infection and in which its presence was unsuspected. On one occasion the pus from a wound of the foot had a bright orange colour; a cultivation was taken to ascertain the nature of the infection, and the result showed a profuse growth of *B. pyocyaneus*. This supports the view that many wounds may be infected, but that a certain stage of healing or other local condition may be necessary for the profuse growth of the organism and the production of the ordinary clinical signs.
3. If cultivations are taken from infected wounds while the treatment with hot eusol fomentations is in progress there is an evidence of decreased virulence, as shown by slower growth and by diminished and slower production of colour.
4. In some cases if cultivations are taken every two days the organism may entirely disappear. This is more likely to be the case in shallow and superficial wounds, and may occur in two or three days or after a slightly longer interval. In deep and sinus-like wounds a faint growth may persist for a very long time, and is usually associated with a faint greenish tinge in the pus. It may also persist in the entire absence of all clinical signs.
5. Complete eradication from deep wounds is difficult. A cultivation may be negative, and even though the treatment is continued and clinical signs absent, later cultivation may give a positive result.
6. Clinical and bacteriological evidence combined show that virulence of the organism varies considerably, and

that a cultivation may show its presence in the absence of clinical signs. Under these circumstances it is practically non-infective, and does not harm other patients or the wound. It is when the clinical signs are present that the pus is infective, and the organism is likely to spread to other patients and seriously to retard the process of healing.

Method.

1. As soon as a wound is suspected to be infected a specimen of the pus is sent to the pathological laboratory for examination. If the clinical signs are definite, treatment by hot eusol fomentations is commenced at once. In a doubtful case the result of the examination may be awaited.

2. The fomentations must be of sufficient thickness and size; they must be as hot as the patient can stand, and must be changed four-hourly. A 5 per cent. solution of eusol heated to boiling point is employed. The wringer should be of canvas or strong calico, since ordinary wringers of linen or flannel are rapidly destroyed.

3. When the wound is deep or sinus-like, or when a slight coloration persists, the wound may be syringed twice daily with eusol as hot as the patient can bear, or packs of eupad powder wrapped in gauze and moistened with hot eusol may be employed in addition to the fomentations. The latter is often very effective.

4. Frequently the odour and colour will completely disappear in twenty-four hours or less, but the fomentations should always be continued for at least three or four days after the disappearance of the clinical signs.

5. When the fomentations are omitted, eusol or saline soaks may be used; but if there is a return of colour and odour, treatment by fomentations must be resumed.

6. A bacteriological examination of the pus should be made every two or three days as a guide to treatment. Cases in which the clinical signs of the infection are absent but the organism is found on bacteriological examination are probably harmless, but it is wise in these cases to continue the eusol fomentations for a long period.

NOTES ON IONIC MEDICATION AND THE METHOD OF ADMINISTRATION.

By LEIGHTON KESTEVEN, M.R.C.S.ENG.,
SYDNEY, N.S.W.

LEWIS JONES, in the preface to his handy little book on ionic medication, laid it down that we need not greatly concern ourselves as to whether there is effective penetration of ions or not, but that the procedures he describes have been followed by results of value. From the incontestably satisfactory results obtained by ionization as compared with simple electrolysis, I think it is impossible to doubt that such penetration does take place.

My experience in the treatment of ear disease, for instance, has given me results that I could certainly have obtained by no other method. None of the authorities on middle and inner ear troubles make more than the most cursory mention of electricity as an aid in treatment, and ionization is barely suggested as feasible at all, yet I have found it of infinite value in arresting some of the gravest symptoms in these cases.

Resolution of inflammation, release of adhesions, and general bactericidal action are the things to be aimed at in dealing with the ear. Galvanism has done some good, but the great value of ionization lies in its sclerolytic effect. This can be secured by no perfunctory use, however, and I think the absence of satisfactory results contributed so far is somewhat due to the insufficiency of the technique employed. For instance, it is recommended to ionize the tympanum by the use of a probe tipped with cotton-wool soaked in the fluid to be employed. This is futile; the cotton-wool cannot hold enough from which to derive sufficient ions to be effective. The proper method is to lay the patient's head sideways on the table, and to fill the external meatus with the solution employed, then the current is passed through it, thus ensuring a constant supply of the required ions. A small probe insulated to its tip will carry the current into the solution.

Great relief may be obtained in all classes of middle-ear catarrh in this way by the use of a solution of zinc iodide (30 per cent.) with 3 to 4 milliamperes of current.

Zinc iodide is a colourless and stable compound made by boiling zinc and iodine together in water in the proper proportions. It is non-irritative, and soothing in action. Iodine being an anion and zinc a cation the current must occasionally be reversed to get the benefit of both the elements, removing the anode during reversal to avoid the shock. In acute cases the current may be kept on for five to ten minutes, in chronic for twenty.

The relief of pain in the acute cases is very marked after the current has run for a few minutes. In the more recent cases the relief comes speedily, perhaps half a dozen applications suffice; in those of long duration weeks, and even months, are called for, and it is not justifiable to cry off without prolonged trial in the most apparently hopeless cases. Tests with the forks may any day reveal some little amelioration encouraging one to persevere.

A man had been stone deaf for twenty years from labyrinthine trouble in one ear and middle-ear disease in the other, with fixation of the ossicles. I ionized the latter for nearly three months without a sign of improvement, occasionally inflating with compressed air at 20 lb. pressure. Just as he wanted to give up and I was beginning to despair, eighty-five days from the beginning of treatment, he told me he had heard the clock ticking, and on testing I found he had slight aerial audition with the C² fork. At the end of six months he could plainly hear loud conversation, and I sent him back to the bush, as that was the most that could be attained, but it made life worth living.

In the functional deafness caused often by nerve exhaustion, the result of mental trouble, ionization gives much relief, acting in some cases like magic. A man who has great business and family troubles comes to me periodically for an "ear pick-me-up," and goes away hearing and refreshed after two or three ionizations of zinc and iodine *plus* a little faradic.

Many mastoid cases, I am convinced, if taken at a reasonably early stage, can be arrested and operation avoided by ionization with an absorbefacient bactericide. Mercuric iodide (HgI₂·2KI) presents such a compound, and can be administered in 1 in 500 solution for periods of half an hour morning and evening with 5 milliamperes current.

A young woman came to me with all the usual symptoms of fairly advanced mastoiditis and I applied this treatment. The pain left her after the second application but returned in the night. That morning I kept her under for an hour and a half; all pain had then gone and she had no return of it during the progress of the case. The swelling and tenderness were very great when she came first, but subsided from the second day; the tinnitus disappeared on the first evening, and, though there was very marked sagging of the posterior wall she recovered entirely within three weeks. She would not allow me to puncture the tympanum. She has no impairment of hearing now, a year after the treatment, and transillumination through the meatus shows no dark area.

The current here, to my mind, clearly carried the ions direct into the mastoid. In purulent otorrhoea this germicidal action is manifested in the rapid diminution of the leucocytes and lymphocytes under ionization by zinc and iodine.

Ionization with a 2 per cent. solution of alum is useful in relaxation of the tympanum. I have used arsenic ions in two cases of tuberculous middle-ear trouble; in one instance without result, in the other with very marked benefit.

The aural vertigo so often indicative of labyrinthine loss of couple, is generally, but slowly, relieved by the mixed continuous ionization and mild faradic current. Labyrinthine tinnitus can also be greatly relieved and often removed by iodine ionization. The positive pad should be placed behind the mastoid, and the current (5 milliamperes) sustained for half an hour on alternate days for a week or so. If pain is at any time urgent immediate relief can be given by ionization with cocaine. Morphine will act similarly, but more slowly.

Goitre has been tackled with varying success by radium and x-ray therapy. It yields to ionization in a satisfactory manner, but the treatment is long and tedious.

In a girl of 17 with marked enlargement of both lobes of two years' standing, I got complete recovery after four months' application on alternate days. I used an aluminium anode 6 in. long, 1½ in. wide, curved to fit the neck, covered with four thicknesses of lint kept saturated with 5 per cent. solution of zinc iodide, with 15 milliamperes of current for an hour at a sitting.

In another case of many years' standing I have reduced the enlargement by half after twelve months' work, and, as it is slowly but steadily decreasing all the time, I hope to get it down entirely.

These are typical of a good many similar cases I have under observation, and are distinctly encouraging; goitre is a great disfigurement, and patients will gladly endure many things to get rid of it.

Following up my experience of the excellent results obtainable by the efficient application of ionic medication, and its potency in promoting the resolution of inflammation and the infiltrations and exudations resultant therefrom in ear troubles, it occurred to me that neoplastic growths offered a suitable field of research owing to the controlling power of the ions on benign tumours, such as adenomas.

In acute tonsillitis, using a curved aluminium probe insulated to within half an inch of its end, round which cotton-wool is wound and dipped frequently in 5 per cent. zinc iodide solution, I pass a 15 to 20 milliampère current through the tonsil for five to ten minutes. Relief from pain is speedy, and the tumefaction subsides so rapidly after the applications that the tonsil will be nearly its normal size within forty-eight hours after the first application. Two or three applications are, as a rule, enough. In chronic indurated cases longer treatment is called for, say eight or ten times on alternate days with a 10 per cent. solution. The negative current should be passed through the probe, as iodine is an anion, and a padded cathode placed at the back of the neck.

Enlargement of the turbinates can be reduced by the zinc iodide, but, owing to the more sensitive nature of the nasal membrane, only 2 per cent. solution should be used. About two or three minutes at a time is all that should be given, and a carbolic powder should be blown in afterwards to allay any smarting. By this method the knife and the cautery may often be avoided. The Eustachian tube can be ionized with a Eustachian catheter perforated at the sides for the last quarter-inch, and closed at the end. This is connected to a fine tube holding the ionizing fluid, with a fine wire in it to carry the requisite 3 milliampère current. It is best to use potassium iodide, as the zinc might do harm if swallowed. Five minutes at a time is ample, and will often relieve mid-ear tinnitus.

Enlarged prostate can be treated with success by this method, and I have described elsewhere a special electrode I devised for the purpose. This, particularly in old cases, is a tedious job, requiring great patience to induce the sufferers to persevere in treatment. The sensation is not very pleasant, and some local anodyne is occasionally called for; but the good results are, in my experience, indubitable. Symptoms which make life a misery are relieved without risk to life.

Either aluminium or copper wire an eighth of an inch thick can be used for the probe electrodes. An easy way of insulating them is to dip them into a saturated solution of celluloid in acetone. The points can then be scraped bare with the knife for the cotton-wool at the ends. The celluloid will not bear boiling, but can be sterilized with 30 per cent. carbolic solution.

A CASE OF ACHOLURIC JAUNDICE TREATED BY SPLENECTOMY.

By ROWLAND HILL, B.A., M.D., M.R.C.P.LOND.,

TEMPORARY SURGEON, R.N.,

ASSISTANT PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, AND
MEDICAL REGISTRAR, ROYAL VICTORIA HOSPITAL, BELFAST.

REPORTS of cases of acholuric jaundice treated by excision of the spleen are comparatively few in British medical literature, and this impels me to publish an account of a case so treated with much immediate and, I hope, permanent improvement in the patient's general condition.

Stoker L., aged 23, contracted dysentery (bacillary?) in Gallipoli in August, 1915; as the acute symptoms of this affection subsided he became slightly jaundiced. After some weeks of treatment in a naval hospital he returned to duty, the jaundice having entirely disappeared.

On August 6th, 1916, he was seized with pain in the right hypochondrium and in both loins; he was found to have marked jaundice; the temperature was 104° F. He was admitted to hospital the next day, being sent to the surgical wards as a case of "acute cholecystitis." He appeared to be in great pain, was sweating profusely, and his temperature was 101° F. There was distinct yellowing of the conjunctivae and a less marked yellowing of the skin; there was tenderness over the abdomen and in both loins, and distinct fullness of the upper

part of the abdomen; no rigidity of the abdominal muscles was present. He had retention of urine; a catheter specimen had specific gravity 1025, was alkaline, and contained a trace of albumin and a small amount of bile pigment, but no sugar. Nothing abnormal was found in any of the other organs, and the stools were normal in colour and consistency.

On August 8th well-marked haematuria commenced and continued until August 11th; no calculi could be detected in the kidneys or bladder by x rays.

Exploratory Laparotomy.

On August 11th, the haematuria, jaundice, and fever still being present and there being now a distinct tumour extending across the upper abdomen from the left hypochondrium, exploratory laparotomy was performed. On incising the tissues of the abdominal wall they were found to be bile-stained and oedematous, and on opening the abdomen the spleen was seen to be greatly enlarged, extending across the middle line, but no inflammatory lesion of the gall bladder, appendix, kidneys, or gastro-intestinal tract could be detected. The abdomen was immediately closed. The patient's general condition improved somewhat after the exploratory operation, the temperature fell, the blood and bile disappeared from the urine, and during the whole of the time he was subsequently under observation no abnormal constituent was found in the urine. There was still slight tingeing of the conjunctivae, and the patient became more and more anaemic. On August 17th he was transferred to my care, and a "fragility" test of the red blood cells was carried out, with the following result:

Saline Solution.	Patient's Cells.	Control Cells.
0.4 per cent. ...	Complete haemolysis	Complete haemolysis.
0.425 " ...	" "	Partial haemolysis.
0.45 " ...	" "	No haemolysis.
0.475 " ...	" "	" "
0.5 " ...	Partial haemolysis	" "
0.525 " ...	" "	" "
0.55 " ...	" "	" "
0.575 " ...	No haemolysis	" "

The serum was distinctly bile-stained. A blood count showed:

Red cells ...	3,090,000
White cells ...	5,200
Haemoglobin ...	45 per cent.
Colour index ...	0.75
Differential count:	
Polymorphs ...	58.4 per cent.
Small mononuclears ...	34.3
Large mononuclears ...	6.0
Basophiles ...	1.3

Three nucleated reds, some macrocytes and microcytes, some poikilocytosis, and some polychromatic staining found in the film.

At this date the spleen extended down to the level of the iliac crest in the left nipple line and across the mid-line of the abdomen. Subsequently the Wassermann test was found to be negative; there was no pathological agglutination of the enteric group of organisms, and no dysentery organisms were found in the urine or faeces.

The patient was treated for a month with iron, arsenic, cod-liver oil, etc., without any marked effect on the anaemia, and at the end of this period, slight jaundice of the conjunctivae being still present, I advised him to submit to splenectomy.

Splenectomy.

On September 30th Surgeon-General Sir Watson Cheyne removed the spleen, which weighed 22 oz. A microscopical section showed a general increase of the fibrous tissue, with atrophy of the Malpighian bodies and a marked free-iron reaction with potassium ferrocyanide.

The condition of the patient's blood improved at once after splenectomy, and by October 6th the haemoglobin content had risen to 55 per cent., and all trace of poikilocytosis had disappeared. Convalescence was slow but progressive, and the blood, examined again in January, 1917, revealed a normal picture except that the abnormal fragility of the red cells was still present.

In August, 1917, I heard from the patient that he has had no jaundice since operation, and is feeling quite fit.

The case appears to have been one of the acquired type of acholuric jaundice, as prior to the attack of dysentery there was nothing in his own or his family history to suggest that he was suffering from the familial type of acholuric jaundice.

In conclusion, I desire to express my thanks to Fleet Surgeon J. Chambers, R.N., for permitting me to record the case, and to Staff Surgeon S. F. Dudley, R.N., for much assistance in the clinical pathology of the case.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF CONGENITAL TRANSPOSITION OF THE HEART.

ROBERT Y., aged 17, was admitted to this ship suffering from phthisis. I found that there was no cardiac impulse at all on the left side, but the apex beat was felt in the fifth interspace under the right nipple; the impulse was of a diffuse nature; the sounds were very indistinctly heard to the left of the sternum. At the base the sounds were faint, whilst at the apex they were well heard; no murmur was detected in any area. Percussion showed the area of cardiac dullness to extend from the fifth right interspace to the sternum, but no dullness was made out to the left of the sternum. The upper limit of the heart was difficult to define on account of the pulmonary dullness in that region. The liver and spleen were in their normal positions.

From the above it seemed that the heart was the only organ transposed, and this was confirmed by x-ray examination. The plate was clear on the left side of the chest, but on the right side there was a shadow which merged with the liver shadow below, and which had a curve to the left resembling that thrown by the normal right side of the heart. The patient did not seem to have any inconvenience apart from some breathlessness on exertion, but this might partly be due to his lung condition.

It was thought at first that the heart had been drawn over to the right side by contraction of the lung due to the phthisis present, but further examination was against this. The chest wall was hardly retracted at all, while with such a complete drawing over of the heart one would have expected much less lung tissue to be present than was made out from the physical signs. One would also have anticipated the presence of some murmur due to twisting of the vessels, but no such murmur was detected.

The condition seemed to be congenital, and this opinion was strengthened by the patient's statement that a doctor had remarked about four or five years previously that his heart was in an unusual position. I think the case is worth recording in view of the rarity of transposition of the heart alone without any of the other viscera.

ROBERT AITKEN, M.D.,

H.M. Hospital Ship *Plassy*.

Temporary Surgeon R.N.

STERILIZATION AND PREPARATION OF CATGUT.

I CAN confidently recommend the following method as one producing a clean ligature or suture material, and an ideal result, as far as tensility and necessary durability are concerned, not to mention the comparative diminution of chemical impregnation, which has been a frequent and fertile source of irritation in the depth of aseptic wounds:

1. Raw catgut, free from fat, as supplied by surgical purveyors, is wound up in loose rolls and placed in a Mayo Robson's or Jellett's bomb, which is almost filled with a mixture of equal parts of rectified spirit and ether. The bomb is then placed in a kettle of hot water and boiled for half an hour for fine catgut, and for one hour for the larger sizes.

2. The catgut is then removed from the bomb by a sterilized forceps and placed in a glass bottle containing a solution of 90 per cent. absolute alcohol and 10 per cent. formalin (40 per cent. solution). The catgut is kept in this mixture for forty-eight hours.

3. It is next similarly taken out of the alcohol-formol mixture and immersed and washed for half an hour in a basin of pure ether.

4. Finally, it is placed in a bottle filled with equal parts of ether and alcohol, in which it is retained until required for use.

JOHN O'CONOR, M.A., M.D., T.C.D.,
Senior Medical Officer, British Hospital,
Buenos Aires.

TREATMENT OF SCABIES.

THE following is the method of treating scabies I have carried out for a good many years. It is quick, simple, cheap, and only one working day is lost.

The morning the patient is seen he is rubbed all over with sulphur ointment; 3 jss is plenty, made with vaseline

3 x, sulphur 3 ij. No bath before is necessary. He then puts on the same infected clothes, not to soil clean ones, wears the underclothing for twenty-four hours, and then has a hot bath with plenty of ordinary soap; when dry, he puts on all clean clothes and returns to his ordinary duties. Before getting into the bath he collects all his dirty clothes and things he has been using the last few days, including bedding, for disinfection. If no disinfectant is available they are put into an izal solution for twenty-four hours; he then washes and dries them.

Under this treatment I had not to send a patient to a hospital, never saw a case of sulphur dermatitis, nor the disease spread to messmates.

G. H. FOOT, M.D.,

Southampton.

Fleet Surgeon (retired).

TONSILLECTOMY.

IN an article in the BRITISH MEDICAL JOURNAL, August 11th, p. 184, the view is submitted as hardly assailable that surgeons who claim to be able to completely enucleate every tonsil with the guillotine are in error, and go to an unjustifiable extreme. The evidence in favour of this view is that other surgeons combine partial dissection with the use of a guillotine. I submit that the evidence in no way warrants the conclusion.

Without entering upon the question of the superiority of one method over another in results, it will be admitted that in hospital out-patient practice the saving of time, the choice of anaesthetic, and the safety of the patient in returning straight home, must lead to the use of the guillotine method. I contend that some surgeons find that after the experience of some thousands of cases they are able, with the guillotine, to deal with every case with which they are confronted, both in child and adult, and require to use no other method.

In my opinion enucleation of the tonsil by the guillotine, in the more difficult cases, requires more practice, and what might be called "knack," than perhaps any other surgical operation. I admit that the length of practice necessary for this complete proficiency with the guillotine would not be worth undertaking for its own sake while there is the method of dissection to fall back upon. But the hospital tonsil day comes round and round, and when this degree of proficiency has been arrived at all other methods appear superfluous—louger, and less safe.

I would suggest that, with few exceptions, the two camps of guillotine or dissection advocates correspond with those continually engaged in hospital out-patient tonsillectomies, and those freed of this duty.

Bristol.

H. BODKIN.

AN UNUSUAL CASE OF STRANGULATED HERNIA.

A MAN, aged 45, was admitted to Kingston Victoria Hospital on August 13th. He had noticed a small lump in his right groin for several months. Suddenly, under effort at lifting, it became large and hard, making him vomit and groan with pain. I found a tumour above Poupart's ligament extending up and out to the anterior superior spine, taut as a drum, and immobile. There was a dimple over the external ring where the intercolumar fibres constricted it. No attempt at taxis was made. The gut at operation was found coal-black but shining, and was returned.

The hernia was congenital, with a lateral sac between the two obliques, interstitial, intraparietal. The gut in the side sac was twisted as well as strangulated. The loop in the scrotum was much less tense and cyanosed; the neck of the sac was very narrow, and creaked like cartilage when snicked. More than a couple of feet of gut were involved. The case was puzzling at first. The man has made a good recovery.

Kingston-on-Thames.

J. E. S. BARNETT, F.R.C.S.

CONGENITAL ABSENCE OF ANTERIOR ABDOMINAL WALL.

THE following case may be of some interest to the readers of the JOURNAL.

On August 13th I was called to a confinement—Mrs. H., 10 para—being informed by the messenger that "there was something coming which was not the baby." On my

arrival I discovered fetal intestine presenting at the vulva. Abdominal palpation showed the child lying transversely with its head in the left iliac fossa. With the kind assistance of Dr. K. I. Shalaby, who administered the anaesthetic, internal version was performed and the child delivered. It proved to be a teratosomian, with complete absence of the anterior abdominal wall. The placenta was directly attached to the abdominal viscera.

This condition appears to be sufficiently rare to merit publication.

Lemington-on-Tyne.

H. C. COXON, M.D.

Rebichus.

WOUNDS OF THE LUNG IN WAR.

EARLY in the war it became clear from Sir John Rose Bradford and Dr. T. R. Elliott's observations that the lessons of the South African war enunciated by Sir G. Makins as to the prognosis and treatment of haemothorax might require considerable revision. The chest wounds in the Boer war were mainly due to bullet wounds and infection rarely followed unless the chest was tapped or opened, and therefore, generally speaking, the policy of non-intervention held the field. It still is true that closed bullet wounds of the chest seldom become infected, but in the present war large and open shell wounds of the chest play such an important part that wounds of the lung formerly regarded as benign now show a high mortality. Thus, in a recent monograph based on the experience of the French Medical Service, PIERRE DUVAL¹ points out that the total mortality of 3,453 cases of wounds of the lung has been 688, or 20 per cent.; the mortality diminishes as the distance from the fighting line increases, being estimated at 25 to 30 per cent. in the casualty clearing stations, at 18 to 20 per cent. in the motor ambulances, and at 10 to 12 per cent. in the base hospitals round Étapes. No less than 60 per cent. of the deaths occur within the first two days, and these are almost entirely due to haemorrhage and mechanical interference with respiration. The frequency of early death from haemorrhage has urgently raised the question of surgical interference, and while there seems to have been general agreement at the discussion at the Société de Chirurgie (1916-17) that such a course was logically correct, the authorities fell into two camps as to the desirability of its practical application: Hartmann led the supporters of the conservative standpoint, while Duval urges, in favour of opening the chest in order to stop the bleeding, a table of 34 cases of thoracotomy (17 from his own practice), with 67.7 per cent. of recoveries. The surgical technique is obviously an essential factor in deciding the question of operative treatment in wounds of the chest; in pre-war times the fear of pneumothorax dominated the position, and led to the employment of elaborate apparatus of German origin designed to maintain a low atmospheric pressure around the operation field, and to raise the intrapulmonary pressure. The object of these measures—namely, absence of pulmonary collapse—when attained, has the grave disadvantage that it interferes most materially with necessary examination, manipulation and treatment of the lung. Duval's experience has changed this point of view, and would revolutionize the treatment of lung wounds; the production of a slow and progressive pneumothorax is not specially dangerous, allows a complete examination of the lung, which can be brought out of the operation wound, and, unlike laparotomy, does not cause shock or a fall of arterial blood pressure. Further statistics of the results of the early treatment of haemorrhage due to wounds of the lungs by thoracotomy as advocated by Duval will therefore be awaited with great interest.

The sequels of wounds of the lungs, though a familiar subject, has been attractively dealt with by EMILE MALESPINE,² who analyses 294 cases seen at a base hospital

three months after the original injury, an interval which ensures that the results are uniformly remote. Empyema was, of course, the commonest and most important sequel, others being varying degrees of pleuritic adhesions, pulmonary fibrosis and emphysema. Secondary haemoptysis occurred spontaneously in cases with an intrapulmonary projectile, as a result of its extraction, and at the onset of an interlobar pleurisy. Although the clinical manifestations may suggest the presence of traumatic tuberculosis the available evidence is against this conclusion. Functional disturbances—pain, dyspnoea, and cough, in the order of their frequency—are common, most persistent after the closure of the wound, and extremely difficult to cure.

SYPHILIS AND THE ARMY.

We have already had occasion to notice a good many of the books issued in the French *Collection Horizon*, and in nearly all cases have been able to speak of them in high terms of praise. They are small books, and may be studied with special advantage by members of the Army Medical Service. The volume we are now noticing, on syphilis in the army,³ by Dr. THIBIERGE, is not inferior to any of its predecessors. With Matthew Arnold, we cannot but concede to our allies with admiration the gift of "sweetness and light" in what they write, even if, as in the present case, it be but a volume on war medicine. Dr. Thibierge writes with a simple clarity and a reasonableness that carry conviction.

If in form the French army practice with regard to the treatment and the regulations regarding syphilis differs from ours, on analysis it is seen that the methods of the two armies are to all intents and purposes the same. We in England would perhaps lay more stress than does Dr. Thibierge upon the value of the Wassermann test, yet while in discussing the frequency of syphilis in the general population before the war an English writer would almost certainly have called attention to the data afforded by the Wassermann test as to the frequency of the disease in the great cities of the empire, it has to be admitted that we cannot produce adequate figures to demonstrate that since the war the incidence of the disease has increased. With Dr. Thibierge we have to be content to state our belief that this is probably the case, basing that belief on the experience of the individual practitioner.

The author deals with his subject under the following heads: Frequency of syphilis in the army; origin of syphilitic contagion in the army; the national danger of syphilis; social consequences of the disease; symptoms and diagnosis (50 pp.); treatment, special conditions governing treatment in the army; mercurial treatment, arsenical treatment, combined arsenical and mercurial treatment, plan of treatment at different periods of this disease; technique of intravenous injection (in all 70 pp.); hygiene; prophylaxis, including instruction, supervision of cases after treatment; instruction of troops regarding venereal disease, personal precautions, establishment of local centres for the treatment of venereal disease affecting the civil population, and supervision of prostitutes.

NOTES ON BOOKS.

THE sixteenth edition of *Minor Surgery and Bandaging*,⁴ originally written fifty-six years ago by Christopher Heath, and afterwards kept up to date by Mr. Bilton Pollard, has now been prepared by Mr. MORRISTON DAVIES, whose name was associated with the last edition. The whole work has been revised, but, except for the final chapter on gunshot wounds, the general plan is unchanged. Without materially altering the scope and character of such a compendium it would not be feasible to deal in any general way with the great mass of knowledge which has been acquired since the war on the subject of military surgery. The chapter on wounds and their infections may, however, prove useful as a slight introduction to the subject for beginners. The character of the work as a whole is too well known to need description here. House-surgeons, dressers, and junior

¹ Les plaies de guerre du poulmon. Notes sur leur traitement chirurgical dans la zone des armées. By Pierre Duval, Médecin-chef de l'Ambulance Chirurgicale automobile No. 21. Paris: Masson et Cie. 1917. (Med. 8vo, pp. vi + 139; 14 figures, 5 plates. Fr. 8.)

² Les séquelles des plaies de guerre du poulmon. By E. Malespine. Thèse Lyon, 1917, p. 59.

³ Le Syphilis et l'Armée. Par G. Thibierge, Médecin de l'Hôpital St. Louis. Collection Horizon. Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie. 1917. (8vo, pp. 196. Fr. 4.)

⁴ Minor Surgery and Bandaging (Heath, Pollard) for the Use of House-Surgeons, Dressers, and Junior Practitioners. By H. Morriston Davies, M.D., M.C. Cantab., F.R.C.S. Sixteenth edition. London: J. and A. Churchill. 1917. (Cr. 8vo, pp. 486; 252 figures. 8s. 6d. net.)

practitioners, for whom it is intended, will find in it a large amount of technical information upon the various procedures which are comprehensively styled "minor surgery." The chapter on anaesthetics, contributed by Dr. Dudley Buxton and Dr. Felix Rood, in common with the rest of the book has been revised in the light of recent advances in technique.

The activity of the pathological department of the College of Physicians and Surgeons of Columbia University, New York, under the direction of Dr. W. G. MACCALLUM, is shown by a volume of *Studies*⁵ containing reprints of thirty-four papers representing work done during the collegiate years 1914-16, and published in 1915. It is not possible to give any detailed account of these publications, many of which are of great clinical and pathological interest. There is an excellent account of periarteritis nodosa by Dr. A. R. Lamb, and several papers of some importance by the Director of the department, to mention but two of the contributors to the volume, which may be recommended to the attention of all pathologists.

⁵ *Studies from the Department of Pathology of the College of Physicians and Surgeons, Columbia University, N.Y.* Vol. xv. 1916. Reprints. New York: College of Physicians and Surgeons. (Med. 8vo, pp. 476.)

WAR PENSIONS STATUTORY COMMITTEE.

THE report of the War Pensions Statutory Committee for the year 1916 has just been issued in Blue Book form. In point of fact the report covers the whole period during which the Committee carried out the functions assigned to it by the War Pensions Act of 1915. The Committee was constituted in November, 1915, and in consequence of the setting up of the Ministry of Pensions it finally relinquished its functions on August 31st of the present year. The Act establishing the Ministry of Pensions, which became law on December 22nd, 1916, provided that the powers and duties of the Statutory Committee should be exercised and performed under the control and in accordance with the instructions of the Minister, and that the Committee should render to the Minister advice and assistance when requested. At the conclusion of their task the Committee, while regretting that they have not themselves been able to complete the work they had begun on behalf of the disabled sailor and soldier, and the dependants of those who have fallen, express the belief that the experience gained both by themselves and the local committees set up by them will be of lasting service and will render the task of the Minister of Pensions much easier than would otherwise have been the case.

Medical Treatment of the Disabled.

The report contains, *inter alia*, an account of the work done by the Special Disablements Subcommittee. The conclusion was soon reached that the medical treatment of disabled men must as far as possible be carried out on national lines. Experience in this country and in France showed that after their discharge it was exceedingly difficult to make sure that the men could be collected for further treatment. It was accordingly resolved that men ought not to be discharged from the forces so long as they still required active medical treatment. The Committee, therefore, in pursuit of this policy, asked that the War Office should retain full responsibility until the men injured during service had been as far as possible restored to health. A conference, followed by a deputation, failed, however, to convince the War Office that this was the right solution of the problem, and the Committee were compelled to make other plans. Early in 1916 the Insurance Commissioners were approached, and a provisional agreement was come to for special treatment for discharged soldiers; but until the question as to the time of discharge was settled by the War Office no final arrangements could be made. In the meantime certain groups of disability were provided for. Thus the Insurance Commissioners undertook the domiciliary and institutional treatment of insured sailors and soldiers discharged suffering from tuberculosis, while the uninsured were provided for by the Local Government Boards for England, Scotland, and Ireland. The totally blind were treated in London at St. Dunstan's, and at an affiliated institution in Edinburgh. The provision of artificial limbs after amputation

was dealt with by the Roehampton Hospital and kindred smaller institutions, while paraplegic cases were taken at the Star and Garter Hospital at Richmond, established by the Red Cross Society. Upon the advice of the Board of Control certifiable mental cases were distributed among the existing public asylums, a small sum above the cost of maintenance being provided so that the men might not be placed on the pauper roll, but become a kind of private patient under the euphemism of "service patients." The disposal of neurasthenic cases naturally gave rise to much anxious thought on the part of the Committee, since it was open to question whether the grouping of such cases together in institutions might not aggravate the condition. Last autumn, however, at the instigation of the chairman of the special medical board for neurasthenic cases, an experimental institution was established in which such men could be placed side by side with crippled and maimed soldiers. The Red Cross Society provided the necessary capital, and the authorities of the Maida Vale Hospital for Nervous Diseases undertook the management of such a hospital at Golders Green.

Industrial Training.

In the paragraphs on training the principle is laid down that as far as possible some curative manual training should be attempted in connexion with the treatment of orthopaedic cases, a point often referred to in articles on this subject in the JOURNAL. The Committee urged on the War Office that they should allow this special form of instruction to take an industrial bias before the man's discharge, so that technical training could be continued afterwards. But looking to the varying circumstances of disabled men, the problem of their training was recognized as being one of great perplexity. It was hoped that many men would desire to be trained in agriculture, but so far this hope has not been realized in any marked degree. Owing to the great dearth of labour almost every discharged man has been able to get work without training, with the result that might have been expected by students of human nature. Thus we learn that, although the technical schools throughout the country have readily offered classes in various subjects, the experience of the local pensions committees has been that they can persuade only a very few men to avail themselves of the offer. This is not very satisfactory, and the local education authorities have been called in to assist in organizing the training of partially disabled men, in co-operation with the local pensions committees.

Employment for the Disabled.

Under the heading of employment the report states that it was considered undesirable to start employment bureaux specially for disabled men if the national system of employment exchanges could deal with them satisfactorily. The figures given suggest that they have been able to do this. There are more than 400 exchanges in the United Kingdom, and as they are in touch with employers in every district, and in every industry and occupation, they are in a position to give substantial assistance to disabled soldiers whose injuries are not so severe as to preclude them from normal industry. Large numbers of partially disabled men have already been absorbed into munitions work upon their discharge, and the Ministry of Munitions has appointed a training section for cases needing instruction before beginning work. While the war continues little difficulty is expected in finding employment for most disabled men who are reasonably efficient; but this state of affairs is not likely to outlast the war, since whatever the general condition of trade and industry, employers will probably be inclined to prefer able-bodied men for all processes which are usually carried out by male labour. The Statutory Committee and the Labour Ministry therefore laid their heads together, and proceeded to collect detailed information with regard to industrial processes in which men disabled in varying degrees could do as good work as able-bodied men. When this information has been gathered it is proposed to press the claims of disabled men upon employers who notify vacancies in which such men could render efficient service. In furtherance of this idea it is hoped that simple adaptations of machinery or methods may be devised which would enable certain classes of wounded men to be employed in tasks which would otherwise be closed to them.

British Medical Journal.

SATURDAY, SEPTEMBER 29TH, 1917.

THE SHORTAGE OF MEDICAL STUDENTS.

ACCORDING to memorandums¹ recently submitted by the Committee of Reference and by the Central Medical War Committee, there seems to be now more than ever grave reason to fear that the supply of newly-qualified medical men and women whose services will be available to satisfy the national needs during the next few years will not be adequate. This possibility was indicated, though not very emphatically, in a statistical table² issued last March by the President of the General Medical Council. Here it appeared that the total number of men and women likely to qualify as medical practitioners in Great Britain and Ireland during the year 1917 was about 1,250, less than 1,020 for the year 1918, and only 833 for the year 1919; the average number of medical men added to the *Medical Register* annually having been about 1,100 in the times before the war. An earlier announcement of this probable shortage was made at the end of last year³ by Sir Donald MacAlister in his presidential address to the General Medical Council. On that occasion he told how he had instituted a census of medical students in May, 1916, and as a result had called the attention of the military authorities to the shortage of medical students in their second and third years of study, suggesting certain steps to prevent any further depletion. The Army Council considered these suggestions, and issued orders permitting registered medical students, called to the ranks otherwise than as combatants for service abroad (men, that is to say, not classed fit for general service), to enrol in an officers' training corps and receive their military training under conditions not incompatible with professional study at home. Still earlier in the war, that is to say, in November, 1915,⁴ something had been done under Lord Derby's recruiting scheme to relieve the shortage of newly-qualified medical men that had long appeared to threaten even at that time. The publication by the statutory professional committees of the memorandums referred to above marks a moment opportune for the consideration of the whole matter.

How far have the measures hitherto adopted to counteract the imminent shortage of newly-qualified medical men been successful? To but a small extent, must be the answer. Before the war the average annual wastage of doctors was about 900. The most recent figures collected go to show that only about 900 men are due to qualify in the present year, 1917, and only about 900 more during 1918. The shortage of newly-qualified men will be at its zenith in 1919, when, according to the Central Medical War Committee, no more than 519 of our male medical students are due to qualify; the figure for 1920 is now said to stand at nearly 800, and that for 1921 at perhaps 700. It is apparent, then, from these figures that the actual shortage of first, second, and third year students,

as compared with normal times before the war, represents, numerically, a very serious reduction. The number of medical students who are likely to become qualified medical practitioners both this year and next year is only enough to make good the normal wastage among civil practitioners in times of peace, quite apart from the pressing demands of our armies in the field, and the heavy casualties among officers of the R.A.M.C. To appreciate this position it must be remembered that the supply of medical men for the needs of the civil population has now been reduced to the minimum consistent with safety, while practically all new additions to the ranks of the medical profession by the qualification of students are at once requisitioned by His Majesty's forces, and are not available to make good the normal average wastage of the doctors required by the civil population at home. Since there is now no longer any reserve of medical men who have retired from practice but are still able to return to work—for us to fall back on, and since there is a large abnormal wastage of qualified medical practitioners arising directly out of the war, the outlook for the future is even less satisfactory than appears from the figures quoted above. We say this without in any way depreciating the valuable services that will be rendered by the few hundreds of women medical students likely to qualify during the next few years. It must be recognized that, considered as medical practitioners, members of the two sexes are not yet generally interchangeable.

To what factors is the shortage of medical students to be attributed? Not, apparently, to any lack of young men anxious to enter the medical profession. As the memorandum of the Committee of Reference shows, early in 1916 there were 1,422 first-year men students, due in the ordinary way to qualify in the year 1921. But it now seems probable that not more than half these will become qualified in that year. The reason for this is threefold. Last February an Army Council Instruction was issued authorizing the calling up of medical students classified as B1; a number of first and second year medical students who had previously been rejected for military service or put in class C have been re-examined under the Military Exceptions Act, placed in higher categories, and called up; while first-year men as they reach the age of 18 have been called up. It is further to be remembered that a certain number of medical students who enlisted or took commissions before the Military Service Acts came into force are still serving as combatants, not all of them having been allowed to return to their medical studies. We would here draw particular attention to the hard case of the students whose patriotism led them to enlist early in the war and who are still serving. As has been feelingly expressed in our correspondence columns, the date of qualification of these young men is deferred thereby in proportion to their length of service; their fellow students who did not enlist enter on the race of life with a proportionately long start; while their parents, who must support them until they become qualified, are heavily handicapped.

What, then, are the measures that should be adopted to minimize the future evils that will surely result from the present shortage of medical students? These are clearly indicated by the Committee of Reference and the Central Medical War Committee, and strong representations have been forwarded by both bodies to the responsible authorities. The main steps advised are three in number. In the first place all medical students now serving in the army who have already passed their examinations in physiology and anatomy should be demobilized and returned to

¹ SUPPLEMENT, September 15th and 22nd, 1917, pp. 57 and 62.

² Ibid., March 3rd, 1917, p. 42.

³ Ibid., December 2nd, 1916, p. 149.

⁴ BRITISH MEDICAL JOURNAL, 1915, ii, p. 785.

the medical schools to complete their studies. In the second place, medical students now serving in the army who have not yet passed these examinations should be seconded to their medical schools for a reasonable period to enable them to pass them, and, if successful, should be demobilized to complete their professional education. In the third place, the calling up of bona fide medical students who have completed their first year of study should cease. Again, in the opinion of those well qualified to judge, senior medical students serving as surgeon probationers in the navy should be demobilized and returned to their medical studies after six months' service afloat.

The whole question is one of the greatest moment, for it is obvious that if we are face to face with a shortage of doctors at home and abroad now, as is notoriously the case, in the near future this shortage will become much more serious. And as the medical schools begin their new session next week, it is important that an early decision on the points indicated above should be reached by the authorities concerned.

URINARY SPIROCHAETOSIS.

THE present war, had it been remarkable for nothing else, would have gone down to history as a disease-begetter. The number of new diseases, real and imaginary, which have been born amidst the blood of the battlefield and the mud of the trenches is already great, and shows promise of being increased. Trench fever, trench feet, trench nephritis, all carry part of their etiology in their name. The committee appointed by the Royal College of Physicians, when it sanctioned the inclusion of the term "pyrexia of uncertain origin" in the nomenclature of diseases, could little have foreseen the gratitude felt by hard-pressed medical officers in the field towards the inventor of "the diagnosis P.U.O." For the demand of the official card indexer for a label of some sort is especially troublesome in connexion with that rather large class of febrile conditions which present neither a diagnostic temperature chart nor an unmistakable symptom complex. It may have been thought at first that this apparent failure to arrive at a concrete diagnosis was due to lack of skill or experience on the part of those who were engaging in unusual medical work under particularly unusual circumstances. The advent of the travelling field laboratory with its expert advice must have been most helpful in many of these cases of pyrexia of obscure origin, particularly in sorting out with greater precision the typhoid-dysentery group of diseases; but even here new conditions brought new difficulties in their train.

The pyrogenic bacteria having been accounted for to some extent, there was opportunity for the concentration of attention on those other recognized classes of fever-producing organisms, the pathogenic protozoa and their possible allies, the chlamydozoa. The malarias, the relapsing or recurrent fevers, and various others have been definitely associated with protozoal infection. Of most interest, perhaps, is that somewhat indefinite group of recurrent fevers with which in several instances spirochaetal or spirillar forms have been identified and which are for the most part insect-borne or tick-borne infections.

The more or less recent work on haemorrhagic jaundice has demonstrated the intimate relationship of that disease to spirochaetal infection, a fact which is referred to by Lieutenant Stoddard and by Major Patterson in communications published elsewhere in this issue of the JOURNAL. Moreover, it has brought

to light the interesting fact that in such diseases the kidney is a chief site of infection, and that in consequence evidence of infection may be confidently looked for in the urine. It is impossible at present to estimate the importance of this far-reaching observation, but it seems clear that we now have at our command a diagnostic method of the greatest utility which must in effect become a fairly trustworthy means of assorting a hitherto heterogeneous group of pyrexial diseases. Apart from the satisfaction which clinical pathologists must feel in the possession of a new and, by this time, approved instrument of diagnosis, there is a much more important gain to our general pathological knowledge. It may well be said that etiology is the only true and permanent foundation of all medical knowledge and practice. Empiricism and symptomatology will doubtless serve many men for everyday work, but the true basis of scientific medicine and practice is a full comprehension of the actual factors at work in the causation of disease, and not the least important of these factors is the causal agent, primary or secondary, as the case may be.

All urinary spirochaetes, however, are not necessarily pathogenic. This troublesome fact will doubtless be received by pathologists with their usual calm resignation, and will only incite them to further effort directed towards the absolute identification and specification of the pathogenic varieties or the pathogenic phases. There exists little doubt, there is in fact some considerable evidence, that spirochaetes and allied forms have a definite life-history marked by more or less characteristic morphological changes. It is many years now since the researches of the Egyptian workers, Balfour, Dutton, Todd, and others, brought to light the important discovery of "granule shedding" in the spirochaetes. The almost contemporaneous work of Leishman demonstrated the remarkable fact that in the intermediate host—for example, the tick, *Ornithodoros moubata*—infection was continued from one generation to another by spirochaetal granules deposited and enclosed within the eggs of the tick.

It may thus be gathered that the mere discovery and demonstration of spirochaetes in the urine of pyrexial cases does not necessarily carry us any great length in our efforts to combat the incidence of "pyrexia of uncertain origin." Nevertheless, we have some justification in surmising from analogy that the infection is insect-borne or tick-borne. Such a surmise, however, does not necessarily limit us; it merely indicates a profitable direction for further inquiry. We are glad to welcome these researches along a line of unusual technical difficulty, and it is some satisfaction to realize that even in our intense desire to "get on with the war" the importance of such investigations as an efficient means towards that end is not being lost sight of.

MOSQUITOS AND FLIES IN THE EPIDEMIOLOGY OF ACUTE POLIOMYELITIS.

THE transmission of disease by insects has been so brilliantly shown in malaria, yellow fever, trypanosomiasis, and other tropical fevers that there is some danger that its instrumentality may be assumed in other instances without exact proof. Thus flies and mosquitos have often been suspected to be responsible for the spread of acute poliomyelitis, and there is some circumstantial evidence in favour of this view—namely, the sudden disappearance of the disease with the onset of cold weather and the usual incidence of the disease in one only of several members

of a family. Rosenau and Brues, indeed, by allowing many thousands of stable flies to feed first on an infected monkey and immediately afterwards on a normal monkey, succeeded in transmitting poliomyelitis, and Anderson and Frost first confirmed and later contradicted this. Such transmission is, it appears, mechanical only, and not in the sense of an intermediate host. Noguchi and Kudo¹ have recently carried out an experimental research to determine if the mosquito *Culex pipiens*, the common house-fly, and the blue-bottle can take up the poliomyelitic virus and make it increase within their bodies. Young growing larvae of *Culex pipiens* were fed on active poliomyelitic virus and subsequently the adult mosquitos were allowed to bite a normal *Macacus* monkey. In another series of experiments female mosquitos well engorged with blood from an infected monkey were, after an interval of one to three weeks, allowed to feed on a normal monkey. Both these series of experiments were negative. Non-biting flies may, of course, mechanically convey the poliomyelitic virus just as they carry about pathogenic bacteria, but so far no experiments have been made to decide if the poliomyelitic virus can enter the fly larvae when the latter are fed on poliomyelitic material, and, if so, if it can multiply in the body cavity of the larvae. This is important, for if it occurred, flies by regurgitating and excreting food about persons or their articles of diet might spread the disease. To test this point, the larvae of house and blue-bottle flies were fed on the brain tissue of an infected monkey, and later the pupae and imagines of these larvae were made into an emulsion which was filtered and injected into the brain of a monkey without any result. These experiments, therefore, do not lend any support to the view that the disease is spread by mosquitos or non-biting flies, and Flexner's hypothesis of direct contact from one individual to another still holds the field.

DISEASES OF ANIMALS.

In his report for 1916 to the Board of Agriculture and Fisheries² Sir Stewart Stockman, the chief veterinary officer and director of veterinary research, briefly reviews the prevalence of the more important animal diseases. Owing to the exigencies of war time the scope of these reports has been narrowed to embrace little more than is needed to preserve the continuity of the series. The only exception is in the case of swine fever, which, by reason of the special nature of the work carried out, is dealt with at some length. The number of suspected outbreaks during the year was over 16,000, and of these 4,331 were confirmed by combined inquiry in the field and in the laboratory. Serum treatment for this disease was introduced in September, 1915, and was applied on a large scale and upon an organized plan throughout the following twelve months. It was combined with quarantine restrictions on infected premises throughout the whole country. During this period the serum treatment was applied in 2,100 outbreaks involving 77,900 pigs. Among these the death-rate was 34.6 per cent. During the same period 38,229 pigs were involved in outbreaks on premises upon which serum treatment was not adopted, with a death-rate of 52 per cent. In the former group the number of animals freed at the end of the outbreak amounted to 38.6, in the latter group to 14.8 per cent. These figures support the claim that serum treatment saves pig life on infected premises. Serum treatment is preventive and not curative; therefore successful results largely depend upon getting in touch with outbreaks before infection is spread far afield; it is practically valueless for pigs in the grip of infection before treatment. On the whole, the results of prophylactic serum treatment are certainly encouraging. Glanders was less prevalent during the year than in 1915, and there were less than half the number of outbreaks

which occurred in 1914. The position in London is said to be most encouraging, and calls for a special effort by local authorities to eradicate the disease finally. With regard to anthrax, the practice of attempting to save the carcasses of animals by bleeding them at the point of death, or immediately after death, and dressing them, is very severely condemned. The endeavour to save the carcasses in this way led to six human beings, who handled them, becoming infected.

A LEGEND OF SALERNO.

At the present time, when the world is at war and most things are in the melting-pot, there is little inclination and less leisure to devote to the ancient history of medicine, and yet it is a relief to turn for a short time to articles, such as Dr. Charles Singer's "A Legend of Salerno: How Constantine the African brought the Art of Medicine to the Christians,"¹ which carry the reader into the shadows of the past. The only certain facts about Constantine are that he died about 1087 and that shortly after works emanating from the school of Salerno were already borrowing from writings attributed to him, but which were for the most part poor translations from the Arabic of Isaac Judaeus (A.D. 932). Practically the only account of his life is from a very unreliable source, Peter the Deacon (1107-1140), and is to the effect that, leaving Carthage, where he was born, he spent thirty-nine years in absorbing the learning of Babylon, India, Ethiopia, and Egypt, and then returned to his native town only to find that his reputation for Gentile learning endangered his life. He therefore escaped to Salerno, and after lying hidden as a beggar for a time was recognized by the brother of the King of Babylon, honourably received by the Duke Robert, and passed to the monastery of Monte Cassino, where he became a monk and the translator of a perfect multitude of foreign works. This history is probably not much more credible than the following legend, reminiscent of the Arabian Nights, which Dr. Singer has extracted from a manuscript of 122 closely written folios, numbered Sloane 2426, in the British Museum, and dealing with anatomy, the story being interpolated in reference to the authoritative work of Avenzoar of Cordova. Among the 1,400 physicians of Cordova Avenzoar was the chief, and on being summoned by Abmansor the King when taken ill far from home, sent his favourite pupils Constantine and Ali in his place. After curing the King of a quartan fever and incidentally giving an overdose of opium, Constantine got tired of his office and, without telling his colleague, slipped off by sea, but was held as a prisoner by the sailors and sold as a slave in Salerno; here he approached the Prince, saying, "If thou wilt free me from the misery of this skin-dressing trade, I will free thee from thy sickness." The Prince, not believing him to be a physician, made him perform first on a sick prisoner. "And it was so; first the prisoner and then the Prince was cured, and cured, mind you, by God's own grace, who willed to bring us this art through the agency of Constantine."

TETHELIN FOR DRESSING WOUNDS.

THE experience of war surgery shows that in countless cases of gunshot wounds some drug that would lead to rapid repair by encouraging the growth of granulation tissue would be of the highest practical value. So often one has seen these wounds under treatment pass into an indifferent stage in which repair and cicatrization hang fire, and no progress is made for weeks or months together. Diet and environment may be altered and the changes rung on the surgical dressings applied, but the granulation tissues remain unresponsive, otiose, and the open wound fails to close. Have we any drugs to stimulate granulation tissue? Scores, if one may believe their discoverers or patentees, but experience is apt to answer—None.

¹ Hideyo Noguchi and Rokusaburo Kudo, *Journ. Exper. Med.*, Baltimore, 1917, xxvi, 49-57.

² H.M. Stationery Office. 1917. Price 2d.

¹ C. Singer, *Johns Hopkins Hosp. Bull.*, Baltimore, 1917, xxviii, 64-69.

For this reason it is of great interest to read¹ that tethelin, a substance extracted from the anterior lobe of the pituitary body, has a remarkable influence in accelerating the growth not only of the Flexner-Jobling transplantable carcinoma of rats but also of the granulation tissue in superficial wounds in mice. Tethelin is described as a hygroscopic and unstable substance, soluble in water and in alcohol, ether, and carbon tetrachloride. Its chemical composition is obscure, but it breaks down on hydrolysis, yielding unsaturated fatty acid soaps and inositol, and it is said to contain an imine-azoyl group. Administered by the mouth to young mice it retards growth, but accelerates growth in the adult animals and makes their coats silky. It accelerates, too, the regaining of weight in mice that have been starved for twenty-four hours; the subcutaneous injection of tethelin was found to exert a stimulating influence on the processes of tissue repair for at least thirty-six hours. Dr. Robertson also found that it greatly accelerated the repair of the wounds caused by punching out (under ether anaesthesia) discs of skin from the sides or flanks of mice. In the animals treated with tethelin the wounds were contracted and filled with white cicatricial tissue at the end of six days, at a time when in the control animals the wounds were still filled with granulations, and had only begun to contract. It is argued that these hypodermic injections exerted a remarkably stimulating effect on the repair and replacement of lost tissue in these experiments. What is true of mice may well be true of men, and we understand that tethelin is now being given a trial as a local and as an internal application in the treatment of men with callous wounds in this country. We wish it all success; the pharmacopoeia certainly stands in great need of a drug possessing the powers ascribed to tethelin. It may be added that the name "tethelin" is derived from the Greek word *τεθλῶς*, a perfect participle used by Homer in a present sense, and meaning "growing" or "luxuriant."

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.²

THE present part, a double one, of the *New (or Oxford) English Dictionary* contains a large number of medical terms or of terms which may be used in a medical sense. Extending, as it does, from *Verificatory* to *Visor*, it includes all the words derived from *vermis* (a worm), such as *vermicide*, *vermicular*, *vermiform*, *vermifuge*, *verminate*, *vermiparous*, etc.; all those coming from *verruca*, from *vertebra*, from *vesica*, from *vesicle*, from *villus*, from *virus*, and from *viscera*, as well as a number of single words of considerable interest, such as *vertigo*, *vesania*, *verumontanum*, *vestibulitis*, *vestibulotomy*, *vestigial*, *viable*, *vibex*, *vibrio*, *vicitiation*, *vidian*, *violuric*, *viripotent*, etc. It would be absurd to expect the *Dictionary* to give all the multitude of proprietary medicines; but since *veronal*, the hypnotic, is named and illustrated, it would have made the reference complete if *barbitone*, the official drug corresponding to it, had been introduced into one of the quotations. It is, however, a high compliment to the accuracy and compendiousness of the *Dictionary* that one has to search for criticism in so comparatively slight an omission. *Verruga* is one of the relatively few terms which have come into English via Spanish; it is a febrile disease endemic in Peru (hence also called Peruvian wart), and characterized by warty eruptions or tumours of the skin; its first use in English dates from 1883 (in Fagge's *Medicine*). *Verruga* is of course, simply the

Spanish form of the Latin *verruca*, a wart. *Verniz* (varnish) is classified as "obsolete, rare"; but surely *vernix caseosa* is frequent in midwifery textbooks, if not elsewhere. The editor is wise in defining *viable* and *viability* in general terms, for in the present fluid condition of medical and perhaps also of legal opinion he would have found it difficult to state any exact number of weeks or days for its establishment, electrical incubators, and other devices constantly tending to throw the date of viability backward towards conception. It is an interesting fact that there are two "viables," the one which has just been referred to, from the French *vie*, life, and the other meaning traversable, from the Latin *via*, a way. As has often been pointed out in connexion with earlier parts of the *Dictionary*, the medical meanings of ordinary, non-medical words are always extremely well done and fully illustrated. This is clearly shown by a reference to such terms as *vernal*, *version*, *vessel*, *veterate*, *vicarious*, *vicious*, *vigil*, *violation*, and *virtue*. *Vex*, one had almost forgotten, used to mean to afflict physically, to affect with pain or suffering; it is now so employed only in poetry. Probably few know that *visit* has or had three medical meanings: the first is the ordinary one—a professional call made by a doctor on a patient; the second is rare—the surgical examination of a wound; and the third is obsolete—an occurrence of menstruation. The verb has yet another meaning—namely, to be visited by a disease or sickness. "When a house hath the plague, we use to say, Such a house is visited" is a quotation of the year 1645 (Caryl).

RICHARD WISEMAN AS A NAVAL SURGEON.

RICHARD WISEMAN, sergeant surgeon to Charles II and author of treatises that can still be read with pleasure for their racy English and the strong common sense of their teaching, served as an army doctor in the Civil War, but he began his career as a naval surgeon, and Longmore¹ thinks it probable that his apprenticeship began at sea. He does not seem to have served in British ships, but was first in the Dutch and much later in the Spanish navy. Wiseman's first publication, dated 1672, was written especially for the "Sea Chirurgeons who seldom trouble their cabbins with many books." He mentions that his knowledge and experience as an English "artist in chirurgy" had been gained by practice on board ship no less than on shore. Wiseman was a conservative surgeon and condemned indiscriminate amputation: "Amongst the Cruisers in private Fregats from *Dunkirk* it was complained, that their Chirurgeons were too active in amputating those fractured Members. As in truth there are such silly Brothers, who will brag of the many they have dismembred, and think that way to lie themselves into credit. But they that truly understand Amputation and their Trade, well know how villanous a thing it is to glory in such a work." Elsewhere he says: "Consider well the Member, and if you have no probable hope of Sanation, cut it off quickly, while the Souldier is heated and in mettle. But if there be hopes of Cure, proceed rationally to a right and methodical Healing of such Wounds; it being more for your Credit to save one Member than to cut off many." He did not hesitate to amputate when there was no hope of saving the wounded limb, but he insists that the operation "must be done in its proper time, that is to say, suddenly upon the receipt of the Wound, before the Patient's Spirits be overheated either with Pain, Fever, &c." He mentions that "in the Armado Naval of *Dunkirk*" the surgeons "after every Fight went together visiting one another's wounded men." Wiseman always tells frankly of his failures, and he confesses that once regard for his own safety led him to abandon a man who in the heat of fight was put down into the hold with a badly shattered arm. "I ought," says Wiseman, "to have cut off this man's arm presently; but a sudden cry that our ship was

¹ T. B. Robertson and T. C. Burnett, *Journ. Experim. Med.*, New York, 1916, xxiii, 631; T. B. Robertson, *Journ. Amer. Med. Assoc.*, Chicago, 1916, lxi, 1009.

² *New English Dictionary on Historical Principles*. Edited by Sir James A. H. Murray, Henry Bradley, W. A. Craigie, and C. T. Onions. Vol. X. *Verificatory-Visor*. By W. A. Craigie, M.A., LL.D. July, 1917. Oxford: At the Clarendon Press; London, Edinburgh, New York, Toronto, Melbourne, and Bombay. Oxford University Press: Humphrey Milford. Price 5s. net (1.25 dols.).

¹ Richard Wiseman. London, 1891.

on fire put me in such disorder that I rather thought of saving myself than dressing my patients. I hastily clapped a dressing upon the wound and rolled it up, leaving his arm in his other hand to support it, and endeavoured to get up out of the hold as others did, verily believing I should never dress him or any of them more." The fire, however, was got under, and when the fight was over and they had got into the next port, Wiseman was able to treat the man successfully. He adds, with a little touch of malice: "When it came to my turn to be visited by my Brother Chirurgeons of our Squadron, they did not dislike the Wound, nor my way of dressing; but they laugh at the excuse I made for not cutting off his arm, and doubted I should yet be forced to do it." The patient, however, eventually recovered without the loss of his arm. Wiseman speaks of his service with the Dutch as having been of long duration, and of his having been in many engagements, but he gives no dates. He served about three years in the Spanish navy, probably between 1656 and 1660. Whilst Wiseman served among the Dunkirkers, "where *Snick and Snee* was as it were a fashion," he had much experience of wounds of the face. The following incident may be quoted as an example of the dramatic way in which he tells a story. Whilst his ship was riding at anchor in the Groine, some Hollanders from Hamburg came in with three ships for the King of Spain. The men were drinking together on shore when one of the Hollanders, a boatswain, "began to prate of religion, and upbraided one of the Dunkirkers for wearing a cross. In a little while, growing more heated from the effects of his potations, he became quarrelsome. After frequent repetition, with curses, that 'he would not wear a Cross, no, the Devill take him,' one of our men beat him down, and fell with him, then, kneeling upon his breast, and holding his Head down, he drew out a knife sticking in his Sash and cut him from the ear down towards the Mouth, then from under the Eye from that Check-bone to the nether Jaw. 'Now,' said he, '*you shall wear a Cross, that the Devill do not carry you away.*'" Wiseman was a man of somewhat poor physique, with a tendency to pulmonary trouble, of which he finally died. One of his case records mentions that the patient whom he had "lately dismembered" ran away on an alarm that the fort was taken, and that, doubtless owing to shortness of breath, he was unable to keep up with the fugitive. He was liable to attacks of haemoptysis from the time he returned to London after his service in the Spanish navy. It is to the breakdown in his health in his latter years that we owe Wiseman's great work *The Chirurgical Treatises*. He died on August 29th, 1676; the date of his birth is uncertain, but it was probably between 1620 and 1623.

PROTECTIVE INOCULATION AGAINST BACILLUS WELCHII.

FROM an investigation conducted on five strains of *Bacillus welchii*, four of which were obtained from the Western front in France, Bull and Pritchett¹ have arrived at a conception of the pathogenic action of the organism totally different from any previous view. It is true that in the past the general symptoms were ascribed to an intoxication, but this was regarded as due either to decomposition products of the infected tissues or to ordinary endotoxin absorption. K. Taylor explained the locally destructive effects of the bacilli as the mechanical result of the gas, which by pressure on the blood vessels sets up necrosis; and Sir A. E. Wright believes that acidosis occurs and by diminishing antitrypsin leads to tryptic digestion of the proteins, thus providing a highly suitable medium for bacterial growth which becomes explosive and is followed by acidæmia. Bull and Pritchett show that the infective

processes induced in rabbits, guinea-pigs, and pigeons are local, and that few bacilli enter the general circulation during life or immediately after death; and that the general symptoms are due to an exotoxin which is a complex of a haemolysin and another poison acting locally on the tissues and blood vessels, thus causing oedema and necrosis, and probably exerting a general toxic effect in addition. Thus the filtrate of a culture, if injected intravenously, causes rapid death from massive destruction of the red blood corpuscles, acid intoxication and agglutinative bacterial emboli being excluded as lethal factors. Successive injection of carefully graded doses of this toxic filtrate into pigeons and rabbits gives rise to active immunity, and the blood from the immunized rabbits neutralizes the toxic filtrate both *in vitro* and *in vivo*, and is further both protective and curative against infection with the spore and the vegetative stages of *Bacillus welchii* in pigeons.

THE MEDICAL SOCIETY OF LONDON.

THIS society has issued an attractive programme for the coming winter session. The opening meeting will be held in the house of the society, 11, Chandos Street, Cavendish Square, on the evening of Monday, October 8th. The annual meeting will be held at 8 o'clock. At 8.30 the in-coming president, Sir St. Clair Thomson, will deliver his inaugural address. He has selected as his subject a sketch of the interesting personality of Dr. Lettsom, the founder of the society. This will be followed by two communications by Dr. Hutchison and Dr. Sparks on a matter which the French would call of "lively actuality"—namely, "War bread and its effects," a subject of universal, personal, and national interest. During the session discussions will be held on modern artificial limbs, and their influence upon methods of amputation; the value and limitations of sanatorium treatment for tuberculosis; facial surgery, and anaesthetics in war surgery.

SIR ROBERT W. PHILIP has been unanimously elected by the Edinburgh University Court to the chair of tuberculosis, which has just been created in the university. This is the first professorship of tuberculosis to be founded in the United Kingdom.

At a meeting of the War Emergency Fund of the Royal Medical Benevolent Fund, held in London on July 31st, 1917, it was decided to hold a general meeting of the medical profession in October in order to nominate a representative General Committee, and to discuss the best methods of promoting this appeal. This meeting will be held on Wednesday, October 10th, at the Medical Society's Rooms, 11, Chandos Street, Cavendish Square, W.1, at 5 p.m. It is hoped that the meeting will be largely attended, in order that the appeal may be well supported and made widely known to the profession and the public.

THE second American Congress of Children's Diseases is to be held at Monte Video under the presidency of Dr. Luis Morquio, a leading specialist in Uruguay. The first meeting of the congress took place five years ago at Buenos Aires.

THE committee appointed under the will of the late Mr. Leopold Salomons for the distribution of his residuary estate, announces the allocation of a further £50,000 to hospitals. The grants include £7,000 to the London Hospital, £2,000 each to Middlesex, Guy's, King's College, University College, Royal Free, St. Bartholomew's, St. George's, St. Mary's, St. Thomas's, and Westminster Hospitals; and £1,000 each to Charing Cross, Seamen's (Greenwich), Great Northern, West London, Cancer, Brompton, National Hospital for the Paralysed, Children's (Great Ormond Street), Royal Surrey County (Guildford), and Lock Hospitals.

¹ Carroll G. Bull and Ida W. Pritchett. *Journ. Experim. Med.*, Baltimore, 1917, xxvi, 119-133.

THE WAR.

THE GENEVA RED CROSS CONFERENCE.

A CONFERENCE of European neutral Red Cross societies was held last week at Geneva under the auspices of the International Committee of the Red Cross. The main subject for discussion was the improvements which could be introduced at the beginning of the fourth winter of the war into the conditions of life of prisoners of war, of interned or deported civilians, and of the inhabitants of occupied countries. Delegates were present from the Red Cross societies of Denmark, Holland, Norway, Sweden, Spain, and Switzerland. The principal resolutions adopted by the conference were to the following effect:

That where neutral Red Cross societies cannot exercise effective surveillance the neutral Governments representing belligerents should have at the embassies or legations delegates authorized to visit prisoners everywhere, particularly in camps and dockyards within the armed zones. In this matter reciprocity between belligerents should be complete.

That the visits of medical commissioners for the selection of candidates for repatriation should be more frequent.

That measures of reprisals against prisoners of war should be renounced by the belligerent Governments, or only taken after four weeks' notice, this period to be employed by a neutral commission in checking the motives alleged for the proposed reprisals.

That the American Red Cross Society should be urged to secure the dispatch of provisions to prisoners of war belonging to the Entente countries; and that the distribution of provisions and of every kind of aid should be assured through the medium of the delegates of the neutral Red Cross.

That the belligerent Governments should be urged to obtain the early realization of a scheme for the repatriation of unwounded prisoners who have endured long captivity, on condition that they are not sent back to the front; the exchange of entire categories being preferable to a system of individual exchanges.

That all interned civilians should be repatriated as promptly as possible, and wherever this cannot be carried out immediately the fate of civilian prisoners should be ameliorated.

That belligerent Governments should authorize imports and exports from neutral countries of sanitary products needed for the care of the sick and wounded.

The full text of the various resolutions is being forwarded to the various Red Cross societies and Governments.

PARCELS FOR OFFICER PRISONERS OF WAR.

A MEMORANDUM describing the revised scheme for the forwarding of parcels to officer prisoners of war has been issued by the Central Prisoners of War Committee, which is the care committee for all officer prisoners. The right to send parcels to an officer prisoner rests with the next of kin, but may be transferred by the latter, or by the officer himself, to any person. Parcels may be dispatched by the Central Prisoners of War Committee itself, by any authorized association, by a shop, or privately. Not more than 100 lb. of foodstuff may be sent to any officer prisoner during each four weeks. The control of the total amount sent in any period and the arrangements for censorship are provided for by a system of coupons issued by the Central Prisoners of War Committee in booklets. A small quantity of medical comforts and drugs other than those in the War Office prohibited list may be sent by the Invalid Comforts Fund, 19, Second Avenue, Hove, on application to the Fund, but only through that channel. The prohibited drugs are:

Emetine, strychnine, thymol, caffeine, capsicum, cascara, glycerin, ipecacuanha, olive oil, lanoline, quillaia bark, nuxvomica, senna, balsams, resins, oleo resins, gums, vaseline, aspirin, antipyrin, pyramidon.

The Army Council have decided that officers' parcels should be brought under control only in so far as they contain foodstuffs, medical comforts, drugs, and wines. Other articles, such as tobacco, cigarettes, and clothing, may, if not on the prohibited list, be sent through the parcel post in the ordinary way, and not under cover of the Red Cross label; they will pass through the ordinary

censorship. A special scheme has been drawn up for officer prisoners interned in Bulgaria and Turkey. The address of the Central Prisoners of War Committee is 4, Thurlow Place, London, S.W.7. The excellent work of the Officer Prisoners of War Fund will be transferred to 104, Brompton Road, S.W.1, on October 1st.

HONOURS.

A SUPPLEMENT to the *London Gazette*, issued on September 21st, contained a dispatch from Vice-Admiral Sir Rosslyn E. Wemyss, K.C.B., late Commander-in-Chief, East Indies Station, covering a report by Captain Wilfrid Nunn, C.M.G., R.N., on the operations of H.M. gunboats in Mesopotamia from December, 1916, to March, 1917. Appended to the dispatch is a list of officers for special promotion, honours, or awards, which includes the following medical officers:

Temporary Surgeon Robert G. Elwell, R.N. (H.M.S. *Gadfly*).
Has rendered valuable service under fire on many occasions.

Surgeon Frederick G. E. Hill, R.N. (H.M.S. *Moth*).

Who, finding a man wounded on the battery deck, gallantly, under heavy fire, carried him into the sick bay to dress his wounds. Whilst doing this the man received another wound through his throat, and Surgeon Hill himself received a nasty wound in his forearm. Nevertheless, although in considerable pain and until his arm became too stiff to use it, he proceeded to dress and attend to all the wounded on board.

Surgeon J. C. Kelly, R.N. (H.M.S. *Tarantula*).

Attended to wounded whilst fire was at its hottest in an exposed position.

Surgeon James P. Shorten, R.N. (H.M.S. *Mantis*).

Continued to dress and attend to the wounded in the open while under very heavy fire.

In recognition of their services the King has appointed Surgeon F. G. E. Hill to be a Companion of the Distinguished Service Order, and the other three medical officers receive the Distinguished Service Cross.

Staff Surgeon T. W. Jeffery, R.N., H.M.S. *Proserpine*, and Staff Surgeon G. G. Vickery, H.M.S. *Dalhousie*, are among the officers recommended for good services at the base which largely contributed to the successful operations.

MENTIONED IN DISPATCHES.

East Africa.

A special supplement to the *London Gazette*, issued on September 22nd, contains a list of officers brought to the notice of the Secretary of State for War by Lieut.-General A. R. Hoskins, D.S.O., Commander-in-Chief East African Field Force, for distinguished service in the field. The following medical officers are included in the list: Lieut.-Colonels R. L. Girwood, M.B., S.A.M.C., and H. W. Vaughan-Williams, M.B., S.A.M.C.; Temporary Lieut.-Colonel A. D. Milne, M.B., East African Medical Service; and Major E. T. Harris, M.B., I.M.S.

Nyasaland.

In Brigadier-General Northey's dispatch on the operations in the Nyasaland Protectorate, transmitted to the Colonial Office by the Governor of Nyasaland and published as a supplement to the *London Gazette* of September 25th, the following medical officers are mentioned: Major D. M. MacGregor, S.A.M.C.; Temporary Major H. S. Stannus, M.D.; Captain (temporary Major) W. F. L. A. Holcroft, M.B., S.A.M.C.; Surgeon-Captains: J. W. Bouwer, S.A.M.C., R. Bury (Nyasaland Field Force), R. R. Murray, W. J. Sheehan, E. Storrs, A. F. Wallace, and R. S. White of the Northern Rhodesia Medical Service; Captains A. P. M. Anderson and R. L. Lloyd, S.A.M.C., A. W. Forrester, Rhodesian Medical Service, M. G. Sanderson, Nyasaland Field Force; Temporary Lieutenant P. A. Lister-Smith, Nyasaland Field Force.

FOREIGN HONOURS.

Surgeon-General Sir Alfred Keogh, G.C.B., Director-General Army Medical Service, has been appointed by the President of the French Republic to be a Grand Officer of the Legion of Honour, in recognition of distinguished services rendered during the course of the campaign.

A supplement to the *London Gazette*, issued on September 24th, contains a further list of decorations awarded by the King of the Belgians to members of the British forces for services rendered during the course of the campaign; the list includes the following medical officers:

Order of the Crown.

Grand Officer: Surgeon-General Sir A. Keogh, G.C.B., M.D., F.R.C.P., Director-General Army Medical Service.

Commander: Surgeon-General Sir W. Donovan, K.C.B., Maritime Transport; Surgeon-General Sir T. P. Woodhouse, K.C.M.G., C.B., A.M.S.

Officer: Lieut.-Colonel (temporary Colonel) H. P. W. Barrow, C.M.G., A.M.S.; Colonel J. B. Wilson, C.M.G., M.D.

Order of Leopold.

Officer: Temporary Colonel J. D. Alexander, D.S.O., M.B., R.A.M.C.

Chevalier: Captain T. F. Corkill, M.C., R.A.M.C. (S.R.); Temporary Captain J. H. H. Pearson, M.D., R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON PROBATIONER H. A. POTTER, R.N.V.R.

Surgeon Probationer Herbert Alfred Potter, R.N.V.R., was killed in action on September 19th, aged 21. He was the only son of Mr. Alfred Potter, of Hatfield Broad Oak.

ARMY.

Killed in Action.

CAPTAIN B. A. BULL, R.A.M.C.

Captain Benjamin Allen Bull, R.A.M.C., was killed in action on September 16th. He was the only son of Professor Bull, of Chorlton-cum-Hardy, Manchester, and was educated at Oxford and at St. Bartholomew's Hospital, taking the diploma of L.M.S.S.A. in 1915. He took a temporary commission in the R.A.M.C. last year, and was promoted to Captain after a year's service.

CAPTAIN H. D. ECCLES, R.A.M.C.

Captain Horace Dorset Eccles, R.A.M.C., was reported as killed in action, in the casualty list published on August 28th. He was educated at Guy's Hospital, took the M.R.C.S. and L.R.C.P.Lond. in 1893, and after acting as clinical assistant at Guy's, went out to New Zealand, where he was in practice at Kawa Kawa, Bay of Islands, till he joined the army.

LIEUTENANT A. G. DUNN, R.A.M.C.

Lieutenant Arthur Gibson Dunn, R.A.M.C., was reported as killed in action, in the casualty list published on September 19th. He was educated at Newcastle-on-Tyne medical school, where he gained the Gibb and the Goyder scholarships, and graduated M.B., B.S.Durh. in 1903, also taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1906, and the M.D. Durh. in 1915. After filling the posts of house-surgeon, accident house-surgeon, and ophthalmic house-surgeon at the Royal Infirmary, and of resident medical officer of the dispensary at Newcastle, he went into practice in that city, where he held the appointment of refractionist in the eye department of the Royal Victoria Infirmary. He had only recently joined the R.A.M.C.

Died on Service.

LIEUTENANT D. ANDERSON, R.A.M.C.

Lieutenant David Anderson, R.A.M.C., died in a French hospital on September 13th, aged 31. He was the eldest son of Mr. A. Anderson of Cambuslang, and was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1908, afterwards going into practice at Washington, County Durham. He had only recently taken a temporary commission in the R.A.M.C.

LIEUT.-COLONEL E. H. OPENSHAW.

The *Pioneer Mail* of August 11th announces the death at the front, presumably in Mesopotamia, of Lieut.-Colonel Edward Hyde Openshaw, of Prince Albert's Somerset Light Infantry. He was educated at the Bristol Medical School, took the M.R.C.S. and L.R.C.P.Lond. in 1890, and after acting as house-surgeon of the Bristol Eye Hospital went into practice at Cheddar, in Somersetshire. Before the war he held the rank of Major in the 4th (Territorial) Battalion of his regiment, and was a member of the Territorial Force Association for Somersetshire. Last year he succeeded to the command of his battalion, which had recently been stationed at Wellington, in Southern India.

Wounded.

Lieut.-Colonel H. Gibson, R.A.M.C.

Major J. H. Dixon, R.A.M.C. (T.F.).

Captain F. F. Dunham, Canadian A.M.C.

Captain A. Gaston, R.A.M.C. (temporary).

Captain J. Lyons, R.A.M.C. (temporary).

Captain H. Moore, M.C., R.A.M.C. (temporary).

Captain A. Morris, R.A.M.C. (T.F.).

Captain B. N. Murphy, M.C., R.A.M.C. (temporary).

Captain C. H. L. Nixon, R.A.M.C. (temporary).

Captain J. F. W. Sandison, R.A.M.C. (S.R.).

Captain D. E. Scott, R.A.M.C. (temporary).

Captain T. M. J. Stewart, R.A.M.C. (temporary).

Lieutenant and Quartermaster E. F. Masters, R.A.M.C. (T.F.).

Sister W. Hawkins, T.F.N.S.

DEATHS AMONG SONS OF MEDICAL MEN.

Bracey, Victor Charles Edelsten, 2nd Lieutenant R.F.C., killed while flying in Hampshire on September 23rd, aged 19. He was the only son of Dr. W. Edelsten Bracey, honorary Lieutenant R.A.M.C., of Wedmore, Somerset, and was educated at Blundell's School. He obtained his commission in February last, and his "wings" last July. At the time of his death he was acting as an instructor.

Butcher, W. G. Deane, Captain London Regiment, killed in action on August 16th, youngest son of Dr. W. Deane Butcher, of Ealing. At Eton he won the Newcastle in 1910. He was an open scholar of Trinity College, Cambridge, and won the Craven and took a first class in the Classical Tripos in 1913. He was reported missing on August 16th, and is now unofficially reported killed in action that day.

Harrison, Major Rowland Damer, D.S.O., R.F.A., only son of Colonel Damer Harrison, R.A.M.C. (T.), of 53, Rodney Street, Liverpool, was killed on September 16th, aged 36. He had had eighteen years' service in the regular army, and before the war had served in the Royal Horse Artillery. He went to France early in August, 1914, as captain in command of an ammunition column of the R.F.A., and was present at the battle of Mons, the retreat from Mons, the battles of the Marne, the Aisne, the first battle of Ypres, the battle of Loos, and subsequent actions. Twelve months ago he was awarded the D.S.O. on the field for conspicuous gallantry in action, and was subsequently mentioned in dispatches more than once. He leaves a widow and two young children.

Jefferson, Ingleby S., Lieutenant R.N., killed by the sinking of a submarine under his command while in action in the North Sea on July 22nd, aged 24. He was the elder son of Dr. W. D. Jefferson, M.O.H., Ripon, and was educated at Aysgarth School, H.M.S. Conway, whence he passed out first, and Dartmouth. He was promoted lieutenant R.N. in 1915. He was a good all-round athlete and played for the navy in the annual football match against the army in 1914. He held the medal of the Royal Humane Society for saving a soldier from drowning.

Stephenson, Arthur Frederick Vere, Lieutenant Gordon Highlanders, younger surviving son of Emeritus Professor William Stephenson, M.D., LL.D., of Aberdeen, reported missing at High Wood, on the Somme, on July 23rd, 1916, now reported to have died of wounds as a prisoner, aged 33.

Von Winckler, Myles William, Lieutenant Middlesex Regiment, only son of Dr. William J. Von Winckler, British Guiana Medical Service, killed August 1st. He was born in Demerara, in 1893, educated at St. Paul's School, where he was in the eleven, and at Wadham College, Oxford, and joined the army through Sandhurst.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

SIR WILLIAM COLLINS, M.P., M.D., through the liberality of friends, has lately dispatched to the Italian and Belgian frontiers two motor ambulances equipped as mobile operating theatres according to his own design. A third ambulance of the same pattern has also been presented for use with the Greek army.

THE RED CROSS EMBLEM.

In order to prevent the improper use of the Red Cross emblem on privately owned motor cars and other vehicles, it is announced that owners of all vehicles desiring to obtain permission to display the emblem must apply through the head quarters of the command in which their cars are employed. Application will be forwarded to the War Office, and the necessary permit issued only when a car fulfils the following conditions: (1) That it is used solely for the conveyance of sick and wounded soldiers; (2) that it has been placed at the disposal of the military authorities for this purpose.

THE War Council of the American Red Cross has established a Bureau of Sanitary Service. An appropriation of £160,000 has been made for the purpose. The bureau will supervise and help in efforts to make health conditions about the camps of mobilized troops as nearly perfect as possible. A radius of from fifteen to sixty square miles will be policed for the protection of the health of the men. Increased provision will be made for milk inspection, and vigorous war will be made on malaria-carrying mosquitos.

A NATIONAL institute of malariology is about to be established in Italy; it will be a part of the department of agriculture. Its objects are to investigate the relations between malaria and agriculture; to study experimentally and otherwise the direct and indirect causes of the unhealthiness of malarial districts; and to organize and direct a campaign against those causes, and particularly against the *Anopheles*.

Ireland.

IRELAND'S MILK SUPPLY.

A MEMBER of the Local Government Board recently stated that the Board was doing all it could in order that there should be no scarcity of milk, and that it should be supplied from the country, where it was plentiful, to cities and other urban areas where it was most needed for nursing mothers and children. A circular letter was issued by the Board in May last and July to county, borough, urban, and rural councils, drawing their attention to the present milk shortage and also to the injurious effects likely to result therefrom to the health of mothers and young children. The Local Government Board points out that it is open to every sanitary authority, with the Board's approval, to make arrangements for the supply of milk to expectant and nursing mothers and children under 5 years of age, and the Board is satisfied that, if effect is given to this provision of the law, it would go far to relieve the present and prospective shortage in particular localities, provided that arrangements be made to obtain milk from places where sufficient supplies are available over and above the quantities needed for their own requirements. Care should, however, be taken not to interfere with the ordinary milk supply of the urban and rural areas, but to obtain further supplies from farmers who produce milk for the purpose of making butter or from creamery societies. The Board has been in communication with the secretary of the Irish Agricultural Organization Society with a view to the formation of a scheme for the supply of milk to Dublin and other cities and towns in Ireland, which might have the effect of meeting the present shortage.

COUNTY HOSPITAL SURGEONS AND THE NURSING QUESTION.

At a meeting of county hospital surgeons, held last week in the Shelbourne Hotel, Dublin, with Dr. M. O'M. Knott in the chair, various matters connected with the working of county hospitals were discussed, more especially those relating to the position of nurses. The opinion was expressed that the qualification of nurses ought to be dealt with in the same way as that of medical practitioners: a curriculum should be laid down, examination tests approved, and a register of nurses set up. The meeting deprecated the idea that any self-constituted bodies or boards should be established to deal with this question, and expressed the opinion that the Local Government Board for Ireland should be the statutory authority for determining by inspection which nurses' training schools and hospitals were adequate for the purpose. It was considered that the medical licensing bodies would be the most suitable for supervising examinations, and for arranging the course of study and training for nurses, with the proviso that a certain number of nurses should be called in to assist. The meeting finally decided to re-establish the County Surgeons' Association.

THE APPOINTMENT OF A DISPENSARY DOCTOR.

The Local Government Board, in refusing to sanction the appointment of Dr. R. Hayes, by the South Dublin board of guardians, as district dispensary medical officer, stated that Dr. Hayes had been sentenced by court-martial to twenty years' penal servitude for having taken part in the Sinn Féin rebellion, that he had been released unconditionally on the occasion of the general amnesty, but that he had not received a free pardon from the Crown, and added that, having regard to these facts, the Local Government Board deemed Dr. Hayes unfit to hold an appointment in the dispensary medical service. The board of guardians resolved that a request should be sent to the Local Government Board to furnish (1) a reference to the statute conferring on it the right to refuse sanction to the appointment of a dispensary doctor, and describing disqualifications; (2) a copy of the record and sentence affecting Dr. Hayes; (3) a statement as to whether the conviction and sentence referred to were those by the secret field courts-martial held in May, 1916; (4) a copy of the record on which the Local Government Board declared that a prisoner so sentenced could be released without His Majesty's pardon being first granted; and (5) a copy of the opinion of the Attorney-General showing that prisoners liberated by grace and favour of His

Majesty, while eligible for co-option to Local Government offices and for election to advise His Majesty in the High Court of Parliament, were disqualified from dispensing medicines and relieving the poor in Irish dispensary districts.

Scotland.

CHILD WELFARE IN EDINBURGH.

THE Edinburgh Corporation proposes, as part of its child welfare scheme, to establish a health home for weakly and ill-nourished children, particularly for those of pre-school age, although children in the early years of school life who are in poor health will also benefit under its provisions. The Public Health Committee are taking steps to secure a suitable place in the country where such children can be cared for amidst fresh air and healthy surroundings. The progress of the scheme will be watched with much interest.

ST. ANDREWS UNIVERSITY.

At the last meeting of the University Court of St. Andrews a letter was read from Professor William Carmichael McIntosh, M.D., resigning the chair of natural history after a connexion with the university as student, alumnus, and professor extending over a period of sixty-four years. The Court, in accepting Professor McIntosh's resignation, recorded their appreciation of his eminent services to science and the university. At the same meeting the Court appointed Dr. Edwin Matthew as additional examiner in medicine and clinical medicine for graduation for a period of three years, beginning January 1st, 1918. It was reported that an arrangement had been entered into with the Dundee Town Council for the investigation in the university laboratories at Dundee of pathological material sent by medical practitioners for the purpose of diagnosis.

England and Wales.

THE HEALTH OF LIVERPOOL IN 1916.

THE annual report on the health of the City of Liverpool for 1916 is less voluminous than in pre-war times, nevertheless it loses nothing in being concise and furnishes all the necessary information on the subject, which is the prime care of the medical officer of health, Dr. E. W. Hope. The population of Liverpool was estimated at mid-year in 1916 to be 777,247, an increase of 4,652 on the year 1915, and the density of population is about equal to 36 per acre. The birth-rate continues to decline. In 1916 it was 26.6 per 1,000, compared with 33 per 1,000 ten years ago. On the other hand it is considerably above that for England and Wales, which is 21.6 per 1,000. Infantile mortality statistics show a satisfactory decline. In 1916 the rate was 117, against 133 in 1915 and 171 ten years ago. The general death-rate in 1916 was 17.9 per 1,000, as against 18.7 in 1915.

Zymotic diseases caused 1,699 deaths in 1916, the death-rate being 2.2 per 1,000. In the latter part of September, 1916, an outbreak of plague occurred. The infection was in all probability imported. Stringent measures were taken to localize the disease, and there were only six cases, limited to three households. Three ended fatally and were proved bacteriologically to be cases of plague. All contacts were kept under careful supervision, thorough disinfection was carried out and twenty members of the sanitary staff were inoculated with Haffkine's plague prophylactic. The result was eminently satisfactory and no further development took place. No case of small-pox occurred in the city, and two cases of typhus, both fatal, were notified, but *post-mortem* examination failed to confirm the diagnosis. Enteric fever accounted for 11 deaths as against the average number, 50, during the past ten years. Scarlet fever claimed 63 deaths out of 2,148 cases, and 62 per cent. of the deaths were of children under 5 years of age.

Measles and German measles became notifiable diseases on January 1st, 1916, and no fewer than 14,732 cases were officially reported. A much larger number received hospital treatment than in previous years. The mortality was 264, as against 438 in the preceding decennium.

Whooping-cough was responsible for 235 deaths in 1916, as compared with the average, 296, during the preceding ten years. Deaths from diphtheria amounted to 143, being above the average—namely, 112—during the past decennium. Nine cases of poliomyelitis came under the notice of the health department, and of these 4 died. Cerebro-spinal fever claimed 37 cases, with a fatal issue in 23. In spite of careful investigation the source of infection could not be discovered. Fortunately no extension of the disease occurred in the households where cases were reported. Fifteen cases of anthrax were notified, and 3 ended fatally. The majority of the patients were associated with imported hides or had to do with hair.

Ophthalmia neonatorum is under most careful supervision now, and the results in treatment are gratifying, owing to prompt medical assistance being given. The authority at St. Paul's Eye Hospital has nine beds and nine cots for the grave cases, which not only ensure systematic treatment but at the same time admit the mothers, who are enabled to nurse the infants.

With regard to tuberculosis, the number of patients examined for this disease by the tuberculosis officers in 1916 was 2,124, showing an increase of 373 of those examined in 1915. In 14.1 per cent. no sign of tuberculosis was detected. Domiciliary treatment was given to 1,191 patients, dispensary treatment to 205 patients, and institutional treatment to 429 patients. The average duration of treatment in 1,081 cases was eighteen weeks; 75.3 per cent. were discharged improved, 13 per cent. were discharged not improved, 11.6 per cent. died, and there remained under treatment on December 31st, 1916, 401 cases.

Sydney.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

DR. C. S. WILLIS, the Principal Medical Officer of the Education Department, in his annual report, emphasizes the point that the work of medical inspection cannot be estimated by merely considering the number of children examined. With this must be taken into account the vast distances travelled to get to the children. In several cases a journey of over a hundred miles has to be undertaken in travelling from one school to another. Experience has shown that with the present staff the medical inspection can be conducted at each school about once every three years. The school medical service was reorganized in 1913, and the first round of medical inspection for the whole State was completed by the middle of 1916. Of 247,385 children examined, 147,079 were suffering from physical defects needing treatment; of these, only 57,310 obtained treatment. During 1916, 76,929 children were medically examined at 753 schools, the staff of the travelling hospital examining 4,011 of the total at 146 schools. During the past two years there has been a progressive fall in the percentage number of children suffering from physical defects sufficiently serious to need treatment. This fall is attributed to the effect of medical school work. Of special interest is the fact that during 1916 no fewer than 36,331 children were found to need treatment for dental defects. Of these, 17,039 were treated by the department's dentists; the work done included 13,394 treatments, 46,037 extractions, and 19,256 fillings. Dr. Willis draws attention to the large number of children who have carious teeth or filthy mouths, and urges that education of both parents and children is urgently needed. While the dentists are mending defective mouths with much assiduity, sufficient is not being done to stop the manufacture of new cases. He expresses the hope that toothbrush drill will be made compulsory in schools in the near future. A scheme has been submitted to the Minister for consideration which it is hoped will cause the children to be taught not only how to clean their teeth, but also the necessity for doing so. Dr. Willis considers that there is great need for organized treatment schemes, and that the school work of this State will never be satisfactorily accomplished until the schemes already approved or their equivalent are fully established. Owing to the opposition of the medical profession to the Government's scheme of appointing specialists as department medical officers, efforts are now being made to secure the co-operation of the metropolitan hospital staffs to deal with defects in school children requiring treatment.

CHILD WELFARE.

The Minister of Health, in the course of a statement of the work now being undertaken in the interest of the children, stated that in spite of the restriction of the finances at present, much is being done in the way of propaganda work, and every mother is being educated in regard to the welfare of herself and her infant. The Government is making strenuous efforts to cope with venereal disease, and a scheme is in operation whereby every subsidized hospital throughout the State will possess a venereal clinic. Illegitimacy, another potent factor in infant mortality, is receiving much attention, and a proposal has been made to extend the system of day nurseries, institutions which do excellent work by caring for these infants while their mothers go to work. As regards the feeding of infants, the milk supply is subjected to the most rigid inspection.

HEALTH CONGRESS.

A Health Congress was held in Sydney at the latter end of July, convened by the Health Society of New South Wales. It was attended by delegates from about thirty health societies in this State, the object being the co-ordination of effort for the promotion of the public health. Four purposes were set out for the conference: (1) The care and cure of the returned soldier and sailor. (2) The restoration to efficient citizenship of the rejected volunteer. (3) The education of the children in the schools in all branches of health instruction. (4) The teaching of hygiene in the home.

EDITH CAVELL MEMORIAL.

As a memorial to the late Nurse Edith Cavell, a beautiful home in Summer Hill, one of the near suburbs of Sydney, was recently given by the owners, Mr. and Mrs. W. E. Shaw, for a rest home for nurses. A total of £10,000 has been raised by the general public, but the committee aim at securing £15,000 as a permanent endowment fund.

Correspondence.

CEREBRO-SPINAL FEVER AND ITS TREATMENT.

SIR,—In the excellent leading article on this subject which appeared in the JOURNAL of September 22nd it was stated that "from the laboratory point of view several different strains or 'races' of the meningococcus have been recognized and differentiated by their immunological reactions; indeed, forms have been described so different from one another as to deserve the name 'subspecies.'"

Carefully guarded as this statement is, your readers might, I think, reasonably conclude—unless they had occasion thoroughly to study the subject—that the existence of different strains or races of the meningococcus has been definitely established. This is very far from being the case, because practically the only evidence at present available in support of the theory is derived from serological reactions. In consequence, from the very nature of agglutination tests, all that has been clearly established is a differential value in antigens, without any light being thrown on its biological significance.

Moreover, by an alternative theory the reputed existence of multiple strains of the meningococcus can be just as easily explained by the fact, demonstrated in the JOURNAL of September 22nd under my name, that this organism represents only one of many phases in the life-cycle of a parasitic fungus. The truth is that the theory of multiple meningococcal strains has been propounded in the absence of any control morphological studies of the life-cycle of the organism, in the belief that this cycle is one of great simplicity. I am not prepared as yet to say that the theory of multiple strains will necessarily give way now that the fact of multiple phases in the life-cycle stands revealed, though prolonged morphological study of the four "strains" in question has furnished interesting evidence in that direction, as will presently appear. None the less it would appear to be well to remember that the theory of multiple strains is still as much suspect as is the legendary danger of the *Amoeba histolytica* cyst. The question is far more

than one of academic interest only, since our one hope of successful serum-therapy in cerebro-spinal fever lies in finding the correct antigen. As I have elsewhere shown, the meningococcus, as such, represents—whatever the “strain” injected—only a saprophytic phase, and it is hardly reasonable, therefore, to look for much curative virtue from an antiserum unless this be prepared by the use of an antigen derived from the parasitic phases of the life-cycle. And this the four “strains” certainly do not provide in meningococcal form. Moreover, it is impossible to forget that the specific infectivity of Gram-negative organisms in man (so far as systemic infection is concerned) as well as their antigenic value, tends to vary inversely as the readiness with which these organisms can be cultivated, isolated, and identified in the laboratory.

The saprophytic nature of the four “strains” of the meningococcus stands self-confessed in these three respects, though the statement will not be accepted by exponents of the simple life-cycle schools, who regard the difference between parasitism and saprophytism as merely an expression of a change of milieu not accompanied by developmental change in form. In my view, however, it is just that fatal facility with which the saprophytic phases of the bacterial life-cycle can be studied in the laboratory which has in the past beguiled us into assuming that the study of bacterial function *in vitro* is alone essential, and that the study of bacterial form can be safely ignored.

It becomes, therefore, doubly necessary to determine by methods other than the serological—supposed to involve the use of one phase only—whether these alleged strains are spurious or genuine.—I am, etc.,

London, W., Sept. 22nd.

EDWARD C. HORT.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—Dr. Bell will, I hope, pardon me if I still think that he misunderstands the arrangements for the treatment of discharged disabled men and the situation which gave rise to these arrangements; and when I say this he must not accuse me of using an improper method of controversy by merely saying that he doesn't know what he is talking about. For me merely to say this about any one would be futile; for me to say it about such men as Dr. Bell and Dr. Genge would be impertinent. I ask them to believe that the object of my last letter and of the present one is primarily not controversial, but expository, and that my only reason for supposing that I understand this matter a little better than some others do is that I have been compelled to go through the educative process of discussing at every stage the details of a not very easy subject. My former attempt to point out and to correct certain misunderstandings failed; let me try again.

Dr. Bell and others are mistaken if they suppose that these arrangements have any other origin, or have been arrived at under any other influence, than the resolutions of the last Conference of Local Medical and Panel Committees. I am challenged to quote any resolution of any conference which sanctions them. The resolutions in accordance with which we acted are too long to quote here, but they will be found as Minutes 63-68 of the Conference of October 19th, 1916. It is not, of course, contended that the details of the new arrangements are set out in these resolutions. If they had been, our task would have been simple. We should simply have had to present them to the Government with the intimation that they were our final demands, to be accepted or rejected as they stood. The resolutions are more or less general in character, but they certainly involve: (1) The withdrawal from the central insurance pool of the contributions in respect of these men; (2) the securing for the profession of an increased payment corresponding to the increased amount of attendance needed; (3) the distribution of this payment for each person on a scale and conditions to be agreed upon between the Insurance Acts Committee of the British Medical Association and the Government. (4) The opportunity for practitioners not on the present panel lists to share in these arrangements if they wished. In strict accordance with these directions the negotiations have been conducted, and the result, we think, should be regarded as eminently satisfactory, though some of the details would have been modified if we could have had everything our own way.

Dr. Bell and others are mistaken, too, if they suppose that it was no trouble to persuade the Commissioners and the Treasury that there was any case at all for asking for increased payment in respect of these men. Axiomatic as this appears to Dr. Bell and to me, it was really the first three “diplomatic steps” which I named in my last letter, and which Dr. Bell omitted in his, which were by far the hardest of all. When we put forward our case for increased payment because of increased work for the disabled men, it was said on behalf of the Government that we were asking them to take account of one part only of the effects of the war on the position of the panel doctor. There were, however, other effects that would have to be taken into account, especially (1) the effect of high wages and other consequences of the war, in improving the health of many insured persons, and (2), as regards discharged soldiers, various circumstances tending to diminish the amount of domiciliary attendance required, especially the increased facilities for institutional treatment of this class. The Government contended that the onus of proof was on us, in putting forward a claim, to show that these offsets did not outweigh the increased work for some discharged soldiers on which our claim was based. The memorandum by which we apparently convinced the Government that increased payment should be given for discharged disabled men, quite apart from any other insurance problems, was published in the BRITISH MEDICAL JOURNAL SUPPLEMENT of June 16th last. May I ask Dr. Bell to read it again? He will see from it the position in which we were, and the kind of arguments we had to meet. The second of the above contentions is, of course, important, and we have asked the Commissioners to note this and several other circumstances which may lead to under-attendance, when they judge of the results of the present experimental arrangements.

Again, Dr. Bell, Dr. Genge, and others are mistaken if they suppose that the new regulations “provide that these men shall be attended in all particulars that affect practitioners under the same regulations as those applying to temporary residents.” I repeat that they are quite different; indeed, the only connexion between the two is that the temporary resident scheme is used to determine what fee per attendance corresponds to the capitation fee for the country as a whole. This fee will not, as Dr. Genge supposes, vary in different areas. It may, in fact, having regard to past experience, be considered at present as a fixed fee which, in England at any rate, will be in the neighbourhood of 95 per cent. of the schedule of fees set out in the new regulations. All attendances, however many, will be paid for at this rate, without any deduction whatever, and *irrespective of area*.

As to Dr. Genge's important point, suggesting that the contributions in respect of these men will be taken out of a pool into which no corresponding sums have been paid, the Commissioners have assured us that the actuarial formula in accordance with which the central pool is formed has been so adjusted as to take full account of the increased disablement. It is therefore a mistake to suppose that we “shall receive proportionally less for our ordinary panel patients,” or that “practitioners not at present on the panel will be paid directly out of the pockets of panel practitioners.” As to the particular question of admitting the non-panel doctors to participate, the panel doctors' only grievance, if any, is that the non-panel men are being admitted to a share of the work and to such payment as fairly pertains to that work. Even as to this, personally I doubt whether any large number of non-panel practitioners will be found participating in these arrangements, and in any case it must be remembered that accounts will be paid, with no corresponding deduction from the pool, for thousands of men who leave the army and navy uninsured persons and for thousands of others who were uninsured when they entered the services.

May I add a few necessary sentences about the general question of the remuneration for attendance on insured persons? Drs. Gardner and Veale fail to keep this question separate from that of increased payment for discharged disabled men. It is important that they should be separated in accordance with the instructions which the Insurance Acts Committee received from the last Conference. But I agree that it is at least equally important that the question of increased remuneration for

attendance on insured persons generally should be seriously pursued. Drs. Gardner and Veale refer, not quite accurately and not very courteously, to a resolution which I moved at the last Conference, not as Chairman of the Insurance Acts Committee, but as the representative of the Panel Committee which had given notice of it. That resolution stated that we had a claim to increased remuneration, and that if we did not immediately press that claim this should be considered a contribution to the national cause and without prejudice to future action. I said very little, but the resolution evidently appealed to the Conference; and I do not think the profession does itself any harm by showing a limited forbearance, and keeping right with public opinion. But things have altered since last October. The cost of living has materially risen, and we have had another year's experience of how the present system works out. The Middlesex Panel Committee has given notice of another resolution urging that we should press for the increased payment suggested in the interim report on the future of insurance practice (SUPPLEMENT, June 30th, pp. 152-3). This resolution I hope to move or support. Dr. Gardner thinks the increase ought to be 25 per cent. The Insurance Acts Committee goes further, and thinks it should be 35 per cent. Dr. Bell tells us that about September 7th last the Gloucestershire Committee issued a circular suggesting a capitation fee of 10s.; it was exactly three months earlier (June 7th) that the Insurance Acts Committee made this suggestion, and gave its reasons for making it; and it is now waiting to see if at the forthcoming Conference and afterwards Panel Committees will unite in its support.—I am, etc.,

Stroud Green, N., Sept. 22nd.

H. B. BRACKENBURY.

SIR,—I felt at first inclined to agree to the new regulations as a temporary war-time expedient. Further consideration has led me to modify my views.

Dr. Brackenbury's statement in the SUPPLEMENT of September 22nd does not help us very much. He writes of the difficulty experienced in convincing the Insurance Commissioners that there is a case for increased remuneration for the treatment of discharged and disabled sailors and soldiers. Surely this is obvious to any person of average intelligence and unbiassed judgement.

Does Dr. Brackenbury expect us to believe that the Insurance Commissioners when in secret conclave with the Insurance Acts Committee assume, when it suits their purpose, a level of intelligence comparable with that of an anencephalic monster? We know to our cost the Machiavellian astuteness of their financial juggling when evolving methods of medical remuneration in the past! Then what can be said as to the decision to take the temporary resident scheme as a basis for our remuneration under the new regulations? My experience is that the temporary resident scheme has been practically a dead letter—most men simply refuse to be bothered with it. Therefore any data based upon its working must be erroneous.

The intense feeling which has been aroused throughout the country is, I believe, most acute on the fact that Panel Committees, and through them panel practitioners, had no opportunity of considering those regulations before they were actually enforced.

Dr. Genge's letter raises a most serious question. If his statements are substantiated, we are the victims of fraud and chicanery. In that case Dr. Bell's clarion call to action will be responded to by all practitioners who are concerned to safeguard not only their own interests but those of their absent fellows.

The conference of Panel Committees which is to be held on October 18th next should be urged to pass a resolution refusing to accept the proposed method of remuneration, and as an alternative proposing a special capitation fee of 12s. 6d. (twelve shillings and sixpence), exclusive of drugs; and, further, should proceed to appoint a special committee to negotiate with the Insurance Commissioners and see that we get it.

We are told that an increase to 10s. is to be demanded for ordinary insured persons on account of the increasing cost of living owing to the war. Therefore the suggested rate for discharged and disabled sailors and soldiers is fair and reasonable. So fair and reasonable is it that we should refuse once for all to argue the point with the Insurance Commissioners.—I am, etc.,

London, N., Sept. 23rd.

A. S. DOWNTON.

CONFERENCE OF REPRESENTATIVES OF LOCAL MEDICAL AND PANEL COMMITTEES.

SIR,—On October 18th a conference of representatives of these bodies will be called together by the British Medical Association. With your permission I would like to formulate a few proposals for the immediate serious consideration of all those in our profession who take any interest in its welfare, in the progress of medicine, in public health, and in the economic conditions relating thereto. There is no doubt whatever that unless the profession soon comes into line and ceases its internal—and possibly often justified—criticisms, it will very shortly find itself a waterlogged ship with a mutinous crew, tossed hither and thither on a stormy sea by contending forces emanating from Government departments, social workers, labour bodies, committees of reconstruction, international groupings, theorists, and faddists, no one of whom cares one farthing for medicine as a science, for the welfare of its votaries, nor for the ultimate consequence of their work, so long as they can dominate and dragoon in order that, "as soon as may be," they can obtain laudation, kudos, titles, and pensions.

I would therefore first remind all of certain facts; only in this way can a true estimate of the present situation be obtained, and a correct course hope to be steered in the immediate future.

1. About the year 1900 general practitioners found themselves dissatisfied and without any efficient organization. They did not love the British Medical Association, that being an organization moulded and run for consultants only.

2. However, the general practitioners determined to seize that Association, with its prestige and funds, and to mould its purposes to their own ends. And they did so.

3. For fifteen years now, in season and out of season, with setbacks and moves forward, in ill repute and in favour, those who came forward have consistently tried to carry into effect the policy adopted. Most of the original workers have passed away; a few are left still.

4. A new generation of general practitioners has arisen which knows not Joseph. Instead of reading up the history of the past and then refreshing the organization with new ideas, energy, and grit, two schools have come to the front; one is content to say ditto to everything done "by the Association," and keeps its eyes fixed on the individuals in power, ready to take its cue from those of pleasing personality rather than to attend to convincing arguments or sound policy; whilst the other spends its time in endeavours to belittle that organization, and tries to bring into existence other groupings of practitioners. It would almost seem that they prefer the profession to continue a mob than to become an organized body.

5. It has been noticed repeatedly that men with convictions, and who, it has been stated, represent those with convictions, which they believe to be right, attend Association, Committee, Council, Representative and Conference meetings determined to assist in putting wrong right; but when they get there their determination weakens, their convictions become suggestions, the cause they would have pushed languishes, and they return to their districts silent. Have they been converted?

What are the comments?

- (a) Unless all branches of the profession quickly unite and fall into line behind one recognized and powerful organization, ceasing to be individualists (single or in groups) they will lay themselves open to be swallowed up by sections.

- (b) There is no doubt that the British Medical Association at the moment does not meet with the approval of a large and powerful number of members of the profession. There are genuine and honest reasons existing to account for this. The organization which suited 1900 will not suit for 1920.

- (c) It is quite useless to expect the Association to return to the position it was in before 1900. To ignore it or to belittle it at home or abroad will only act as a boomerang. It will continue on its way. It will prove suicidal to think or act otherwise.

Then what are the proposals?

- (i) The general practitioners may not love the Association, but they must unite and determine to seize its prestige and funds, moulding it anew to its rightful purpose. The "contents" with the present position must be brought to recognize facts and be made willing to co-operate; otherwise they should be moved on.

(ii) The coming conference offers an opportunity for those in earnest to unite and to place on the Insurance Acts Committee fifteen representatives who can together mould the policy of the Association in one branch of medical politics which affects the very foundations of medicine and public health. It is waste of time to argue "we should nominate twenty, or thirty, or all." For the present make sure of the fifteen, and that quickly.

(iii) Having elected these fifteen then it must be seen to that they, and those who think like them, are supported through thick and thin. If any fail they must come off at the first opportunity. This is not a time when sentiment and comradeship should be allowed to influence policies.

(iv) Having tried their strength through the conference then consider the Association itself; seize its Division meetings, its Branch Councils; and next year its Council and its Representative Body. Such action is constitutional, and no one who really desires the Association to be for the profession and not for himself will do other than gladly welcome and assist such a propaganda.

Then certain questions, and I have finished.

(a) What steps are the profession in each area taking to see that the right man goes to this conference? Are the writers of complaints and the groups of malcontents doing anything?

(b) What steps are these same persons and the Panel Committees taking, by means of collaboration and correspondence, to ensure that the right men are put forward for the fifteen seats, and that the wrong ones do not slip in?

(c) Are the candidates for election men who are keen on the interests of the profession as a whole; on medicine being maintained as a science, and not degenerating to the level of a well organized fried fish shop? Are the candidates men who, when inside, will not be swayed by the powers that be, but will think out for themselves proposed policies from a broad outlook, and not from a narrow class interest? Will they maintain their position, or are they men likely to be "absorbed"?

The situation is serious. The profession cannot wait much longer. Every day more disintegrating influences are being brought to bear against it. Will it wake up?—I am, etc.,

Hove, Sussex, Sept. 22nd.

E. ROWLAND FOTHERGILL.

SIR,—On reading through the interesting "Report of Action taken by Insurance Acts Committee since 1916 Conference," I came reluctantly to the conclusion that some other body devoted solely to insurance interests must soon arise if we are to be saved from disaster. The loose sheet enclosed with the report proved that I was right. The Association, as the bulwark of the profession, is on its trial.

I confess I look at the Association with the eyes of an insurance practitioner, and therefore as a partisan. The report says that the Association exists to safeguard the whole profession, but wisely makes it clear that the whole profession may be soon involved in insurance work; "In the immediate future it is practically certain that extension of medical benefit, in some form or another, to include either other sections of the community, or other kinds of medical service, or both, will bring within the ambit of national insurance many practitioners who are not at present directly affected." The panel practitioners' interests, therefore, are the interests of the whole profession.

What has a conference of Local Medical and Panel Committees to do with a Ministry of Health? Is its pious hope, "that a Ministry of Health should be created to take over from the existing Government departments such duties as are concerned with the health of the community and to deal with those duties only," likely to cause the Government to deviate one hair's breadth from its course? Sir Edwin Cornwall thought so highly of the advice of medical men that his advisory committee consisted almost wholly of representatives of approved societies. Thanks to the Association this was afterwards changed.

Every insurance practitioner knows that the care and treatment of discharged disabled soldiers and sailors will be a heavy tax on his time and energies. He also knows that his remuneration is totally inadequate. The Association agrees with these views and asks for better terms. But while failing to obtain any assurance that this request would be favourably considered by the Treasury, neverthe-

less pleads that the new arrangements shall not exclude practitioners who hitherto have abstained from insurance practice from undertaking the treatment of discharged disabled soldiers and sailors.

Whilst the Association has submitted to the Commissioners questions of life and death to the profession and has received replies saying "that the contents of its letter have been noted," or "that no assurance could be given that its request would be favourably considered," the Association asks nevertheless for the care of the wives and children of these discharged disabled soldiers and sailors. There is, surely, inconsistency in this.

On the subject of "production of medical cards, onus of proof," the course for the Association to take is so clear that if it allows itself to be browbeaten its dissolution should be welcomed by all. We sink to the level of imbecility when we begin to discuss whether a man who seeks treatment should prove whether he is entitled to it or not. An insurance patient who cannot refuse insurance treatment if he likes becomes at once a pauper and a slave. The panel doctor needs only to be branded on the forehead to make his degradation complete.

I write in the hope that the result of the conference will be to convince the profession that we have in the Association a doughty champion, who can make the Commissioners realize that they have a foeman worthy of their steel.—I am, etc.,

Exeter, Sept. 23rd.

J. A. W. PEREIRA.

TREATMENT OF VINCENT'S ANGINA.

SIR,—On page 404 of the JOURNAL of September 22nd a letter is published from Dr. F. E. Taylor and Captain W. H. McKinstry regarding the treatment of Vincent's angina. I should like to call attention to the fact that the first publication on this subject since the beginning of the war appeared in the *Proceedings of the Royal Society of Medicine*, vol. ix (Medical Section), pp. 51-60; also in the *BRITISH MEDICAL JOURNAL*, March 1st, 1916, and a little later in the *Journal of the Royal Army Medical Corps*. Salvarsan was mentioned as being an excellent treatment for the condition, but unsatisfactory for general use among the troops.

Among Canadian troops the mixture recommended by me in the above paper is still being used with very satisfactory results. Of late, on several cases, however, I have been using, in place of the arsenic in the prescription, a saturated solution of antimony and potassium tartrate, which is much less poisonous, and which would seem to be equally good.

It might be mentioned that all reference to my work was omitted in Taylor and McKinstry's article, which was due probably to the "exigencies of space."—I am, etc.,

Folkestone, Sept. 23rd.

F. B. BOWMAN, Major C.A.M.C.

THE SUPPLY OF MORPHINE, ETC., TO ARMY MEDICAL OFFICERS.

SIR,—An editorial appears in the current issue of the *Pharmaceutical Journal* on the subject of the right to supply medical men serving in the army with cocaine, morphine, etc., on their personal written order for the same, and the view expressed in an editorial in the same journal on July 28th is emphatically confirmed that it would be a direct contravention of the regulations to do so.

If this view is correct, it appears to me that medical men serving in the army are placed in a difficult, not to say somewhat ignominious, position. But is it correct? If words have any meaning, I should say not. The regulations state that such drugs shall not be sold except to "authorized persons," and further on the regulations define authorized persons as including "duly qualified medical practitioners." Surely a man does not cease to be a duly qualified medical practitioner because he takes up His Majesty's commission in the army, whether as a medical officer or a combatant. In the north of England, as elsewhere, there are many medical practitioners with commissions in the army who are at the same time able to do a certain amount of private work. The reading of the regulations suggested as correct would make it an offence against the Defence of the Realm Regulations to supply such an officer with a tube of morphine tablets or a small quantity of cocaine. This surely would be an intolerably

unfair restriction on the legitimate freedom of action of medical practitioners so placed, and I cannot think that such can be the intention of the authorities.—I am, etc.,
WILLIAM MARTIN.
Newcastle-upon-Tyne, Sept. 24th.

Obituary.

THE death of Lieut.-Colonel FREDERICK ROBERT SWAINE, I.M.S., of Ranchi, removes, perhaps, the oldest European official resident in the Province of Bihar and Orissa. Colonel Swaine came to Ranchi in the Seventies, and, after spending the greater part of his service in that station, settled there when he retired twelve years ago. He had a wonderful knowledge of the town and its inhabitants, and had done valuable service as a municipal commissioner for a great many years.

WE regret to record the death of Dr. ARTHUR BADCOCK, who died suddenly on September 16th, after an illness of some months' duration. Dr. Badcock was the son of the late Rev. J. Badcock, D.C.L., Vicar of Stroud, Gloucestershire. After completing his studies at the Leeds School of Medicine he qualified in 1886, was appointed resident medical officer to the York Dispensary, and subsequently settled down in practice in succession to Dr. Hall at Clarence House. In 1902 he succeeded his partner, Dr. Weekes, as honorary medical officer to the York Dispensary, of which for some years he was senior honorary officer. He took a keen interest in the management of the York Dispensary and in all professional matters in York. From July, 1914-1917, he was president of the York Medical Society. He was held in high esteem by his medical colleagues and by a wide circle of friends and patients. He leaves a widow, the daughter of the Rev. J. L. Challis, late Rector of Hartwell-with-Stone.

The Services.

EXCHANGE.

CAPTAIN R.A.M.C., in F.A. three years in France, would like to exchange with M.O. in England.—Address, No. 3300, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Medical News.

THE American Red Cross has appropriated £20,000 for medical research work in France.

THE opening meeting of the thirty-sixth session of the West London Medico-Chirurgical Society will be held at the West London Hospital on Friday, October 5th, at 8.30 p.m.

THE seventh Norman Kerr Lecture will be delivered before the Society for the Study of Inebriety by Major W. McAdam Eccles, R.A.M.C.(T.F.), on Tuesday, October 9th, at 5.30 p.m., in the Robert Barnes Hall, 1, Wimpole Street, Cavendish Square, London, W.1. The subject of the lecture will be War and Alcohol.

LIEUT.-COLONEL SIR ALFRED PEARCE GOULD will deliver the first Hunterian Lecture before the Hunterian Society on Wednesday, October 3rd, at 9 p.m., at the House of the Royal Society of Medicine, 1, Wimpole Street, W. The subject of the lecture will be Modern Antiseptics.

MESSRS. LONGMANS announce for early publication a volume by Mr. Henry Carter, member of the Liquor Control Board, entitled, *The Control of the Drink Trade: A Contribution to National Efficiency, 1915-1917*, giving a full account of the work of the Board in restricting the sale of drink, and providing industrial canteens, and also of the State purchase of enterprises at Gretna, Carlisle, and elsewhere.

THE Special Health Committee of the Calcutta Corporation recently considered whether the present campaign against rats and the system of payment of a reward of half an anna for each live rat should be continued. The campaign was started several years ago by the Plague Department, and has been continued with indifferent results. During the last year 138,386 rats were killed and 40,213 dead rats were found in the streets. The total cost of the campaign works out to Rs. 3,374 per annum. In

Bombay during last year the total expenditure was Rs. 35,590, and the number of rats collected was 943,346. In Madras the total expenditure during the last year was Rs. 6,709, and the total number of rats killed was 138,611.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Attingham, Westrand, London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY and BUSINESS MANAGER (Advertise-ments, etc.), *Attingham, Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Meilsora, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

J. D. asks for information or references in medical literature relating to the symptoms, and more particularly the post-mortem appearances, in any known cases of poisoning by "bitumastic"—an anticorrosive fluid and paint applied to the water tanks of ships, etc.

LETTERS, NOTES, ETC.

TREATMENT OF WHOOPING-COUGH.

DR. T. DUNCAN NEWBEGGING (Abington, Lanarkshire) writes that he has had satisfactory results during a recent epidemic of whooping-cough by the following treatment. A small wet brush is dipped into crystals of zinc sulphate so that they adhere; the brush is applied to the fauces, chiefly to the uvula, the patient being instructed to keep the powder in place as long as possible. In some instances one application has effected a cure, even in fully established cases; in others two were necessary.

ACTION OF ADRENALIN.

DR. I. HARRIS (Liverpool) writes: In an interesting paper on trench nephritis Lieut.-Colonel Michell Clarke, M.D., F.R.C.P., in the JOURNAL of August 25th, recommends adrenalin in the treatment of those cases "attended with low blood pressure." May I point out that adrenalin does not exercise any permanent influence on the blood pressure? Adrenalin administered intravenously raises the pressure for a few seconds only; adrenalin given by the mouth has a more lasting effect on pressure, but only because the process of absorption of this substance into the circulation is extended. Adrenalin is not only indicated in low blood pressure, but is equally valuable in cases of nephritis attended with high blood pressure. Adrenalin acts as a diuretic and diminishes albuminuria in cases of nephritis irrespective of blood pressure. A case with a high blood pressure, published in the last issue of the *Liverpool Medical Journal*, has done extremely well under adrenalin.

INFECTIVE JAUNDICE—A CORRECTION.

LIEUT.-COLONEL W. E. HUME asks that the following corrections may be made in the paper on infective jaundice by Dawson, Hume, and Bedson, published in the JOURNAL of September 15th, 1917: (1) Page 345, second column, line 36, "September 15th, 1917," read "April and May, 1916." (2) As the paper only treats of one type of infective jaundice, the title would be better described "Infective Jaundice (Spirchaetosis Icterohaemorrhagica)."

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NOTE.—It is against the rules of the Post Office to receive postage *retroactive* letters addressed either in initials or numbers.

NOTES FROM THE ANGLO-RUSSIAN HOSPITALS.

BY

SIR HERBERT F. WATERHOUSE, F.R.C.S.,
SURGEON-IN-CHIEF,

W. DOUGLAS HARMER, M.C.CANTAB., F.R.C.S.,
SURGEON,
AND

CHARLES J. MARSHALL, M.S.LOND., F.R.C.S.,
ASSISTANT SURGEON.

We returned some months ago from Russia after respectively eleven, eleven and a half, and six and a half months of service with the Anglo-Russian hospitals. In the hope that a record, brief and imperfect as it must be, of our work among the Russian soldiers may be of interest to our surgical colleagues in this country and on the Western front, we venture to direct attention to certain of the results of our experience, trusting that here and there a hint of importance may be gleaned by them.

We would at the outset draw attention to the fact that, owing to the stupidity of a Russian customs official on the Russo-Finnish frontier, who, in spite of our strenuous protest, couched in very indifferent Russian, tore up the manuscript of our notes of several cases, under the notion that they contained treasonable matter, this communication necessarily lacks many details of statistical importance, and that its value is impaired by the loss of these notes, because we have had to rely, in their absence, partly upon memory instead of on manuscript. Fortunately one of us (C. J. M.) was lucky in meeting with no such obstacle in his journey to England, and his notes have enabled us to fill up many blanks and to check our memory regarding many details.

The Anglo-Russian Hospital, which owes its inception largely to the energy and devotion of Lady Muriel Paget, was divided into four sections: (1) The hospital in Petrograd, in the Dmitri Palace on the Nevsky Prospect, the main street of Petrograd, an excellently equipped institution of 200 beds with a complete staff and an admirably arranged x-ray department and bacteriological laboratory, all the necessary plant having been brought from London. (2) The field hospital, a mobile unit in tents, with 42 ambulance and transport carts, 125 Russian sanitars (orderlies), and 8 British nurses, was attached to the Russian Guards and moved with them. The Russian Guards should be considered rather as an army than as a regiment, as we were informed that they numbered 120,000 men. (3) A hospital in a large barracks at Lutsch, under the care of Mr. Geoffrey Jefferson, M.S.Lond., F.R.C.S. Eng. In this hospital a vast amount of surgical work was most efficiently performed, but we had no direct connexion with it except that two of us visited it occasionally as consulting surgeons. (4) A fleet of 22 motor ambulances, which proved of the greatest value. The main roads in Russia are, in general, excellent, though in summer terribly dusty. The side roads are very bad. It was our practice to keep the motor ambulances on the main roads and to trust to horse transport to bring the wounded from the dressing stations to the main roads, where they were transferred to our admirable motor ambulances. During the eleven months November, 1915, to October, 1916, more than 6,000 patients received treatment in the Anglo-Russian hospitals. The time that the patients remained under treatment was widely different in the various hospitals. At the front it rarely exceeded one week; in Petrograd, owing to the lack of convalescent homes in Russia, the patients had to remain in hospital until their wounds were completely healed.

I. The Treatment of Infected Gunshot Wounds, with Special Reference to Compound Fractures.

As so many gunshot wounds are associated with a compound fracture of a bone it is advisable to consider their treatment together. Surgical opinion is divided on the question whether antiseptics should be employed or not. We confess that we can give no definite answer. We are convinced that strong antiseptics, such as pure carbolic acid, while they are distinctly harmful to the tissues, do not sterilize the wound; their employment we unhesitatingly condemn. It is more difficult to dogmatize as

regards the comparative value of eusol, prepared according to the formula of Professor Lorrain Smith, and the hypertonic saline solution of Sir Almroth Wright. We have treated hundreds of infected wounds and of infected compound fractures both with eusol and with hypertonic saline solution; we are not yet convinced which method presents the greater advantages. We can only state that both are, in our opinion, a great advance on older methods of treatment.

II. Tetanus.

From this scourge we were favoured with an extraordinary immunity, notwithstanding the fact that for many months we could very rarely obtain antitetanic serum. So far as we were able to ascertain only three of our patients suffered from tetanus. One patient, under the care of W. D. H., developed the disease on the fifth day after admission and died two days later. In the two other cases the incubation period was long (nineteen and twenty-two days respectively). In the absence of antitetanic serum we had to fall back upon the carbolic acid treatment. We employed far larger doses of carbolic acid than are generally recommended; thus for the first three days we administered hypodermically 1 oz. of a 5 per cent. solution of carbolic acid every four hours. In neither case was carboloria produced and both made excellent recoveries. Our experience is in striking contrast to that gained by us in the R.A.M.C.T. hospitals, where we, in the earlier days of the war, treated patients from the Western front who had not, as is now invariably the case, received a prophylactic injection of antitetanic serum. We can only attribute the difference in the incidence of tetanus to the contrast between the dusty, comparatively uncultivated soil of Volhynia and the highly-manured fields of Flanders.

Immediately on admission every gunshot wound was freely opened under anaesthesia, and finely powdered potassium permanganate (about 1 oz.) was rubbed into all the wound surface. This caused a considerable development of heat, the wound "smoked" and assumed a blackened appearance. The superficial necrosis of the tissues cleared away in four to five days, at the end of which time the wound had a healthy granulating aspect and union by second intention rapidly followed. This treatment, which we carried out in hundreds of cases of infected wounds (including compound fractures), was attended with the happiest results. It did not appear to retard the healing of the wounds, and, so far as we are aware, in no case did tetanus subsequently result. We consider the rubbing into the wound of powdered potassium permanganate an admirable method of treatment of gunshot wounds, especially in cases in which antitetanic serum is not available, and we recommend it with confidence.

III. Bullet Wounds of the Brain and Hernia Cerebri.

Of these injuries we had a large experience. Thus, in one convoy of wounded, we admitted fourteen patients suffering from rifle or shrapnel wounds of the brain. We learnt to employ the freest possible drainage, for it soon became apparent to us that the chief mortality was due to septic infection, and that the only way to avoid it was to establish the most complete drainage of the wound secretions. We therefore opened the wound widely, removed all loose fragments of bone, and, after securing efficient drainage, covered the open wound with gauze moistened with formalin lotion (2 per cent.). It is noteworthy that of these fourteen cases in this one convoy twelve left the field hospital apparently well on the road to recovery at the end of seven days from admission, and that only two died in hospital. Attention should be drawn to the difference in prognosis between cases in which the bullet perforates the skull and those in which it remains embedded in the brain. In our experience the vast majority of the former recover, of the latter die. In the base hospital in Petrograd we had a large number of cases of hernia cerebri, the result of gunshot wound of the brain. The routine treatment was to cover the hernia cerebri with gauze soaked in formalin solution (2 per cent.) for three days. At the end of this period the hernial protrusion was covered by a brownish membranous slough, and bacteriological examination proved that it was practically sterile. The protrusion was then shaved off level with the opening in the skull and the formalin dressing reapplied. As soon

as the wound was healed an operation for closure of the gap in the skull was undertaken. This was effected by turning into the opening fragments chiselled from the outer table of the skull (pericranial surface inwards) while still maintaining their connexion with the pericranium at the margin of the aperture. In other cases thin layers of costal cartilage were employed for this purpose. In every case Cargill membrane or egg membrane was inserted between the brain substance and the bone or cartilage. With the exception of one case, in which an abscess of the brain was situated underneath the hernia cerebri (this abscess was diagnosed and drained, but subsequently burst into the lateral ventricle with fatal result), this procedure secured excellent results in every instance.

IV. Compound (Gunshot) Fractures of the Lower Ends of the Tibia and Fibula.

We were amazed to find how frequent such injuries were. On one occasion we found no fewer than eleven patients suffering from gunshot compound fractures situated a few inches above the ankle-joint in successive beds in the Petrograd hospital. We are unable to account for the frequency of such injuries. We were informed by the Russian military authorities that the reason of their common occurrence was that the German and Austrian soldiers were ordered to fire at the feet of the troops opposed to them. As we have, in our experience in the 1st and 4th London General Hospitals, met with no such preponderance of similar injuries, we are not convinced that the above explanation suffices to explain the enormous number of cases we had to deal with in Russia. We refer to the matter chiefly to draw attention to the advantage to be obtained in the treatment of such injuries, especially in cases in which the deformity is marked, by subcutaneous tenotomy of the tendo Achillis, a procedure we carried out in a large number of instances with most satisfactory results.

V. Suppurative Arthritis.

It is essential to distinguish between suppurative arthritis due to a wound of the joint and those cases that are due to metastatic infection from a pyogenic focus, whether due to a wound or not. In the treatment of metastatic pyogenic arthritis we invariably adopted the plan laid down by the late John B. Murphy of Chicago, to which attention was directed by one of us (H. F. W.) in a contribution to the *BRITISH MEDICAL JOURNAL*, February 6th, 1915, entitled "The employment of ether in surgical therapeutics." In every case of metastatic pyogenic arthritis that came under our care we refrained from incision into the joint and drainage, as we knew from past painful experience that such treatment almost invariably resulted in bony ankylosis. Convinced converts to the Murphy theory, we aspirated the pus from the joint cavity, injected ether or a 2 per cent. solution of formalin in glycerin and applied adequate extension; by this we mean 20 lb. for the knee-joint; twenty-four hours later we reaspirated the joint and reinjected ether or formalin glycerin (2 oz. for the knee-joint), and continued this treatment daily until the joint recovered. So far as we are aware, in no case did ankylosis result. The results obtained in suppurative arthritis due to a wound of the joint were far less favourable. In such cases ether was inadmissible, as its vapour forced its way through the opening into the joint. Formalin glycerin was no more satisfactory, and we were driven therefore to employ free drainage combined with continuous eusol irrigation. In many such cases osseous ankylosis resulted, and in two instances amputation had to be resorted to.

VI. Bone Grafting.

This measure was employed to secure osseous union in several cases in which the loss of bone caused by a gunshot wound was too great to permit of union of the fragments. In no case was it attempted until the wound in the soft parts had completely healed. Then the fractured ends of the bone were sawn off and an intramedullary splint, obtained from the opposite tibia (the tibia was the bone affected in the majority of instances), was inserted into both revivified ends of the fractured bone and fixed securely with screws or nails. All these cases yielded a satisfactory result.

VII. Intestinal Worms.

The Russian soldier is a very frequent host of the *Ascaris lumbricoides*. In the large majority of patients proved to be infested by this worm no symptoms of ill health could be traced to its presence. The number of soldiers who vomited these worms after operation was truly amazing. One day, out of four patients who had been operated upon three vomited one or more ascarides. During our service at the field hospital a Siberian soldier was admitted nearly moribund from general peritonitis. On opening the abdomen much pus and gas escaped. In the peritoneal cavity were five ascarides, which had found their way out of the small intestine through three circular perforations of the ileum, all situated in a segment of bowel $1\frac{1}{2}$ in. in length. We were unable to discover the cause of these intestinal perforations. The patient died a few hours after resection of the affected segment of the ileum.

VIII. Gas Gangrene.

This terrible condition was the cause of the majority of the deaths at the field hospital. Many of our patients had lain, after being wounded, in No Man's Land for four or even five days, and on admission were suffering from virulent gas gangrene, with its vilely putrescent odour and grave toxicæmic symptoms. Immediate amputation, wherever feasible, was performed, and, owing to the splendid vitality of the Russian, and more especially the Siberian soldier, in a large majority of cases proved to be life-saving. In cases in which amputation was not possible—for example, in infected wounds of buttock and back—the freest incisions, combined with rubbing into the opened-up wound surfaces of powdered potassium permanganate, secured, in a considerable number of instances, an unexpectedly favourable result. Two things we learnt definitely about the treatment of gas gangrene: (a) That injection of hydrogen peroxide into the infected tissues, warmly recommended in some quarters in the expectation that the nascent oxygen will have an inhibitory effect on the development of the infecting anaerobic microbes, is entirely harmful, as it increases the tension in the affected part, whereas the desideratum is the relief of tension; and (b) that when gas gangrene affects a muscle the entire muscle should be extirpated from its insertion to its origin. This procedure we carried out in a large number of instances with very satisfactory results. A case successfully treated by W. D. H. may here be mentioned.

A Russian colonel, who had been left for five days in the open after being wounded, was admitted with extensive gas gangrene involving the whole of the upper extremity, and spreading for several inches on to the chest wall. Although there seemed to be small hope of saving life, as the patient's condition appeared desperate in the extreme, disarticulation at the shoulder-joint was performed and an intravenous injection of normal saline solution given on the operating table. Despite the extension of the gas gangrene to the subcutaneous tissue of the chest, the patient made a rapid recovery.

Isolated instances of the development of gas gangrene twenty, thirty, or even forty days subsequent to the infliction of the wound, came under our care at various times. The following case shows that the infecting microbe may remain dormant for sixty-seven days and then produce gas gangrene:

A Siberian soldier was admitted into the Petrograd hospital suffering from a comminuted fracture of the upper end of the right femur. The limb was three inches shorter than the left leg. His papers proved that he had been wounded by a fragment of a bomb sixty-six days prior to admission. X-ray examination revealed the presence of a fragment of metal the size of a filbert, wedged in between the overlapping fragments of the femur. The day after admission the edges of the wound became black and the discharge was characteristically putrid. Gas crepitation was made out around the wound, and Dr. Rosher, bacteriologist to the hospital, demonstrated *B. perfringens* in the discharge from the sinus. The patient's condition was grave in the extreme; the pulse was 140 and the temperature 103.6°. The sinus was opened widely, the bomb fragment extracted, and all the gangrenous tissue removed with scissors. The entire wound was rubbed with powdered potassium permanganate and constant irrigation with a strong solution of the same chemical was instituted. The disease was thus promptly checked and in five days the pulse and temperature fell to normal. It is of great interest to record that, a few days later, the patient developed bilateral suppurative mastoiditis and that from the gas-containing pus of the abscess on the left side *B. perfringens* was isolated.

IX. Gas Gangrene Pyaemia.

We know of no case in which gas gangrene pyaemia has been recorded, but as we were many months in Russia and unable to obtain the medical journals, we may readily have missed a notice of this condition. That there is such a thing as gas gangrene pyaemia is, we think, proved by three cases.

1. The patient just mentioned in whom the *B. perfringens* was discovered in the pus evacuated from an acute mastoiditis.
2. A young Siberian soldier was wounded near Riga, January 30th, 1916, and admitted into the Petrograd hospital on February 3rd, suffering from a fracture of the body of the left scapula caused by a bomb. There was no wound of exit. On February 4th his condition was grave, the pulse was 135, and the temperature 103.5°; there was a brawny swelling just behind the left clavicle. An incision into this swelling evacuated much stinking gaseous pus in which the *B. aerogenes capsulatus* was discovered by Dr. Rosher. The following day two small abscesses were incised, of which one, over the left tibia, contained a tiny fragment of metal and the pus evacuated contained the *B. aerogenes capsulatus*; the other, situated on the right thigh, contained the same organism. This patient, under treatment by eusol intravenously, made an excellent recovery. Naturally, as the former of the two small abscesses was the result of a wound, we lay no claim to its being of pyaemic origin. The second of the two abscesses, which was unassociated with any wound and contained the *B. aerogenes capsulatus*, appears to us to sustain our contention that it was pyaemic in origin. It must be admitted that blood cultures made by Dr. Rosher proved negative, but this is not surprising as, prior to the abstraction of the blood for the purpose of obtaining a culture, intravenous infusion of eusol solution had been employed.
3. Late one night a soldier was admitted into the field hospital suffering from gunshot wounds of the head, of the left humerus, and of the soft parts of the right thigh. The wounds were clean perforations, and the patient's condition appeared to us 'in no way serious. At 2 p.m. the next day he was almost pulseless. Examination revealed a large area of gas gangrene situated over the right lower chest and upper abdomen. Incision into this crepitant area gave exit to a large quantity of gas-containing fluid, and the subcutaneous and muscular tissues showed the typical appearance of gas gangrene. As we were at the field hospital and, at the time, overwhelmed with work, no bacteriological examination was made, but the two of us (H. F. W. and C. J. M.) who saw the case are convinced that it was one of pyaemic gas gangrene. The area of the gangrenous patch was at least twelve inches from the nearer of the two wounds. It is difficult to avoid the conclusion that the microbes were conveyed to the part by the blood stream.

X. Intravenous Infusion of Eusol Solution.

This method of therapeutics was employed by us in a large number of cases, and we entertain the highest opinion of its value as a life-saving method in many apparently hopeless cases of septicaemia and pyaemia. A striking example of its efficiency was afforded by Case 2 recorded above. Several of our colleagues who saw this patient were convinced that the young man must die, yet, thanks to intravenous eusol infusion, he made an excellent recovery. In many instances in which, for some reason not discoverable, the patient appeared to be steadily going from bad to worse from some form of septic infection, a single intravenous infusion of eusol turned the scale in favour of recovery, and this improvement was, as a rule, rapid. We may mention that in these intravenous injections we used a large dose of eusol. Almost invariably, in cases that appeared to call for its employment, 100 c.cm. of Lorrain Smith's solution of eusol were given intravenously, and we had no hesitation in repeating this dose daily for several days. No toxic symptoms were ever noticed. So far as our memory serves, our results in cases of streptococcal septicaemia were, in general, disappointing. In three such cases the intravenous injection apparently had no good effect, and a similar failure has recently been observed by one of us (H. F. W.) at the 4th London General Hospital. We can offer no explanation of the comparative inefficiency of the treatment in infections due to streptococci in contradistinction to its sterling value in other bacterial septicaemias.

XI. Tendon Transplantation in Cases in which too long a Segment of a Motor Nerve has been Destroyed to allow of its Ends being Sutured.

Two such cases came under our care, and were operated upon with very satisfactory results.

- (a) A large splinter of shell had carried away the upper four inches of the fibula, together with the external popliteal nerve and a considerable mass of muscular tissue. There was complete paralysis of motion and sensation in the distribution of the external popliteal nerve. The limb below the knee was useless, the ankle-joint fully extended, and the toes flexed. The

following operation was carried out by H. F. W.: A vertical incision, five inches in length, was made over the tendo Achillis, which was divided by two longitudinal incisions into three equal segments—an inner, middle, and outer. The three strips of tendon were divided transversely just above their attachment to the os calcis. An incision just above the external malleolus exposed the tendons of the peroneus longus and brevis. By tunnelling through the subcutaneous tissue the outer segment of the divided tendo Achillis was brought into contact with the two peronei tendons, and a small perforation having been made into each of these tendons the cut end of the outer segment of the tendo Achillis was brought through each perforation and fixed securely by means of chromicized catgut sutures. In a similar manner the inner segment of the tendo Achillis was brought through perforations in the tendons of the tibialis anticus, the extensor longus digitorum, and the extensor proprius hallucis, just above the internal malleolus, and fixed by means of sutures. The middle segment of the tendo Achillis was left unattached in the hope, which was justified, that it would unite with the short distal fragment of the tendon. The foot could now be brought to a right angle with the leg. The after progress of the case was excellent, the patient being able to walk satisfactorily and to extend his toes.

As the method gave so excellent a result, it was repeated in the case of a girl, aged 8 years, admitted into the Victoria Hospital for Children early in February, 1917, suffering from paralysis of all the muscles supplied by the external popliteal nerve, the result of infantile paralysis. In this case we were also much gratified by the result obtained, and we venture to recommend the method in similar cases.

Since the above was written we have obtained a third equally satisfactory result.

One of us (H. F. W.) has since returning from Russia had under his care two patients suffering from paralysis of the quadriceps extensor crureus muscle, the result of acute anterior poliomyelitis. In one case the tendons of the biceps flexor cruris and of the gracilis were inserted into the suprapatellar tendon of the quadriceps with excellent result, the patient being now able to extend the knee satisfactorily. The second case has been operated upon too recently to permit of any report as to the results.

(b) As the result of a gunshot wound of the right humerus a considerable comminution of the middle third of the humerus had occurred, with much callus formation and paralysis of the musculospiral nerve. An extensive dissection failed to reveal the distal end of the musculospiral nerve. It was then decided by H. F. W. to divide the tendon of the flexor carpi radialis, under the anterior annular ligament, and to insert it into the extensor tendons of the thumb and fingers three inches above the level of the wrist. This operation was easily performed, and the patient was well satisfied with the result, as he could extend the thumb and fingers completely, though, naturally, all the digits had to be extended at the same time.

XII. Surgery of Arteries.

Simultaneous Ligation of Common Femoral, Superficial Femoral and Deep Femoral Arteries.—This remarkable case, abstracted from notes by C. J. M., appears worthy of record from the fact that no gangrene followed the simultaneous ligation of all the above arteries.

The patient was admitted into the field hospital three days after he had been wounded by a fragment of shell which entered just below the left anterior superior spine of the ilium. There was no wound of exit. Scarpa's triangle was occupied by a brawny mass, the skin was discoloured, and distinct pulsation was readily made out. As the skin was threatening to rupture, an incision was made over the line of the main artery. The cavity of the false aneurysm was opened, and some 10 oz. of recent clot were turned out of the wound; furious haemorrhage occurred from the depth of the wound. Owing to the staining and infiltration of the tissues it was difficult to recognize the landmarks. The superficial femoral artery was ligated (by H. F. W.) 2 in. below Poupart's ligament. This had no effect in diminishing the bleeding. The common femoral artery was then ligated. This almost completely arrested the haemorrhage and allowed inspection of the wound. It was then clearly demonstrated that the shell fragment had torn the profunda artery completely across, exactly at the site of its origin from the parent trunk, and had thus left a hole in the latter which involved the lowest part of the common femoral and the uppermost portion of the superficial femoral arteries; the divided end of the deep femoral artery was then ligated.

The operator (H. F. W.) desires to express his thanks to his colleague, Professor Graham Aspland, for his valued help under very trying circumstances.

We, naturally, felt certain that gangrene must supervene, and the only question in our minds was as to its extent. Fortunately the circulation was completely restored, and when the patient left the hospital, ten days after the operation, the circulation, even in the toes, appeared normal. C. J. M. in his note on this case lays stress on the fact that the gradually increasing pressure on the vessels may for some time have allowed a certain amount of blood to run through the superficial femoral artery, and thus have given time for the anastomosing circulation to have been fully restored in sufficient degree to maintain the vitality of the limb.

Syme's Amputation Performed after Ligature of Posterior Tibial and Plantar Arteries.—A volunteer had been excused military duty owing to osteomyelitis of the tarsus eight years previously, with resulting ankylosis of the ankle-joint. He had, however, insisted on serving as a volunteer.

His patriotism was ill rewarded, as marching caused a recurrence of his tarsal osteomyelitis with abscess formation in the foot and numerous secondary abscesses. One of these, situated midway between the internal malleolus and the heel, had been incised in such a way that the posterior tibial artery had been severed at its point of bifurcation into the two plantar arteries. Secondary haemorrhage occurred in the train and on admission to the Petrograd hospital bleeding was still going on. The three vessels were ligated. The next day much carious bone was removed from the tarsus, but, in spite of free drainage, it was found necessary to amputate the foot. After consultation it was decided to attempt a Syme's amputation in spite of the fact that the above vessels had been ligated. The amputation was skillfully performed by our colleague, Captain Gardner, and as some sloughing was anticipated larger flaps than usual were made. Union by second intention was secured and an excellent, though somewhat bulky, stump was obtained.

An interesting case under the care of W. D. H. deserves mention:

Fracture of Base of Skull, Rupture of Both Branches of the Middle Meningeal Artery, and Laceration of Intracranial Venous Sinuses from Shell Concussion without External Wound: Recovery.

The patient could only remember that a large shell burst near him and that after this he lost consciousness. He had no wound and no bruising was discovered. Typical symptoms of intracranial haemorrhage supervened. On trephining, a long fracture was discovered running from the parietal region towards the base of the skull. Both the anterior and posterior branches of the middle meningeal artery were ruptured and had to be ligated. Much bleeding from the basal intracranial sinuses (petrosal?) necessitated firm plugging for its control. The patient made a rapid recovery.

XIII. Aeroplane Bombs and Bomb Wounds.

One of us (H. F. W.), prior to visiting Russia, had a terrible experience of the wounds caused by bombs dropped from Zeppelins, as he had been surgeon for the day at Charing Cross Hospital when the Zeppelin raid took place in September, 1915. On this occasion 100 patients were admitted into Charing Cross Hospital, of whom fourteen were dead on admission, and nine others died within twelve hours. In every wound examined bacteriologically the *Bacillus aerogenes capsulatus* was identified. The same organism was found in every case of wound caused by a bomb dropped from an aeroplane admitted into the Petrograd hospital. At the field hospital we had no opportunity of making bacteriological examinations, but, warned by previous experience, we freely opened every such wound and rubbed into the tissues the powdered potassium permanganate as mentioned above. The fact that in every Zeppelin and aeroplane bomb wound examined at Charing Cross Hospital and the Petrograd hospital the *B. aerogenes capsulatus* was demonstrated, makes us suspect that the outer casing of the bomb must have been infected with a culture of this micro-organism. If such be the case, science has surely never before been made to serve so fiendish a purpose.

On the Russian front we were greatly pestered with visits from German aeroplanes that dropped bombs with annoying frequency and regularity. Generally our unwelcome visitors appeared at about 7 a.m. and 6 p.m. Two of us were knocked down by the concussion of the air, but fortunately the bomb fragments missed us. The wounds caused by the bombs were truly terrible. Wounds of the limbs generally called for immediate amputation. Wounds of the abdomen were almost invariably fatal. Thus, on one day in which 140 bombs were dropped in our village, seven of which fell in our hospital grounds, six patients were admitted suffering from laceration of the intestines, and death resulted in every instance. In our own hospital there was fortunately no fatality from aeroplane bombs, and we attribute this immunity largely to the fact that we had surrounded our tent wards with walls of sandbags 4 ft. high. Although every tent was perforated by bomb fragments repeatedly, none of our patients received any injury.

XIV. Bipp.

Professor Rutherford Morison was good enough to send to one of us (H. F. W.) a reprint of his contribution on the

treatment of infected suppurating war wounds.¹ Unfortunately by the time we received this reprint we had already left the Russian front, and had therefore no opportunity of making trial of bipp in recent wounds. We, however, employed it in several cases at the Petrograd hospital, and have since used it largely at the 1st and 4th London General Hospitals R.A.M.C.(F.) and at Charing Cross Hospital. Bipp, which is composed of bismuth subnitrate 1 part (by weight), iodoform 2 parts, and soft paraffin in sufficient quantity to make a stiff paste, has proved entirely satisfactory in our hands and has yielded results equalling those described by Professor Rutherford Morison. We have formed the opinion that, in extensive gunshot compound fractures, free opening of the wound, cleansing it with ether or alcohol, and then packing the cavity firmly with bipp, will, in the great majority of cases, ensure the safe and painless healing of the fracture, and that this method of treatment is a distinct advance in surgical therapeutics. Our best results have been obtained with bipp in wounds that were non-perforating, as in such the paste can be more thoroughly packed away into the recesses of the wound than with a perforating wound. We have been greatly impressed with the fact that splinters of bone of considerable size, completely detached from their surroundings, can be removed from the wound, washed with ether, replaced in the gap in the bone, and there help to consolidate the fracture in the presence of bipp. We can also confirm the statements of Professor Morison (1) that when bipp is employed "all infected discharge comes from the surface of the wound in the neighbourhood of the skin. The paste in the depths is clean and should not be disturbed." (2) That a weekly dressing is all that is required; and (3) that no symptoms of iodoform poisoning need be feared.

The sole objection we have noticed in cases treated by bipp has been the occurrence of a dermatitis in the skin surrounding the wound. This, which we believe to be due to the action of nascent iodine, has been noticed in six cases. Captain J. A. Willett, R.A.M.C.(F.), has demonstrated to us that, in the presence of this dermatitis, the correct treatment is to remove the iodoform and employ only the bismuth subnitrate in the paste. Recently we have been making use of bipp in which the bismuth subnitrate and iodoform are employed in equal parts, and we have found that, while the efficiency of the paste is in no way impaired, the tendency to cause dermatitis is distinctly lessened.

XV. Powers of Resistance of the Russian Soldier.

The Russian soldier is an ideal patient. His powers of resistance are indeed marvellous. Practically every patient who came under our care was a countryman, accustomed to live in the open air, inured to extremes of heat and cold, and able to undergo major operations with a minimum of shock. One instance will illustrate the above.

At 6 o'clock one evening, one of us (H. F. W.) amputated in the middle of the thigh for gas gangrene of the leg and knee regions in the case of a Siberian soldier. The next morning, at 7 o'clock, we were awakened by the sound of the anti-aircraft guns and took refuge in one of the dug-outs. This was a necessary precaution, as every tent in the hospital was perforated by bomb fragments. Seated in the dug-out we found our patient of the previous evening quietly smoking a cigarette! In response to our inquiry how he had got there, he informed us that he had placed his arm round the neck of a fellow-patient and had hopped to the dug-out on his sound leg!

It is well known that wounds received in very cold climates tend to heal slowly, and this was noticeable during the winter months in some of our patients. The protracted healing of the wounds appeared to be due to a sluggish circulation in the part affected, but we think that a contributing factor was to be found in the poor condition of many of the patients, who were often ill-nourished and anaemic. The Russian peasant seems to be able to sustain life on a minimum of food. Weak tea, black bread, soup, and "kasha," a kind of porridge made chiefly of millet seed, with meat twice a week, make up for him what he considers a generous dietary, though a patient in a London hospital would think this a starvation allowance. Probably also the difficulty in securing adequate ventilation of the wards was a considerable factor in the difficulty in securing normal healing of wounds in winter. A temperature of

50° or 60° below freezing point does not encourage the ward sister to open the windows. The lowest temperature we experienced was 67½° below freezing point (Fahrenheit) —that is, —30° Réaumur.

XVI. Frostbite and Trench Feet.

After our experience in the 1st and 4th London General Hospitals R.A.M.C.(T.) of frostbite and trench feet occurring in British, Colonial, and Belgian soldiers, we expected to meet with numerous examples of these troubles owing to the extreme cold of the Russian winter. To our astonishment, we saw far fewer cases than we encountered in the various London hospitals. The Russian soldier knows nothing about socks or stockings. He wraps his foot in a square piece of flannel and then puts on an excellent loose-fitting top-boot. Despite the fact that he has to face a temperature 30° to 40° lower than that encountered by his British comrade, he is far less liable to suffer from frostbite or trench feet. Admittedly he is more inured to extremes of cold, but as the result of our experience we recommend, as the best way to prevent frostbite and trench feet, a flannel wrap around the foot and a loosely-fitting top-boot.

XVII. Mortality.

On the question of the percentage of deaths we regret that, owing to the loss of many of our records, we can make no authoritative statement as to the exact percentage of deaths that occurred in our hospitals. It is, of course, obvious that no comparison can be made between the Petrograd base hospital and the field hospital in this respect. In the former institution we met with much the same type of case that finds its way into the big London general hospitals R.A.M.C.(T.), and the death-rate was low, certainly under 1 per cent., and probably nearer ½ per cent. The cases admitted into the field hospital were, naturally, in general, suffering from far graver injuries. The majority of them were not sent to us direct, but were transferred, by the courtesy of our Russian colleagues, from neighbouring hospitals for treatment because of the gravity of their injuries. Thus during our time at Cherukoff, with the sanction of the General of the Russian Red Cross, our admissions were confined to cases sent to us by the surgeons of the various Russian field hospitals, and every patient admitted was in a serious condition. W. D. H. can testify that during the time that he had charge of the field hospital the mortality was 4 per cent. Later on, as our hospital became better known and only the gravest cases were sent to us, it rose to nearly 5 per cent., the most frequent cause of death being gas gangrene.

REFERENCE.

¹Lancet, August 12th, 1916.

A METHOD OF EARLY CLOSURE OF RECENT GUNSHOT WOUNDS.

BY

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EARLY closure of the gunshot wound has been for nearly three years the ambition of the surgeon and the pathologist, and although several methods have stood the tests of time and practice and have proved extraordinarily efficient, no apology is needed for making further suggestions. This paper is written to bring forward the use of a mechanical aid to excision of the wound—namely, the staining of the track of the missile, and, secondly, the use of a paste as the method of sterilization.

Excision of the Wound.

Ever since the possibility of an early closure of the wound was demonstrated by Gray and Carrel, it has been my custom in quiet times to examine and consider and operate on the wounds handed over to us in the casualty clearing station from the point of view of an early suture. In these later days the surgical organization of the armies has become so efficient that a surgical "push" in the old sense does not exist, and incisions of the fresh wound for the sole purpose of preventing spreading sepsis have been replaced for ever on the Western front by full and often final excisions. Hence this view now can be, and ought to

be, the universal one. And this outlook is the secret of success.

To the surgeon who so looks on the virgin wound which nature and the host are really anxious to close, asepsis is even more of a god than it was in his theatre at home. His operation is planned beforehand with the care and thought requisite for a possibly difficult procedure. The skin, on which rests the final visible proof of his good workmanship, is in the secondary suture preserved with the jealousy of the miser, and in a primary closure is removed with the thoroughness that eradicates rodent ulcer, so nice and so accurate becomes the generous but parsimonious balance. The incision is nowhere useless; its centre corresponds with the centre of the work, but as reckoned by ordinary war standards, it is almost appallingly long. Every part and pocket of the track is offered to his vision, and as his confidence in the certainty of early suture increases, so and at the same pace the number and length of his incisions grow and the exposure becomes automatically greater. Thought having been given to the blood supply cut off by the passing missile, the track disappears before the knife to a depth that is living and will live—it bleeds. Obstructing bridges of tissues are divided unhesitatingly with this knowledge of quick reunion, and the old operation of "removal of the foreign body" develops into an operation of some magnitude. The missile and the clothing come away buried in the tissues which surround them. Haemorrhage is arrested with more thoroughness than of old, and the toilet is as fairly finished as if the operator himself had broken the undamaged skin. Then, and only then, will all be well. Even if suture be impossible, a greater saving of life and limb will result. This is grandiose but not impossibly Utopian; it is a practical everyday affair to the surgeon who steadily preserves that outlook.

Depth of excision has always been cultivated, and after excising wounds in the usual way for nearly two years I attempted to stain the track. Since that first attempt, I have been of the opinion that formerly a complete surface excision of a deep and complicated muscle wound must have been for me a rare and happy event. Of course, by reason of important structures and the impossibility of invariably staining the whole track, complete excision is often impracticable, but the staining makes a more thorough removal possible, and also it indicates the points to which simple mechanical cleansing must be more particularly directed. When staining has been thought unnecessary, the final results have become immediately worse. In every case it is a help. It is never a hindrance, and the time expended on the actual staining is negligible. Certainly the operation is somewhat more prolonged, because the stain insists on a more thorough surface excision, and consequently multiple wounds demand multiple surgeons. At first I used a 1 per cent. watery solution of methylene blue, but later a ½ per cent. watery solution of brilliant green, for the sake of uniformity of material and its antiseptic action.

Wound Sterilization.

After complete excision, the problem resolves itself into the sterilization of a freshly infected surface. Here the first question was that of the antiseptic. Almost all available were tried, but the work of the Middlesex School in showing its peculiar antiseptic properties, its particular selective potency over the special organisms found in these war wounds, and more especially its fulfilment of practical requirements, has made me give whole-hearted support to brilliant green. But this is not all. I found that instillation of a watery solution of brilliant green through Carrel's tubes in wounds possibly incompletely excised sometimes resulted in a thin creamy yellow pus containing cocci; at this stage brilliant green, however applied, did no good; strong or weak solutions would neither sterilize nor affect the stationary condition of the wound. Dakin's solution, eusol, and other antiseptics would clear this up, suggesting the false inference that brilliant green was of inferior potency; and the simplest and one of the most effective of these complementary antiseptics was boric acid. And this might suggest that antiseptics suitably combined according to their predilection for the special organisms to be attacked might be of more value than the single antiseptic on which we commonly rely. However that may be, a combination of brilliant green and boric acid, suitably

applied, has proved of greater service than brilliant green alone. As has been stated by Webb, solutions of this dye give excellent results in the Carrel method of treatment. Solutions of the same strength by weight of brilliant green frequently possess different intensities of colour, and clinically it would appear that the antiseptic value varies with this intensity and not with the actual strength by weight.

Now the main principles of the sterilization of the wound are that the surfaces of the cavity shall be kept apart until the antiseptic has done its work, otherwise organisms will be imprisoned and spreading sepsis result; secondly, that fresh infections from without shall be impossible; and, lastly, that the local condition of the wounded part and the general condition of the patient shall be improved by providing rest in every sense of the word. And my second argument is that an adhesive preparation, which could be everywhere applied under an anaesthetic, which could remain active until the wound was sterile, and which could be removed when the wound was ready for suture, would best fulfil these requirements. Such a method reduces dressings to a minimum; the work of the medical officers, sisters, and orderlies can be diverted from the wards to the theatre, where all effort and assistance can be concentrated in the endeavour to make the first operation the last operation. The avoidance of dressings in the ward removes opportunities for daily reinfection, and early suture of the wound excludes it. Wounds are exposed for the purpose of diagnosis, rarely for treatment. As an ordinary example, with the paste to be described, a compound fracture of the humerus was looked at four times in four weeks—namely, at the operation of excision, on the fourth day for a smear count, on the fifth day at the operation of suture, and on the sixteenth day for the removal of sutures. The avoidance of pain and fear is no small matter.

A paste which would adhere to the freshly cut tissues in the presence of blood and effusion and which could be so prepared as to disappear in a given number of days, like hardened catgut, or which could be dissolved or removed at the operation of suture was required. But this healing balm has yet to be found.

Two years ago, and again later, amongst other methods I had worked at what I called the method of distension, which I will briefly relate simply as a blind alley of work. Here, after excision, the wound was primarily closed and the cavity made water-tight with two controlled inlet and outlet tubes. The wound surfaces were kept apart by light distension with various antiseptic fluid preparations until a normal temperature and pulse were reached, generally in a few days, when the tubes were removed and the sterilized surfaces fell into apposition. This primary suture was fascinating and was successful in primary amputations, excisions of joints, and in some fractures, but I discarded it because it was not safe, as no primary suture of a possibly highly infected wound can be.

The mucilages of tragacanth and acacia and gelatine had here been tried, but they would not adhere to the tissues satisfactorily for a sufficiently long period. Then Morison's bipp came into use and provided us with the best application we had seen. The results were startling, but it could be used only in small quantities on account of its poisonous effects; when very freely applied, blue lines on the gums, rapid pulses and high temperatures were not uncommon. Also slow or non-union of the skin edges was troublesome; this is commonly attributed to the liquid paraffin, but by altering its constituents it can easily be shown that the insoluble bismuth is the chief factor in producing this tardy union. However, bipp provided the requisites for the quality of adhesion—namely, the combination of an oily fluid and an amorphous powder. Experimentally, mixtures of the contents of the dispensary of a casualty clearing station and compounds obtained elsewhere were tested on raw beef in moving water, and in other ways, but nothing perfectly satisfactory has been reached. The media tried in actual practice have been varying mixtures of animal fats, suet, the hard and soft paraffins and soaps to produce pastes with requisite melting points, starches prepared in various ways, repetitions of the old mucilages, the heavy and light magnesias, calcium lactate and ordinary French chalk, liquid paraffin, olive oil and glycerin. None have been actually harmful; some could not be worked into the tissues, others remained unaffected in the tissues and could not be completely removed, and their

presence delayed healing, and others were absorbed too rapidly; none fulfilled all the requirements in the fresh wound, and, with the exception of the last five, they were definitely useless for the purpose.

Liquid paraffin and French chalk were most suitable, but, the latter being insoluble, a minimum quantity to make the paste adhere in the presence of wound fluids was determined; and this small amount does not appear to have any deleterious effect.

If necessary, the liquid paraffin can be replaced by olive oil; glycerin calls out so much fluid that it is only suitable for wounds which can be immediately closed or very rapidly sterilized.

The following paste was therefore made and is now the only one in general use:

Boric acid	...	...	...	11 oz.
French chalk	...	...	...	1 oz.
Liquid paraffin	...	...	...	8 fl. oz.
Brilliant green	...	...	...	17½ gr.*

* That is, 1 in 500.

The boric acid and French chalk must first be intimately mixed in a mortar, then the liquid paraffin worked in, and finally the brilliant green dissolved in rectified spirit. Considerable time and energy are required to avoid a paste with many isolated masses of boric acid. It is kept in jars and used chiefly from large syringes with very wide nozzle apertures or from grease pumps. Departures from the quantities and constituents of this paste have been invariably productive of worse results. If the chalk is omitted it will not adhere to any but the driest and freshest of wounds, and intimate adhesion to the tissues is an essential quality of a paste. No toxic effects have been observed.

TECHNIQUE.

Primary Operation.

After sterilization of the skin every endeavour is made to cover the wound track or surface with a one-half per cent. watery solution of brilliant green. In the case of a track this is done by injecting the dye through a metal or rubber tube of fine calibre, closed at one end like a Carrel's tube, and perforated by very many of the finest holes, so as to act as a spray; at the distal end are two rather larger holes to permit freer exit of the fluid. Tubes perforated for a distance of two, four, and six inches are used. A tube perforated for a suitable length is passed along the wound track, if possible up to the foreign body or fracture. The staining solution is then injected along the tube without force, so as to avoid opening cellular planes. Movement of the limb assists the insertion of the tube, and movement of the tube helps to a complete staining.

In the case of a surface wound, the syringe and occasionally gauze soaked in the fluid are used. At least two minutes should elapse before the excess dye is wiped away. Haemorrhage prevents staining.

The wound is then excised, using the stain as a guide. If a secondary suture is intended, only the damaged tags and a film of skin are removed, more will be cut away at a later date. Wide exposure and good visibility are essential for the removal of every particle of stained tissue; one or two incisions, each eight or nine inches long, are frequently required in a fractured femur. The excision proceeds systematically from the skin to the missile, which is removed last, preferably enclosed in its enveloping tissues. Irremovable structures are cleaned, and dirty bone is gouged. Only dry swabs or gauze soaked in spirit are used. A most scrupulous and exacting search for all bleeding points is essential.

The wound is dried throughout with spirit or 1 per cent. picric acid in spirit, and the paste is then rubbed into the tissues with all thoroughness into every recess. Five minutes may be so spent in extensive wounds. The syringe or pump is used to bring the paste to all deeper parts before rubbing it in, and later to fill the cavity to the brim. The deepest parts are treated first. Bone fracture areas are packed with it. Sutures may be inserted to bring together the skin edges which have been divided by the knife; with increasing experience more and more partial and complete primary sutures are done. Dry gauze dressing and firm bandages are applied, and splints are freely used.

After-Treatment.

Where the case progresses favourably—that is, where the temperature and pulse are descending, pain is slight or absent, and the patient is eating and sleeping well—the wound is not examined until the patient's general and local conditions suggest that the wound may be closed; in wounds of the soft parts this usually occurs on the third to the fifth day. It is impossible to give any rule as to the time for suture. Smear counts have generally been taken, and average reports of 0.2 to 2 organisms per field have been received. On the other hand, wounds with a greater number per field, even up to 9, have been intentionally and successfully sutured. It is really unnecessary to wait until the evening temperature is normal, but it is safer, and it is our usual practice. The clinical aspect of the wound and the patient's general condition are the best guides; in a patient possessing a sense of general well-being and local comfort, a normal pulse and temperature, a good appetite, and a good sleeping capacity, the wound, although glazed and green with the paste, but otherwise of good appearance and with no swelling, may be safely sutured; and experience shows that all of these requirements are not necessary. In a dubious wound or a fracture, smear counts are always made, and with cocci over four, or *Bacillus perfringens* anywhere, the case is left. If for any reason suturing is inadvisable and the paste originally put in has disappeared, the wound is repasted.

Where the case progresses unfavourably, the excision or the pasting has been incomplete, and repasting or further operative measures are required. Nitrous oxide anaesthesia is occasionally used for deep repastings in the ward. Refilling with paste and hot fomentations are frequently sufficient, as the temperature and pulse may be slow in coming down although there is no sepsis.

The Suture of the Wound.

Under an anaesthetic the wound is gently wiped out, dried with spirit, and the skin edges freshened or further excised. A very thin film of paste is then everywhere rubbed in and the excess removed. Silkworm-gut sutures are used for the skin. Closure of the cavity, preferably by underrunning gut or occasionally buried catgut sutures, is of great importance. There should be no tension on the skin; undermining followed by pasting can be safely done. Deeply running sutures have fine rubber tubes threaded on them. No drain is used with the exception of a minute one in a few fractures.

Primary Suture.

This is always done after pasting, where the wound has been completely excised without the blade of the knife entering the original wound cavity. It is frequently done in other cases and even in some minor bone injuries, but only experience with this paste can indicate the suitable ones; here the wound is filled with paste and only lightly sutured or else a very temporary drain is inserted. Primary suture will always be less safe than secondary suture, and the gain of two or three days and the avoidance of a short anaesthesia is not commensurate with the risks run in a case of the slightest doubt.

Abdominal incisions, head wounds, excisions of joints and other relatively clean wounds are pasted lightly in the absence of, and heavily packed in the presence of, a remaining cavity, followed by partial or complete primary suture as the case indicates.

All amputations in which flaps have been fashioned are filled with paste, particular attention being directed to the bone, and the flaps are apposed by two or three sutures; the closure is completed after wiping and slight repasting two or three days later when the pulse and temperature are normal. Flapless amputations are performed only in certain cases of gas gangrene or of extreme collapse.

RESULTS.

I shall not give any records; the staining and the paste are matters for trial by the individual surgeon. A strong, firm scar rapidly results; the skin unites well over a cavity such as is left by a pulped tibia. Extensive wounds of the buttock, and wounds complicated by division of large arteries or by fracture of any of the long bones, have been quickly closed. Fractures have been successfully sutured in three to five days, and wounds dividing muscle have been closed by partial primary suture with safety, which must be the outstanding feature of any method.

After the Carrel-Dakin treatment of any wound secondary suture can be safely and successfully performed at an earlier date and in the presence of a higher average field count if this paste is used.

It has also been packed into acutely inflamed cavities, such as in acute suppurative arthritis of the knee, with excellent results, but this has not been sufficiently tested to warrant a definite expression of opinion.

Where the foreign body has not been removed, I believe that pastes ought not to be used.

In conclusion, the case for complete excision must be again pleaded; it should begin and end all discussions on the wounds of war; without it, good antiseptics and this medley of pastes are almost useless in quickly healing the broken skin. Many good methods of sterilization have been doomed for want of it; a good paste will cover a multitude of sins, but ultimately the omissions will surely be found out. The pathologist has provided and is providing us with the means of sterilization, and now it rests solely with the surgeon as to whether the compound fracture shall become sterile in a few days or pass through months of continued suppuration.

My thanks go out to our consulting surgeons for their help and stimulation, to our pathologists and medical officers for innumerable suggestions in this and other work, and to the sisters for assistance in many practical details.

THE SPREAD OF INFECTION IN OPEN BONE, AND ITS BEARING ON THE TREATMENT OF PROJECTILE FRACTURE.

(Preliminary Communication.)

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This paper gives a brief review of certain features in the spread of infection through fractured bones, which we have observed when studying this problem at a base hospital in France.

Our methods of laboratory work and the precise details of our observations will be fully described elsewhere. Here it will be enough to say that the material used was chiefly obtained from freshly amputated limbs. The injury to the bone was accurately mapped out up to the furthestmost fissuring, and the spread of bacterial infection along the bone was ascertained by cutting the latter into series of sections, and taking cultures from samples gouged out at each level in succession. Blood cultures were made from the patient at the same time so as to control the possibility of any general septicaemia that might be present, because the latter would have confused our attempt to analyse the local spread of the sepsis through the bone from the original wound.

When pathogenic organisms are implanted into normal bone from the blood stream pus is produced at the site of implantation, and so long as the bone remains closed they spread along lines determined by its anatomical conformation, produce further pus, and ultimately lead to necrosis. Before the war the description of these processes and of the subsequent course of repair made up the bulk of the accessible information about the interaction of bacteria and bone.

It has long been a surgical platitude that if a bone in a condition of early acute osteomyelitis is opened up until normal looking bleeding marrow is reached, it will recover without incident beyond the separation of sequestra. In projectile fracture of the shaft of a long bone the wound itself establishes some drainage simultaneously with the introduction of the infective agent—that is, organisms are implanted on to the surface of a widely open marrow, and although the complexity of the cavity and rigidity of its walls renders perfect drainage of the bone wound an unrealizable ideal, yet the conditions on any given surface of exposed marrow are adequate to prevent that spread of the inflammatory process which leads to pus formation in a closed bone.

It is a rare experience to meet with acute spreading osteomyelitis in the early stages of projectile fracture. Pus is seldom found in the medullary cavity of a long bone, nor is it seen issuing from the end of a bone unless a fissure is present. In the latter case the pus comes from the walls of the fissure, and the assumption that the marrow is infected to any appreciable depth must, in the absence of deliberate investigation, remain a hypothesis.

On the other hand, wounded cancellous bone is, to superficial inspection, more liable to osteomyelitis than the shaft, but this appearance requires analysis before a valid comparison can be instituted.

In the first place, owing to the greater strength and elasticity of compact bone and to the tubular character of the shaft, portions of the latter broken off by a missile usually retain their vascular attachments through the periosteum and comparatively few fragments become entirely detached. The solid articular end composed of inelastic cancellous tissue is more liable to be broken up in such a way that fragments are left entirely without blood supply. Such isolated portions are readily attacked by organisms and, if not removed, become foul and necrotic.

In the second place, on account of the physical properties of cancellous bone, the surface of the fracture is always covered with a layer of debris consisting of pulverized trabeculae, dead marrow and blood clot, a culture medium highly favourable to the growth of organisms. The elasticity of compact bone, on the other hand, causes comminution of the shaft to take the form of multiple fissuring rather than of pulverization. By reason of this contrast infection of cancellous bone can best be understood through the study of the results of treatment of the fractured surface, while the process of infection of the shaft can be followed most easily in the evolution of an untreated fissure.

Fissures.

Fissures fall naturally into two categories, the open and the closed, each of which has a distinctive clinical history.

A *closed fissure* is one whose walls spring back into apposition as soon as the force of the blow is exhausted. On this account no dead space exists in which organisms can develop, and such a fissure unites without incident. Closed fissures occur only in compact bone. Two kinds are met with in association with projectile fracture—one due to the direct effect of the missile itself, in which case the fissure commences in the main fracture and ends blindly in the bone; and the other to the indirect effect of the fall or muscle twitch which follows the mechanical stimulus. In the latter case the fissure does not communicate at any point with the original bone wound, and it is apt to assume the spiral form associated with simple fracture. It is in fact a minor degree of the indirect complete fracture which not uncommonly accompanies incomplete direct fracture of a distant part of the bone, or occasionally may even be associated with a simple flesh wound of the limb.

Open fissures occur in both compact and cancellous bone. They start at the main fracture and at the other end open on the surface of the bone into either muscle or joint. They form, in fact, an integral part of the fracture and differ only slightly from it in their reaction to infection.

All fissures in cancellous bone behave as open fissures.

EXTENSION OF INFECTION ALONG OPEN FISSURES.

A fissure whose walls are not in contact with each other affords ample opportunity for the growth of any organisms which may be present in the wound, as it provides a cavity with rigid walls, full of blood clot and defiant of drainage. Its behaviour can be studied clinically in an infected fracture accompanied by fissuring, where the incisions for drainage have been confined to the region of complete solution of continuity. The fissure full of blood clot is, then, in communication at one end with the wound flora, and at the other end opens into either muscle or joint cavity.

Organisms grow along it from the point of primary infection, and, since lateral penetration of the bone by organisms and toxic absorption from the walls of the fissure are comparatively slight, the process of extension is not reflected to a noticeable extent in the temperature chart, pulse-rate, or general condition of the patient. As soon, however, as bacteria escape from the fissure into

adjacent muscle or joint cavity, the clinical picture changes to that associated with pocketing or the development of septic arthritis.

Spread along a Fissure.

The absolute rate of travel of organisms along a fissure can only be determined by the bacteriological examination of serial sections of bones removed by operation. From a clinical point of view estimates of the apparent rate of travel have also been founded on the appearance of infection in a joint at the far end of a fissure. This use of a joint as an indicator is probably fallacious, since it implies the assumption that no delay occurs at the breach in the synovial surface. Delay is known to occur in the case of anaerobes and the staphylococcus, and probably happens to a less degree in the case of the streptococcus, although the material available does not allow of precise statement with regard to this organism.

The process may be illustrated by three cases showing different stages in the life-history of a fissure.

In the first a fissure led into the shoulder-joint from an infected fracture of the surgical neck of the humerus. Serial sections at intervals of 0.5 cm. examined bacteriologically showed that after three days no organisms had grown along the fissure from the main fracture.

In the second case a shell splinter with its attached fragment of cloth was embedded in the lower end of the femur, and from its site a fissure ran up to open on the surface of the shaft 10 cm. above. When examined three days after infliction of the wound, pus had spread to a distance of 0.5 cm. from the edge of the shell fragment. Beyond this the fissure contained blood clot, which, to the naked eye, was fresh and normal in appearance. Bacteriological examination showed that streptococcus, staphylococcus, and anaerobes were present at a distance of 4 cm. from the edge of the purulent area.

In the third case a fissure 9 cm. long led down to the knee-joint from an infected fracture of the lower third of the femur. Between fifteen and seventeen days from infliction of the wound a streptococcus reached the joint, and when the limb was removed on the seventeenth day the fissure contained pus throughout its whole length from fracture to joint.

Fissures, then, offer an easy path by which infection can reach distant parts of a bone, and the organisms concerned may be regarded as growing in orderly progression parallel to and on the surface of the exposed bone from one end of the fissure to the other, or from the original site of implantation throughout all the ramifications of a comminuted fracture. In the latter their progress is often accelerated by an imperfectly drained muscle wound with its opportunities for multiplication and accumulation of a "head" of organisms.

Lateral Penetration.

Pari passu with this spread of infection parallel to the surface a second mechanism comes into play—namely, the direct growth of organisms into bone at right angles to the fractured surface. This mechanism we have named *penetration*, and have studied it by the bacteriological examination of serial sections of bone away from a fracture.

Since penetration depends primarily on the number of organisms presented to an open bony surface, it is best seen in fractures of the cancellous end of a long bone in which the original debris of crushed trabeculae, dead marrow and blood clot has been left undisturbed by surgical interference. Organisms are constantly found in such a bone, and may extend to a depth of 10 cm. or more beneath the surface. This penetration of open bone by bacteria does not appear to be influenced by the particular bone affected nor by its structural variety (cancellous or medullary), nor again by the extent to which it is bruised. Open fissures, like any other part of a fracture, allow penetration to occur at right angles to their walls, and through their agency the degree of mechanical injury of a bone is reflected in the extent of the infection of its substance.

Penetration is influenced by the following factors:

1. Surgical treatment of bone and flesh wound.
2. Diminution of blood supply to the bone.
3. Types of bacteria.
4. Time.

Surgical Treatment of Bone and Flesh Wound.

However freely the flesh wound is opened up, penetration goes on unchecked so long as the original layer of necrotic debris remains on the surface of the fracture. If

this débris is removed by gouge or curette, and firm though bruised bone left at the bottom of a freely-excised flesh wound, penetration either does not occur at all or is limited to the surface layers of the bone.

The simplest conditions under which penetration can be studied are those obtaining in a flapless amputation stump, where bone injury and sepsis of soft parts are alike minimal. If such a bone be examined by the method of serial section organisms are found limited to the terminal 1 or 2 cm. The infected bone is softened, and probably represents the area of terminal necrosis which is so frequently found at a later date. Such an amputation stump affords direct drainage of both bone and flesh wound, and may be taken as a type, departure from which is initiated by deficiency of drainage of either bone or soft parts.

Direct drainage of bone with indirect drainage of the flesh wound are the conditions present after resection of a joint for suppurative arthritis, and these may be illustrated by four cases of resection of the knee-joint following projectile wound.

In two cases the failure of the operation to control septic absorption rendered amputation necessary. In these two cases organisms penetrated 9.5 cm. and 0.8 cm. into the tibia from the cut end in six and fourteen days respectively. In the other two cases the progress of septic absorption was at once arrested by resection and the patients were transferred to England with their wounds reduced to sinuses. Eight months later Captain Everidge, R.A.M.C.T., reported that the wounds had healed rapidly and that no recrudescence of sepsis had taken place, but that the ends of the bones were in a condition of rarefying osteitis and had not united. A tentative suggestion may, therefore, be put forward that penetration by organisms represents one phase in the development of rarefying osteitis.

That direct drainage of bone plays a part in the substitution of the latter process for that of suppurative osteomyelitis is suggested by a case in which a comminution of the upper end of the ulna and a minor fracture of the articular surface of the humerus were associated with a staphylococcus infection of the elbow-joint.

At the first operation, two days after infliction of the wound, the upper ends of both forearm bones were resected and the small gutter fracture of the humerus curetted. This was followed clinically by cessation of sepsis in the forearm, with extension in the upper arm. At amputation, sixteen days later, suppurative osteomyelitis was present throughout the lower third of the humerus, while the forearm bones were normal to naked-eye inspection, though serial sections demonstrated the presence of organisms to a depth of 3 cm. from the open ends. The staphylococcus was the only organism present in all cultures.

In this case, then, three open bones communicated with a common septic cavity, and although too much stress cannot be laid on an isolated instance, the penetration by organisms of all three associated with osteomyelitis only in that bone which was imperfectly drained is a suggestive comment on the different course taken by infection in open and closed bone.

Reinforcement of bone infection from an imperfectly drained flesh wound leads to an increase of penetration. This is seen in a fracture of the articular end of the femur, where the infected knee-joint lies across the track leading from bone to surface. In one such case examined a similar fracture of the upper end of the tibia was present in the same limb. The tibial fracture was exposed in the wound—that is, the element of soft part sepsis was negligible, and in association with this, organisms were confined to the surface of the bone. In the femoral wound, on the other hand, where reinforcement of sepsis from the infected joint took place, penetration occurred to a depth of at least 2.8 cm., the organism in each case being a streptococcus.

Diminution of Blood Supply to the Bone.

The importance of this factor can scarcely be overstated, for penetration seems to be directly proportional to the degree of diminution. It frequently determines amputation, and, while its effects are seen chiefly in an increased growth of anaërobcs (as in the soft parts), it also accelerates the progress of the streptococcus.

From the clinical point of view, the significance of this factor can best be illustrated by examples of interruption of the chief artery to the bone and of the medullary artery. Of two cases of projectile fracture of the os

calcis, comparable as regards degree of injury, duration of sepsis, and types of bacteria (anaërobcs) present, the posterior tibial artery was intact in one, divided in the other. In the former, penetration reached only 0.5 cm. from the surface of the fracture, in the latter, organisms were present throughout the whole bone. Again, from a fracture of the tibia below the entry of the medullary artery penetration extended to 1.5 cm. in the upper fragment, the blood supply of which was intact, and to 5.5 cm. in the lower fragment, from which the medullary artery was cut off.

Other examples could be quoted, but these are sufficient to indicate the paramount importance of an intact blood supply in enabling bone to resist infection, and the value of conservatism in the treatment of vessels during operative interference with infected fractures.

Types of Bacteria.

The chief groups of bacteria isolated from the bones examined were, in order of frequency:

Streptococcus	...	...	...	34 per cent.
Staphylococcus	...	...	...	23 "
Anaërobcs	...	...	...	23 "
<i>B. coli</i>	...	...	...	20 "

The average depth of penetration from the surface of bones with intact blood supply was:

Streptococcus	...	...	2.0 cm. in 10 cases.
Staphylococcus	...	...	1.5 cm. in 6 "
Anaërobcs	...	...	0.8 cm. in 6 "
<i>B. coli</i>	...	...	0.7 cm. in 3 "

Bones with heavy mixed infection are excluded from the above table.

Time.

While the influence on penetration of the duration of sepsis between infliction of the wound and examination of the bone is not easy to dissociate from other factors, the following two generalizations can be made from the cases examined:

First, within the first four weeks from infliction of a wound the continued presence of organisms on the surface of a fracture does not necessarily lead to infection of the deeper layers of the bone.

Secondly, the rate of penetration is at its maximum during the first few days, to the extent that the average depth of penetration during the first week is equal to the average additional penetration during the succeeding four weeks.

CONCLUSIONS.

The following conclusions can be drawn with reference to the operative treatment of projectile fracture. Some are already well recognized, none are universally practised.

1. Soft parts killed by the direct effect of the missile require removal.

2. An infected fracture of the shaft of a long bone requires opening to the full extent of solution of continuity.

3. In infected fracture of cancellous bone the superficial débris of smashed trabeculae, etc., requires removal. Solid bruised bone is able to resist infection and may be left.

4. As penetration is at its maximum in the first few days early operation is essential, especially in fractures of cancellous bone involving joints.

5. Every artery directly or indirectly supplying a fractured bone is of importance in the defence against infection.

6. In the presence of vascular injury proximal to the fracture, radical measures, such as amputation or resection of a joint, may be adopted with less hesitation.

THE Manor House Military Orthopaedic Hospital, Golders Green, was opened by Sir William Robertson, Chief of the Imperial General Staff, on September 29th. It has been founded by the Allies Hospital Benevolent Society, with the approval of the War Office and the assistance of the Joint Committee of the British Red Cross Society and the Order of St. John. The house, surrounded by nine acres of well-wooded ground and meadow land, is used as the administrative block, with which the wards, each containing forty beds, are connected by covered ways. Electrotherapeutic and hydrotherapeutic departments have been established as well as curative workshops. The accommodation at present provided is for 120 men, but it can be extended if necessary so as to provide 1,000 beds.

A METHOD FOR EFFICIENT DRAINAGE OF THE KNEE-JOINT.

BY

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It will be generally conceded that, whether in civil or military practice, septic inflammation of the knee-joint is one of the most serious and anxious conditions that the surgeon can be called on to treat, involving as it does dangers both to limb and life.

The chief danger arises from the character and shape of the knee-joint with its various recesses and pouches, rendering efficient drainage in the ordinary position absolutely impossible.

With the limb in the usual dorsal position, the deepest part of the synovial cavity is in front of the popliteal space, much below the level of the suprapatellar pouch. Drainage is at present practically always effected by inserting a tube or tubes into the pouch above the patella, leaving much of the septic contents of the joint behind and between the femur and tibia with a tendency to make a way for itself to the surface by burrowing backwards into the popliteal space or along the course of the tendons in that region, upwards into the thigh, and downwards into the leg, or in both directions; this at the same time leads to septic absorption and blood poisoning from the imperfectly evacuated joint. Thus, in order to save life, the limb or the joint has not infrequently to be sacrificed.

Now, by changing the position of the limb, it is possible to make the suprapatellar pouch the dependent part of the joint, when by the very simple operation of inserting a tube into the top of the pouch the whole joint can be completely evacuated and purified, and if this is done sufficiently early, a speedy recovery may be anticipated with the joint mobility unimpaired.

Two changes of position will make the suprapatellar pouch dependent:

(a) The vertical position of the limb at right angles to the body with the patient in the dorsal decubitus, or

(b) The prone position of the body with the foot of the bed well raised.

In both positions the limb must be efficiently fixed on a splint, as fixation in inflammation of the knee-joint is only second in importance to drainage.

The first position can be easily maintained by a horizontal bar of wood arranged over the top of the bed, to which the limb is suspended by a pulley and weight. In this position dressings are easily carried out without moving the limb, and the pulley and weight enable the patient to be raised in bed for the use of the bedpan without pain or disturbance of the joint or dressings.

If for any reason the vertical position is inconvenient or difficult to carry out, the prone position can be adopted, the foot of the bed being raised and the limb slung from above by pulleys and weights for the thigh and leg.

This position also makes the suprapatellar pouch the dependent part of the articulation, and enables the joint to be completely evacuated of its fluid contents through a tube inserted a little way into that pouch.

As the prone position is irksome if prolonged, the patient, when once the joint has been emptied, may, if necessary, be turned on to his back, and the prone position adopted for from half an hour to an hour every four hours at first, and later about three times in the day, until the drain can be dispensed with.

When once the joint has been thoroughly evacuated of its septic contents, and if needful gently washed out with warm normal saline solution, the synovial membrane of the knee, like the peritoneum, is capable of taking care of itself. Long-continued drainage is very seldom required, and usually a movable joint will be obtained.

THE Minister of Munitions has added acetic acid of all strengths to the war material to which Regulation 30 A of the Defence of the Realm Regulations applies. Inquiries regarding this order should be addressed to the Director, Chemical Section, Trench Warfare Supply Department, St. Ermin's Hotel, Westminster, S.W.1.

FIVE HUNDRED CONSECUTIVE CASES OF ACUTE GONORRHOEA TREATED WITH VACCINES;

AND

A NOTE ON THE ELECTRO-CHEMICAL METHOD.

BY

N. P. L. LUMB, CAPTAIN R.A.M.C.

AFTER treating a large number of cases of gonorrhoea, it seemed that the only way of eradicating the disease was to attack it through the blood, in the same way as with salvarsan in syphilis. The administration of many thousand injections of a particular stock vaccine (Staphgon) prepared at this hospital brought to light one most encouraging fact, namely, the appearance of a visible discharge from the urethra or signs in the urine shortly after the injection of a moderate dose when the cure was not complete, or in other words, when the patient was not free from active gonorrhoea. This is referred to in Colonel Harrison's manual on the subject as one test of cure, and in my experience it has proved very valuable.

The return of the discharge can only be due to gonococci reappearing at the surface of the urethral mucous membrane, and it is reasonable to suppose that the vaccine has reached them through the blood stream, rendered them uncomfortable, so causing their migration from the deeper tissues to the surface. This, then, is a means of attacking the gonococci through the blood stream in the acute stage of the disease, and of penetrating tissues which the irrigating fluid cannot reach. By giving suitable doses of vaccine the hostility of the blood is increased to a maximum, whilst irrigation washes away the inflammatory products. The administration of a vaccine as a routine form of treatment in the acute stage of gonorrhoea has not up to the present been generally adopted, and I have thought it worth while to bring the results to notice. Both in regard to dosage and the period of time between successive injections experimental evidence had to be accumulated, and the effect produced by varying these two factors was observed in several hundred cases before finally deciding in favour of the method now to be described, which differs considerably from that usually adopted in the chronic stage.

REPORT ON FIRST FIFTY CASES.

The results of the first series of fifty consecutive cases are quoted below. Most of the cases to be dealt with have been severe, and owing to the circumstances in which the disease has been contracted, the patients have not reported until obliged to do so. In nearly every case there has been a discharge for at least a week before any local treatment has been commenced, and the disease consequently well established. Briefly, the pathological condition in such cases is that the gonococci have invaded the greater part of the urethra and are no longer on the surface alone, whence they can be washed out by an irrigating fluid, but have penetrated the mucous membrane and lie below the surface, as well as in the glands of Littre and the various lacunae. Once this has occurred it becomes a matter of much greater difficulty to eradicate the disease, for the irrigating fluids merely wash away the accumulated discharge and do not penetrate into these side-channels of the urethra, within which the organisms remain indefinitely. The discharge may disappear entirely under ordinary conditions of living, only to return if the patient take a considerable amount of exercise or indulge in alcohol. This is due to a reinfection of the urethra by gonococci from these glands.

The rationale of the method described is as follows:

1. To affect the blood as early as possible, with a view to

- a. Antagonizing the gonococcus,
- b. Diminishing the likelihood of complications.

2. To get as big an action as possible in the shortest time without inducing a negative phase.

It has been proved by the work of Eyre and Stewart and others that a gonococcal vaccine increases the power of the blood to destroy the living organisms, and that one positive phase can be superimposed upon another by giving suitable injections at the proper intervals, thereby obtaining the maximum effects.

In utilizing this fact two main lines of treatment were adopted:

1. Intensive dosage with a mixed stock vaccine (Staphogon) containing 20 million gonococci and 50 million staphylococci per c.cm.

2. Weak irrigations on Janet's system.

I have called the dosage intensive because the amounts given are considerably larger and the intervals between them considerably shorter than has hitherto been the case in vaccine therapy. Three injections are given within the first five days, the total number of gonococci injected in that period being 60 million and 150 million staphylococci. It is believed that by adhering to this scheme a series of positive phases is actually imposed one upon the other, thus producing the maximum effect.

Irrigation is commenced with a weak solution of potassium permanganate (1 in 8,000) and then replaced by 1 in 6,000. This strength is not exceeded without special reason. In all but a few cases it is found to be sufficiently strong, and, whilst washing out the urethra efficiently, it neither irritates nor injures the mucous membrane.

Method.

On the first morning after admission a two-glass urine test is made, the urine of six or seven hours being passed into two conical glasses on rising in the morning. About four ounces are passed into one glass and the remainder of the bladder contents into the second one. The patient stays in bed for the first three days, getting up only to irrigate in the morning and again in the afternoon. Milk diet is ordered and an unlimited quantity of barley water allowed. Aperients are given regularly as necessary to keep the bowels freely open. Irrigation is commenced with 1 in 8,000 potassium permanganate on Janet's system, the container being placed 5 ft. above the patient, who is instructed to thoroughly wash out the anterior urethra first and then to get the solution into the bladder. A dose of 5 million gonococci is given on the first morning, and urotropine, according to the following formula, for five days.

R. Urotropine...	...	...	...	gr. x
Aq. ....	...	...	...	ad 3j
R. Ac. sod. phosphat. ...	...	...	...	gr. xx
Potass. citrat. ....	...	...	...	gr. x
Syr. aurant. ....	...	...	...	3 ss.
Inf. buchu ...	...	...	...	ad 3j

Dose: One ounce of each, mixed just before taking, three times a day.

On the second day irrigation is carried out morning and afternoon as before, and the vaccine is given again on the third morning, the dose being 10 million. By the fourth day the discharge in most acute cases has diminished to a small drop and the patient is allowed to get up and go about as usual, taking a moderate amount of exercise. He now irrigates with 1 in 6,000 potassium permanganate and the diet becomes an ordinary one, except that fish or a small quantity of meat is allowed, alcohol and condiments being forbidden. On the morning after getting up a four-glass urine test is made and used as the guide in further treatment. On the fifth day the medicine is stopped and another dose (50 million) of gonococci given, irrigation being continued as before. The patient then passes a two-glass urine test, as already described, on alternate days and the treatment is modified as considered necessary. On the ninth day he receives a second dose of 50 million gonococci, and a bougie is passed on the tenth day, the urethra being massaged if the glands are involved. The bougie at this stage is valuable in three ways:

1. It allows the massage of Littre's glands.
2. It reveals any tendency to stricture.
3. It has a stimulating effect on the mucous membrane.

On the thirteenth day a third dose of 50 million is given, and by the sixteenth day, when it is again repeated, the discharge has almost invariably ceased. The urine in both glasses is clear, though the first one may still contain a few flakes. The patient at this stage is taking as much exercise as possible, playing games every afternoon and eating a full diet. If under these conditions no discharge be apparent, the irrigation is changed to 1 in 1,000 zinc sulphate or 1 in 4,000 zinc permanganate for two or three days, and then all treatment stopped. The urine is examined as before and a final dose of 50 million gonococci given two or three days after all treatment has ceased. If the patient be not free from active gonorrhoea, this "provocative" dose invariably gives rise to signs in the urine, or an obvious discharge, within twenty-four hours, and this is a most valuable test. If the urine remain clear after this, the case is watched for another three days and then considered clear.

Results.

In the first series of 50 cases so treated 37 have been discharged with an average duration of twenty-two days in hospital (that is 74 per cent.). Of the remaining 13, 6 were complicated by pus in the prostate and one with epididymitis

A certain proportion (13 out of 50, that is, 26 per cent. in the series) do not clear up in so short a time. This is what one would expect and is generally due to one of the common complications. Epididymitis and prostatitis accounted for 7 out of the 13 in the series. In these the complications are treated on the usual lines, vaccine treatment being continued. In some other cases doses of 100 million have been given at this stage with very satisfactory results. In all the complications of gonorrhoea this vaccine has given equally good results, and but a small proportion of early cases, treated with it from the time of admission, have developed prostatitis or epididymitis.

Epididymitis.—A large number of cases develop this condition before admission, but the testicle rapidly becomes normal under local treatment combined with vaccines. Two or three patients who had suffered from the same trouble in years gone by spontaneously remarked that the testicle which had always remained enlarged had, since the vaccine, assumed its normal size. The average duration of the first 11 cases treated on this plan was twenty-four days.

Periurethral Abscess.—In this condition the vaccine has proved of considerable value in helping to free the enlarged and infected glands from discharge and, at the same time, reducing the infiltration along the whole urethra which so frequently renders it like an atheromatous artery in consistence.

Arthritis.—Excellent results have been obtained. Four acute cases have been treated and all have recovered with perfect movement. One of them, who was unable to stand, was affected in the hips, knees, and ankles. He left hospital after seven weeks with perfect movement in every joint and was able to proceed direct to his unit at the front.

General Effects on the Patient.

These come under four main groups:

1. Mental relief at the rapid disappearance of the discharge.
2. Rapid disappearance of pain on micturition.
3. Rapid disappearance of pain on irrigation.
4. Exercise can be taken without delaying the cure.

The mental state of the gonorrhoea patient is very important, and anything which tends to turn his thoughts away from the site of the disease and associated ideas is valuable. The actual injections tend to do this, but far more valuable is the rapid diminution in discharge, which convinces the patient that he really is getting over the attack.

Pain on micturition and during irrigation speedily disappears, considerably increasing the patient's comfort, whilst he can lead an ordinary life and take plenty of exercise without delaying his recovery. No relapses have to be recorded so far, though nearly every case has returned direct to duty at the front.

REPORT ON FIVE HUNDRED CASES.

The foregoing report, prepared some months ago, contains the results of fifty consecutive cases treated with vaccines on the plan outlined therein. But with such a comparatively small number of cases no final decision was justifiable as to the value of the method, and it was decided to continue the investigation. Five hundred consecutive cases have now been collected, acute ones only being included, and in most of them ten to thirty days had elapsed before receiving any treatment. No selection was made and each case was added to the list on commencing treatment, any complications developed and the number of days under treatment being added on completion of attendance. The relapse rate was accurately available, because of the fact that all relapses were returned for readmission to the same hospital.

Revised Method.

A modification has been introduced in the dosage and also in the frequency of the injections, though the number of days between each remains the same. It was found that an initial dose of 50 million gonococci could be given without serious reaction, and double this dose on the third day; this plan was adopted throughout. On admission a dose of 1 c.cm. (50 million gonococci, 150 million staphylococci) is given, and 2 c.cm. on the third day. The third injection is given on the sixth day, the dose remaining the same, and a similar injection on the ninth day; two more doses of 2 c.cm. given on the twelfth and fifteenth days complete the first course. No further injections are then given for ten days. At the end of that period a second

course of six injections may be commenced, the dose remaining at 2 c.cm., and the interval between each injection being two clear days. Table I shows this in detail.

TABLE I.

<i>First Course:</i>			
First day	...	...	1 c.cm.*
Third day	...	...	2 c.cm.
Sixth day	...	...	2 c.cm.
Ninth day	...	...	2 c.cm.
Twelfth day	...	...	2 c.cm.
Fifteenth day	...	...	2 c.cm.
<i>Second Course:</i>			
Twenty-fifth day	...	...	2 c.cm.
Twenty-eighth day	...	...	2 c.cm.
Thirty-first day	...	...	2 c.cm.
Thirty-fourth day	...	...	2 c.cm.
Thirty-seventh day	...	...	2 c.cm.
Fortieth day	...	...	2 c.cm.

* = 50 million gonococci.

Many cases require one course only, others two, the latter particularly when complications are present. At the end of the first course of vaccines the two-glass urine test usually shows that the patient is practically free from discharge, apart from a little muco-purulent secretion in the morning. Irrigation is continued until nothing is seen at any time, even after vigorous exercise, and then stopped altogether. The test dose of vaccine (100 millions) is given, and the urine examined for six or seven days afterwards. If no discharge reappears the patient is considered to be clear. Owing to existing circumstances it has not been practicable to examine urethroscopically every patient before leaving hospital, but in a considerable number this was done. With regard to the second course, it should be made clear that the whole of the six injections are frequently not required. When the urine is free from flakes and no discharge is seen at any time, irrigation is stopped and the test dose of vaccine applied. Should a discharge reappear, indicating that the disease has not been eradicated, the remaining number of vaccines to complete the six is given, and then a second interval of ten days allowed to elapse. Irrigation and local treatment have been carried out in accordance with the original scheme.

Results.

The results of 500 consecutive cases are given in Table II with details of the different complications and the number of days under treatment. It will be seen that 222, or roughly 44 per cent. of the cases, were complicated. This is accounted for by two factors: (1) Active service; (2) lateness in reporting.

A patient contracting gonorrhoea often does not realize the condition until the discharge is profuse, and during that time a spell of hard work will do much harm. Also a number delay reporting to the medical officer in the hope that the discharge will disappear. Thus of 101 epididymitis cases in the series of 500 acute cases 70 were present on admission and 8 of the 10 arthritis cases. Of the prostatitis cases the exact number present on admission cannot be stated, since routine examination of the prostate was not carried out until the end of the second week of treatment.

An analysis of the uncomplicated cases shows that 60 per cent. were under treatment thirty days or less, with an average of nineteen days. The average duration for the whole of the uncomplicated cases (278) was thirty-five days, or five weeks.

The complicated cases show clearly the importance of thorough treatment of the prostate, the cases of prostatitis requiring, on an average, ten days longer than those of arthritis, and twenty-two days longer than those of epididymitis. The longest cases of all were those in which acute prostatitis was followed by acute epididymitis, this group forming 3 per cent. of the total. The average stay of all complicated cases was fifty-two days, or several days under two months.

It has from time to time been suggested, though never with adequate proof, that vaccines are dangerous in the acute stage, and lead to complications. If this were so it would have been expected that in this series of 500 acute cases, all treated from the start with big doses, a large proportion of complications would have developed, especially epididymitis and arthritis. This is not the case.

Of the 101 epididymitis cases 70 were present on admission, leaving 31 developed out of 430 cases, that is, 7 per cent.

Of the 10 arthritis cases 8 were present on admission, leaving 2 developed out of 490 cases, that is, less than 1 per cent.

The most remarkable feature of all is the exceptionally low percentage of relapses. Out of the 500 cases two only

have occurred during a period of four months after completion of the series. Many of the cases left hospital more than six months ago. This gives a relapse rate of less than 1 per cent. It is a very satisfactory proof of the value of vaccines as a test of cure, and although by omitting it the number of days under treatment could be reduced in many instances, the relapse rate would very soon counter-balance any gain. At the present time everything possible has to be done to minimize the number of relapses of gonorrhoea cases, and this system has been found, in actual practice, to be far in advance of any other; whilst the number of days under treatment compares favourably with any known figures.

TABLE II.—Results of 500 Consecutive Cases treated with Vaccines in the Acute Stage.

Number of uncomplicated cases	...	278
Number of complicated cases...	...	222
Average number of days in hospital (all cases)	...	43
<i>Uncomplicated cases 278, made up as follows:</i>		
Under treatment 30 days or less	...	157*
(Average 19 days)		
Under treatment 31 days or more	...	121
(Average 55 days)		
<i>Complicated cases 222, made up as follows:</i>		
Epididymitis	...	101
(Average 38 days)		
Prostatitis	...	94
(Average 60 days)		
Arthritis	...	10
(Average 50 days)		
Acute prostatitis and epididymitis	...	17
(Average 86 days)		
Average stay of all uncomplicated cases	...	35 days
Average stay of all complicated cases	...	52 days
Number of cases relapsing (four to six months after completion of treatment)	...	2†

* That is, 60 per cent. discharged with an average of 19 days.

† That is, less than 1 per cent.

A NOTE ON THE ELECTRO-CHEMICAL TREATMENT OF GONORRHOEA.

This form of treatment seemed to offer some hope of success, and since it has recently been brought into prominence by one or two writers, it may be of interest to record the results obtained.

The method adopted was similar to that of Russ, with the additional advantage that provision was made for distending the urethra with fluid during the passage of the current. This gave all the advantages of dilatation, together with the exposure of a larger surface to the electro-chemical action and increased hyperaemia. A perforated straight silver catheter was used, the top being closed by a small rubber cork through which a hollow silver stylet passed, reaching down to the bottom of the catheter. A small side tube also entered the catheter, so that fluids could be run in, whilst a small ring of rubber tubing round the stem, six inches from the tip, served to make a water-tight joint when the instrument was in position. A glass container and four feet of india-rubber tubing held the chemical solution, which could be run in through the side tube and out again at the top of the hollow stylet. Thus, by closing the exit from the hollow stylet, fluid could be run into the catheter under pressure, dilating the urethra and giving the advantages mentioned. The pressure was regulated by raising or lowering the glass container. Sodium iodide with dissolved iodine (5th per cent.) was used, the positive pole being connected up to the stylet within the catheter and a current of 3 milli-amperes passed for ten minutes and then reversed for a similar period.

Of twenty acute cases so treated one only, a mild case, was cured. In this instance twelve applications were given and no other treatment. In the remainder the discharge soon diminished, but the urine did not become entirely clear, and after three weeks' treatment vaccines were used. One of the twenty, a severe case, was practically unaffected after twelve applications. In others various solutions and current strengths were adopted, but with no more definite results. Undoubtedly this treatment has a beneficial influence on the urethritis in the acute stage, the discharge and soreness diminishing, but in my own cases there was nothing to show that it could be considered curative.

THE American Red Cross has sent a group of specialists in infant welfare to France. At its head is Dr. William P. Lucas, Professor of Paediatrics in the University of California. The mission will study the work already being done by the French, and will practise without fees. Its work is to co-operate with French specialists and carry on an educational campaign among French mothers with the object of securing better prenatal hygiene and scientific feeding and care of babies. Special efforts will be made to protect children from tuberculous infection.

A CASE OF GONORRHOEAL KERATOSIS.

BY

CAPTAIN W. H. BROWN, R.A.M.C.(T.C.),

AND

CAPTAIN A. M. DAVIDSON, R.A.M.C.(T.C.).

CONSIDERING the prevalence of gonorrhoea, we may say that gonorrhoeal keratosis is very rare. This case is the sixth recorded in our country, and consequently deserves to be brought to notice.

The patient is aged 25, a regular soldier, of seven years' service. He contracted gonorrhoea early in 1914 and was treated at Curragh Hospital with irrigations. After four months' treatment he was back on duty and well by July, 1914. He came to France in October, 1914, and remained perfectly well till May, 1915. He exposed himself to infection again, and was admitted to hospital on the fifth day of his second attack, May 18th, 1916. On admission he was sharply ill—temperature 102° F., acute gonorrhoeal arthritis of the right ankle and great toe, muco-purulent urethral discharge. The prostate was hard and the right lobe nodular, suggesting chronic prostatic trouble. Both seminal vesicles were also indurated and readily palpated. Four days after admission the right wrist became acutely painful and swollen, and nine days after admission there developed acute arthritis of the left knee, which within thirty-six hours had to be tapped. Over 100 c.cm. of thick serous fluid was withdrawn; no gonococci were found in the fluid, but pus cells were present. Patient was treated with urethral irrigations and vaccines—mixed gonococcus and staphylococcus. Local treatment to joints consisted of radiant heat and massage, and at the end of ten weeks he was sent to a convalescent home well.

Skin Condition.

Three days after admission peculiar small nodules were noticed on the right foot, which was greatly swollen, and as the patient's general condition was very bad, and he was anaemic, it was thought he was developing septic lesions of the skin with cellulitis. Under treatment the swelling of the foot and ankle subsided, but the skin lesions gradually became more numerous and extended to the left foot. In ten days the lesions had become quite distinct. They were hard and shotty, and when pricked with a needle were found to be solid. The accompanying photographs show the appearance and distribution of the eruption twenty days after admission. As the case was under observation from beginning to end, all the various phases could be traced, from the smallest lesion noticed to those fully developed. The small group of lesions shown in Fig. 2 on the dorsum of the right foot appeared three weeks after admission. Briefly, the eruption was discrete, and consisted of very small conical nodules or crusts, very hard, and varying in size from that of a large pin-head to that of a pea. The smallest lesions were more or less conical in shape, with a firm, horny feel, and giving the impression of being just under the epidermis, which remained intact over the small cone and normal in colour. From this stage to that of the largest there were all grades.

As the lesions increased in size the epidermis became whitish over the cone, and gradually gave way at the apex, exposing a small hard brownish crust, in colour and consistence very like beeswax. When the epidermis had completely given way a loose fringe of epithelium encircled the underlying hard cone, and the cone itself could be easily picked out from the underlying Malpighian layer, leaving a smooth pinkish area on which the base of the crust had been attached. The striking

way in which these hard cones could be picked out, even in the very earliest lesion, by artificially breaking through the covering epithelium, left no doubt that they developed between the Malpighian layer of the skin and the corneal layer. There was no bleeding on artificially removing these crusts. In the larger lesions, where the covering layer of epidermis had practically disappeared, these crusts looked as if they had been simply cemented on to the skin. Excepting a few of the largest lesions, where the crusts were disc-like—three-eighths of an inch in diameter and about one-eighth of an inch thick—they were all fairly uniform, conical, with a flat base. Some were perfectly limpet-shaped, with a concave base resting on a convex elevated surface. All the crusts were hard and dark brown in colour.

The parts affected were chiefly the soles and borders of the feet. A small group of lesions is seen on the dorsum of the right foot; some lesions were present on the dorsal and plantar surfaces of the toes; there were none on the hands or any other

part of the body. As the patient improved the crusts gradually fell off, and the skin returned to its normal condition. Cultures were taken from under the crust but no growth resulted. No initial erythema or telangiectasis was observed, as described by Williams in his case, and there was no inflammatory areola in any of the lesions. The lesions were practically all discrete, and there was no generalized plantar keratosis.

A very notable feature in all the cases that have been recorded is the simultaneous presence of gonorrhoeal arthritis, and mostly in men who have had a previous attack of gonorrhoea. The question naturally arises, What is the relation between the joint condition and the skin eruption, and what is the relation to the specific gonococcus? Are both manifestations of the presence of the gonococcus in the joints and tissues of the skin? Are they due to toxins emanating from the gonococcus, or are both trophic changes due to the gonococcus or its toxins acting through the central nervous system?—a view suggested and favoured by Jeanselme. He had noted in his cases that the reflexes in the lower limbs were greatly exaggerated.

Another notable feature is the rapid improvement of the skin lesions with the general progress of the patient. In none of the cases described has the gonococcus been found in the fluid aspirated from the joints.

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LORD RHONDDA will contribute an introduction to the new edition of Sir William Crookes's book on *The Wheat Problem* which Messrs. Longmans will shortly publish.

THE special aural board of the Ministry of Pensions has now completed arrangements for the treatment of deafened soldiers and sailors at the Central London Throat and Ear Hospital, Gray's Inn Road, London, W.C., and at the Queen Mary Hospital, Stratford, Essex. The clinic at Stratford will open on the evening of October 10th, and the clinic at the Central London Hospital on the evening of October 12th. Applications for permission to attend the clinics are to be made to the local War Pensions Committees.



FIG. 1

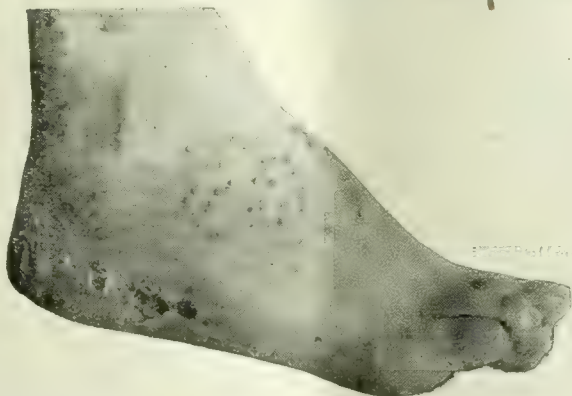


FIG. 2.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

LAPAROTOMY FOR GANGRENOUS GUT: DRAINAGE: RECOVERY.

On February 2nd, 1916, a lad of 18 consulted me for abdominal pain, the history being that he was awakened from sleep during the previous night by general abdominal pain, and then vomited. The bowels were opened.

On examination the temperature was normal, pulse 120. There was localized tenderness in the right iliac fossa. He was sent at once to another hospital as a case of acute appendix; but returned to me to watch for further developments. The whole trouble cleared up in a few days. In the second attack he was seen by another doctor, but the abdomen was not examined. The third attack was on August 28th, 1916. It was similar to the first, with a localized tenderness which cleared up in two or three days. He was attended by my partner, but I advised the patient to come into the London Temperance Hospital for appendicectomy.

The condition on September 25th was as follows: The patient was quite free from pain. The bowels were opened daily (takes salts occasionally). The abdomen moved well on respiration; no rigidity and no tenderness even on deep palpation in the right iliac fossa. On September 27th appendicectomy was performed by Mr. Arthur Evans. The appendix was red and very swollen, and suggestive of several acute attacks. On October 6th, 7th, and 8th, the patient vomited. Temperature and pulse were normal; bowels opened daily till October 7th, when they became obstinately costive. On October 11th, 13th, and 14th, there was again vomiting; bowels not opened; temperature normal, pulse 96; and on the 14th acute generalized abdominal pain set in. On October 16th the vomiting continued, and the temperature and pulse were both running up.

On October 17th at 2 a.m. a further operation was performed by Mr. Evans for acute obstruction. It was found that a Meckel's diverticulum had attached its tip to the site of the invagination of the appendix stump into the caecum, so that, at first sight, it looked exactly like the defunct vermiform appendix. This acted as a band, constricting several feet of small intestine greenish black in colour, which only very slightly improved on removing the constriction. The patient's condition was so poor that resection was out of the question, so Mr. Evans inserted a long drainage tube into the gangrenous gut, letting the free end fall into a pail by the bedside, and the patient was put back to bed with a prognosis as black as the gut.

However, the lad made a splendid recovery; a faecal fistula persisted, which was finally cut away after two smaller plastic methods had failed, and on May 5th, 1917, the patient left hospital with a soundly healed abdominal wall and bowels acting well daily.

I am indebted to Mr. Arthur Evans, F.R.C.S., for permission to publish these notes.

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THE ETIOLOGY OF SO-CALLED TRENCH NEPHRITIS.

WITH reference to the views of a recent correspondent that hyperchlorination of drinking water may be one source of this disease, I have been of this opinion for many months, and am in a position to produce considerable evidence in its favour.

Having been on active service in France in positions from a base hospital to an infantry battalion in the fighting line, I have noticed that as a general rule "the nearer the unit to the front line, the heavier the incidence of the disease." In the front and support trenches the men are placed under extremely favourable conditions for the development of acute nephritis; but in former wars and in polar expeditions very similar conditions were present without causing the disease. It is clear, therefore, that a further etiological factor must exist.

On April 20th, 1917, on taking over medical charge of an infantry battalion, I found no Horrocks's test box, and the corporal in charge of the water-carts was adding a minimum of at least one measure of bleaching powder to each water-cart.

On June 6th the Horrocks's test box arrived, and I found on testing the water that the amount of organic matter, etc., present was very low. The amount of bleaching powder per water-cart was at once reduced to a maximum of one half-measure, and it has never exceeded that amount since.

We have thus two periods: (a) April 20th to June 6th, forty-seven days, never less than one measure of bleaching powder per cart, and often more; (b) June 6th to July 12th, thirty-six days, never more than half a measure of bleaching powder per cart, and often less.

During period (a) there were numerous complaints of hyperchlorination of the drinking water (verified personally). There were seven cases of acute nephritis. During period (b) there was only one complaint of hyperchlorination. There were no cases of nephritis. The other living conditions—that is, trenches, etc.—of the battalion during the two periods were identical.

The hyperchlorination may be absolute, too much bleaching powder per water-cart; or relative, parts only of the water in the cart are hyperchlorinated owing to insufficient admixture and shaking up of the added powder. In my opinion the drinking of hyperchlorinated water by a recruit recently arrived in France, and placed suddenly under conditions imposing great strain on the kidneys, frequently determines the onset of an insidious toxic nephritis closely resembling the renal type of eclampsia in the female.

Subjoined is a list of cases of acute nephritis, with the duration of their service in France:

Service in France of Patient.				
May 4th	...	Corporal L.	...	4 months.
May 8th	...	Private B.	...	4 "
May 17th	...	Private P.	...	4 "
May 19th	...	Private C.	...	4 "
May 20th	...	Private P.	...	4 "
May 20th	...	Private R.	...	5 "
May 30th	...	Private F.	...	5 "

The battalion to which the men belonged had been on service in France for seventeen months.

S. A. BULL, M.D.Lond.,

Temporary Captain R.A.M.C.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

No. — BRITISH GENERAL HOSPITAL, MESOPOTAMIA.

COMA DUE TO SUPPURATIVE MENINGITIS: DIFFICULTY OF DIAGNOSIS.

(By Captain C. E. H. MILNER, R.A.M.C.(T.), Registrar.)

I HAVE ventured to record notes of the following case, which has recently come under my care at the above hospital, as it is illustrative of the difficulties in differential diagnosis under war conditions in a tropical climate.

Pte. T. was admitted to hospital with a statement from the medical officer in charge of his dépôt that he had been in an abnormal mental state for some two or three days. He had been kept in bed under observation, and on the day of his admission to this hospital he had been continually getting out of bed "to paddle in puddles of water." When questioned by the orderly medical officer as to what was the matter with him, he replied, "A pack of cards." These appear to have been his last words, for when I saw him in the mental observation hut about a quarter of an hour later he was already unconscious.

He was a big man, whose age was said to be 39, but who looked 50. The pulse was full and bounding, but of no great tension. The heart was hypertrophied, and the aortic second sound was a little "blurred." The temperature was 101.4° F. The left knee-jerk was lost, but the right normal; both plantar reflexes were flexor; both the corneal and the abdominal reflexes were lost. Kernig's sign was absent; there was conjugate deviation of the eyes to the left. Examination of the optic discs was difficult, and that of the urine impossible, by reason of incontinence.

In peace time this would have been at first sight a case of granular kidney with cerebral haemorrhage. But there were no localizing signs of paralysis, and the plantar reflexes were normal. The possibility of malignant malaria of the cerebral type led me to have his blood examined, but with a negative result. Although it was in Mesopotamia, and in June, the previous four or five days had been unusually cool, owing to the early Shimal, so that a diagnosis of heat-stroke was by no means certain. To my mind the diagnosis lay between cerebral haemorrhage and heat apoplexy, and, as the treatment would tend to benefit either condition, I decided on venesection followed by infusion. By this time the pulse had begun to fail, and the rectal temperature was found to have risen to 105.6° F. The patient bled sluggishly, normal venous blood, and was not improved by saline infusion. He died at about 1.30 a.m.

An autopsy was performed, which confirmed none of the above possibilities. It is true that there were several small haemorrhages in the anterior horn of the lateral ventricle, which may or may not have been the ultimate cause of death. But the striking feature of the examination was the discovery of a sero-purulent basic meningitis and of a large abscess in the left frontal lobe. Pus from this gave a pure culture of meningococci. The cisterna magna and all the ventricles were distended with sero-purulent fluid, and the meninges in relation to them were hyperaemic and inflamed.

The situation of the abscess explained the semiambulatory form of the illness, the mental condition, and the absence of any localizing neurological signs. I hope I may be forgiven for having failed to make the correct diagnosis.

Rebuelus.

HEAT-STROKE IN MESOPOTAMIA.

CAPTAIN H. STOTT, I.M.S., has written an interesting account of his experience of hyperpyrexial heat-stroke in Mesopotamia during 1915,¹ and comes to the conclusion that in many cases it was evidence of a malarial infection. and in some others was connected with the enteric group of fevers. The heat in the Persian Gulf during June, 1915, was intense, and the relative humidity of the atmosphere very high. During June, July, and August of that year 58 cases of heat-stroke were treated on board his hospital ship. Two only of the patients were Indians, the remainder were Europeans. Captain Stott remarks on the well-known rarity of pure heat-stroke among Indians, and adds that one of the two patients had enteric fever (the temperature of the body reaching 108° F., and 112° F. *post mortem*), the other relapsing fever. Amongst Europeans heat-stroke is commoner in those without previous experience of hot weather in the tropics, those of full bodily habit and a tendency to the consumption of alcohol, and those in a generally low state of health and below par for some reason or another. As regards the 56 European patients with heat-stroke, Captain Stott found that they were not without the experience of some months of life in India and the Gulf, and that intemperance was a contributory cause in but one or two of the cases. Careful examination in 33 of the instances showed that 13 had an active concomitant malarial infection, and that in 5 more the presumptive evidence in favour of malaria was very strong. Usually the patient was struck down suddenly with a well-marked heat-stroke of 107° or 108° F., and malarial parasites were subsequently found in the blood; no doubt definite cerebral malaria was present in some cases. Seven others of the 33 patients gave a positive Widal reaction that was sufficiently strong to be taken as evidence of an enteric-group infection; typical typhoid ulceration in the jejunum and upper ileum was found in one case with a fatal ending. Two of the 7 also had an active malarial infection. In 8 only of the 33 cases of heat-stroke was there no clear evidence of any concomitant infective process; naturally cases of pure uncomplicated heat-stroke do occur. Captain Stott comes to the general conclusion that directly the diagnosis of hyper-

pyrexia becomes clear in any case the patient should be placed in the coolest possible place, stripped, and cooled by water or ice as soon as possible, without a moment's delay, until the rectal temperature falls to 102° F. No alcoholic stimulant should on any account be given, but an intramuscular injection of 10 grains of bilydrochloride of quinine should be administered. Evidence of the concomitant infection presumed to be present should be looked for, and the subsequent treatment of the case determined by the results of the examination.

PRACTICAL X-RAY WORK.

OMBRÉDANNE and LEDOUX-LEBARD have published an interesting book on localization and removal of foreign bodies,² based upon their experiences in France during the present war. As will be seen from the title, the authors do not limit themselves merely to the demonstration and localization of bullets and such like objects by radiography, but go wider afield and extend their work to a consideration of the elaboration of methods so as to give the surgeon the greatest assistance possible in the operations for the removal of the foreign bodies. In this respect the authors address themselves equally to surgeons and radiographers. The monograph is most comprehensive; whilst it does not profess to discuss each and every device and variation of manipulation which has been advocated, nevertheless practically everything of any real importance bearing on the subject is fully considered. One interesting point becomes very evident in the course of reading this volume—namely, that similar ideas of technique, and similar ideas of instrumentation, have occurred to British and French workers at the same times. Methods and instruments to which we have been accustomed to attach British names we find attributed to well-known French workers. In the general scheme a division is made into two main parts—the first being given up to the finding of, and the localization of, foreign bodies; the second to their extraction. In addition, there are four introductory chapters which deal with the indispensable knowledge of x-ray work and physics necessary to a complete understanding of what follows. There are many illustrations; diagrams, and not picture radiographs, predominate, and form an important part, inasmuch as they visually interpret the text. Whilst comprehensive and detailed, the descriptions are easily followed, and, indeed, made quite simple by these admirable diagrams. All radiographers and surgeons doing war work will find this textbook full of practical information and valuable suggestions.

The second edition of ARTHUR and MUIR's *Manual of Practical X-Ray Work*³ has been brought thoroughly up to date, and is one of the best of the smaller books on this subject. The first half consists of a description of various x-ray apparatus and a short chapter on the photography of the subject, whilst the second half deals with x-ray diagnosis and therapeutics. This is a common fault in the arrangement of books on x rays. It means that whilst half the book is an elaboration of the instrument makers' catalogues and the illustrations they contain, the second and more valuable part is often unduly compressed. The chapter on localization of foreign bodies is good. The most important and valuable methods are described very simply, and no attempt is made to refer to the very numerous, and mostly worthless, methods which have been advocated by various inventors. It seems a pity that the chapter on orthodiagraphy should have been retained now that this method of examination has for practical purposes passed out of use. The chapter on photography, which deals with the various photographic processes of value in x-ray work, has been rewritten and extended, and on the whole is reliable and practical. The second portion of the book, dealing with diagnosis and x-ray treatment, passes in somewhat rapid

¹ *Studies in Malaria*. By Hugh Stott, M.B., B.S. Lond., Captain I.M.S. Calcutta: Thacker, Spink and Co. 1916. (Demy 8vo, pp. xvi + 190; with maps, charts, and illustrations. 10s. 6d.)

² *Localisation et extraction des projectiles*. By L. Ombredanne, Chirurgien des Hôpitaux de Paris, and R. Ledoux-Lebard, Chef de Laboratoire de Radiologie des Hôpitaux de Paris. Collection Horizon: Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie. 1917. (Cr. 8vo, pp. 353; 225 figures, 8 plates. 4 fr.)

³ *Manual of Practical X-Ray Work*. By David Arthur, M.D., D.P.H., and John Muir, B.Sc., M.B., Ch.B. Second and revised edition. London: William Heinemann. 1917. (Demy 8vo, pp. xiv + 351; 195 figures. 12s. 6d. net.)

review the various conditions in which radiography and x-ray therapy are indicated, and gives a fair idea of the present-day scope of this kind of work. There are many illustrations throughout the book, pictures of various apparatus, radiographs of normal and of abnormal conditions, and a series of diagrams demonstrating many of the points discussed. More care might, however, have been employed in the choice of illustrations, for, whilst many are good, some are not good, especially those used to illustrate the condition of the thorax, in which radiographs are of value in diagnosis. They do not do justice to what is one of the most striking and dramatic uses of x rays. The best part of the section allotted to therapeutics is that dealing with the treatment of ringworm; the method is described in full detail and well illustrated. As a whole this volume is an admirable introduction to an important subject, and beginners in x-ray work should find it of use.

CHEMISTRY FOR MEDICAL STUDENTS.

An excellent *Textbook of Organic Chemistry*⁴ for students of medicine and biology has been written by Professor McCOLLUM of the University of Wisconsin. It is arranged on what may be described as the usual lines, beginning with an account of the simpler organic compounds such as the hydrocarbons, alcohols, ethers, esters, and the like, and ending with brief chapters on such highly complex compounds as the terpenes, alkaloids, organic arsenical compounds, and proteins. Professor McCollum omits reference to laboratory and technical methods of preparation, and devotes most of his pages to descriptions of the biologically important compounds and the proof of their structural formulas wherever possible. In this way he presents the student with the how and the why of the reactions of organic chemistry, and sets him on the way to understanding some, at any rate, of the complicated but intensely interesting reactions of physiological and biochemical importance upon which explanations of life as a series of chemical processes must rest. The book is clearly written, and its author is to be congratulated upon the selection of the material it contains. It would, perhaps, gain by the insertion of a little more information about glycuronic acid, a substance of such common occurrence in the urine, and explanations of the derivation of such terms as "mercaptan," "alkyl," "cis," and "trans," would probably be welcomed by most students who use the book. A few misprints may be noted: "Cannizzaro," on p. 61, should be "Cannizzaro"; the use of the symbol "ba" to express a single valence of the metal Ba (p. 152) is not free from objection in a book for beginners; on p. 205 "chlor ethylacetate" should be "ethyl chloracetate"; on p. 375 "alkaptonuria" should be "alcaptonuria," in accordance with Boettcher's original spelling of the word, and "alizerin," on p. 386, should be "alizarin"; there is nowadays no justification for calling the metal aluminium by the name "aluminum" (p. 358). All these, however, are but trifling faults in what is a good book for students of elementary organic chemistry which may be cordially recommended to the attention of medical and physiological students.

The second edition of Dr. CUMMING'S *Practical Chemistry for Medical Students*⁵ is an excellent and practical handbook for laboratory use. It begins with exercises illustrating the properties and preparation of simple chemical substances, and has a good chapter on volumetric analysis. The last hundred pages deal with qualitative analysis; here some simple experiments and tests more properly belonging to elementary physiological chemistry have been introduced—very wisely, in our opinion, as the untutored student is apt to store his knowledge in compartments that do not communicate with one another, and to miss the interdependence of all the forms of chemistry he is set to learn—physical, inorganic, organic, and physiological. The use of Dr. Cumming's book will do something to bring home to him the essential continuity of these branches of

chemical science. The volume may be warmly recommended to those for whom it has been written.

Dr. STEEL'S *Laboratory Manual of Organic Chemistry for Medical Students*⁶ is a well-designed volume laying out a somewhat ambitious course for the embryo practitioner of medicine. To have worked through the many tests and preparations described in the book, and to have made adequate notes on the blank pages with which it is interleaved, would afford a first-rate training for the medical student. In this country one fears that time would be lacking for so thorough a course of training in organic chemistry, important as that subject is for the study of medicine. With this qualification, however, the volume is thoroughly to be recommended.

NOTES ON BOOKS.

THE Isles of Aran, thirty miles from Galway, and much exposed to the storms of the Atlantic, are little known. Ten years ago the Irish dramatist, John Millington Synge, wrote the story of his summer's experiences, and now an equally fascinating description of life all the year round, more particularly of the winter storms and her perilous voyages as a district nurse, has been written by Miss HEDDERMAN.⁷ In the chapter on some first cases a most graphic account of the dangers she experienced in going from one island to another to attend urgent calls makes the reader see the bravery of the natives and their skill in paddling the curragh—a frail canvas craft—through the angry seas. The authoress clearly loves these desolate islands, and gives an interesting account of their superstitions and customs, which are especially barbarous from a medical aspect, perhaps the least harmful being that the first person entering the room after the birth of an infant must spit upon the newborn, then on the mother, and finally on the nurse, doctor, or attendant, as a lifelong preservative for the child and its parents. The charm of the style and the interest of the matter are so irresistible that it is to be hoped further instalments will soon appear.

The third edition of *One Hundred and One Practical Non-Flesh Recipes*,⁸ by MARGARET BLATCH, is an excellent book for vegetarians and those who wish to substitute strange but appetizing and nutritious foods for meat. In this edition twenty-six additional recipes for dishes and cakes made of maize, oats, barley, and rice have been inserted. We recommend the book.

⁴ *A Laboratory Manual of Organic Chemistry for Medical Students*. By Matthew Steel, Ph.D., Professor of Organic and Biological Chemistry, the Long Island College Hospital, Brooklyn, New York. First edition. First thousand. London: Chapman and Hall, Limited. New York: John Wiley and Sons, Inc. 1916. (Med. 8vo, pp. viii + 193. 6s. net.)

⁷ *Glances of My Life in Aran*. By B. N. Hedderman. Part I. Bristol: John Wright and Sons. 1917. (Cr. 8vo, pp. 107; 10 plates. 2s. 6d. net.)

⁸ *One Hundred and One Practical Non-Flesh Recipes*. By Margaret Blatch, M.C.A. Third edition. London: Longmans, Green, and Co. 1917. (Fcap. 8vo, pp. 92. 1s. 6d. net.)

MEDICAL AND SURGICAL APPLIANCES.

A Modified Anchor Tourniquet.

CAPTAIN C. MAX PAGE, R.A.M.C.(S.R.), writes: In the ordinary pattern of Samway's tourniquet, though the anchor catch gives a satisfactory hold, it is not easy to fix the instrument at the required tension, nor can it be rapidly detached.

These shortcomings are due to the lack of any part of the apparatus upon which a firm purchase can be obtained. To provide this I have had a handle added in rigid continuity with the anchor. The form is sufficiently shown by the illustration.

It will be found that a tourniquet fitted with this modified anchor can be readily applied at any tension, and can be rapidly detached, even when out of sight. The pattern shown has been made for me by Messrs. Allen and Hanburys, Wigmore Street, W.



⁴ *A Textbook of Organic Chemistry for Students of Medicine and Biology*. By E. V. McCollum, Ph.D., Professor of Agricultural Chemistry, University of Wisconsin. New York: The Macmillan Company. 1916. (Post 8vo, pp. 438. 10s. net.)

⁵ *Practical Chemistry for Medical Students*. By A. C. Cumming, D.Sc. With Preface by Professor James Walker. 2nd edition. Edinburgh: James Thin. 1917. (Demy 8vo, pp. 173; 15 figures.)

British Medical Journal.

SATURDAY, OCTOBER 6TH, 1917.

THE AIR WAR.

Those who prophesied a year or more ago that the development of the war in the air would be so rapid as to become an important factor in the whole field of operations have been more than justified. The official reports of all the belligerents contain almost daily accounts of the activities of the airmen on the several fronts, the most important work being undoubtedly the results of observation of enemy preparations behind the line, enabling the guns to register all enemy defences and assemblies of troops; this registration is immensely helped by photographs taken by the observers in airplanes, which show with the utmost clearness the plan of trench systems, the disposition of blockhouses, and, what is extraordinarily interesting, the results next day of the fire of the long-range artillery thus directed. But the Germans, in pursuance of their policy of frightfulness, have made the bombardment of open towns from the air a part of their general war methods, inasmuch that London for ten days, about the full moon, has been subjected to almost daily bombardments. The number of casualties has been relatively small, and it has been calculated that the Londoner's chance of being hit is 69,999 to 1; the material damage also has been small, both results, it is believed, being due to the effectiveness of the defensive air barrage. But this barrage is not only a source of danger from the falling splinters of our own exploded shells, but the noise is nerve-racking. It has undoubtedly had an injurious effect upon many people in delicate health or of nervous disposition, but the general behaviour of the inhabitants of the great province of houses which extends into five counties surrounding the city of London itself has been admirable. The injunction to take cover after the warning is given has been generally obeyed, owing, no doubt, in no small measure to the evidence afforded by coroners' inquiries that the majority of persons injured have failed to follow out instructions.

The only exception to this good behaviour has been afforded by certain elements of the alien population of the east end, who have crowded into the tubes and thronged the platforms of the principal railway stations and the trains going even as far as thirty or forty miles from London. Arrived at their destination, they have naturally experienced great difficulty in finding accommodation, and though efforts have been made by municipal authorities to house them in public buildings, many of them have been sleeping out. The people of the localities thus invaded, though they do their best to fulfil the dictates of humanity, cannot regard the invasion with anything but distaste, mingled with some contempt for the attitude of mind disclosed; in fact, it will not be surprising if a public demand arises either for the deportation of these persons or for their segregation in camps, where the elementary principles of hygiene can be enforced.

The exodus of these foreigners has been used as an argument for a policy of reprisals; it is being contended that if air raids and the measures taken for their repulse can produce such a state of

nerves in these aliens, it is probable that raids over German towns would have a similar effect on their inhabitants. The French have, indeed, recently carried out this policy on a small scale. The Germans admittedly raid London and other English towns in order "to paralyse the enemies' war spirit," and it is argued by some, as, for instance, by Sir Henry Morris in a letter published in the *Times* of October 3rd, that by raiding every accessible place in Germany, not sporadically and intermittently, or by way of reprisals, but systematically and continuously as a deliberate and justifiable policy, the Germans can be made to realize that their Kaiser and his military despotism are unable to give them security, and that to obtain peace they must alter their aims, methods, and politics. A semi-official pronouncement published the day before asserted that there is in this country no reluctance to raid the enemy's towns, but that while the great battle on the Ypres front continues it is of the first importance that all necessary and available military resources should be concentrated there. This, no doubt, is an admission that we have not got enough aeroplanes, and we have the statement of Dr. Addison, then Minister of Munitions, that only in January last were the whole of the internal resources of the country mobilized to deal with the manufacture of aeroplanes. This is another example of the ineptitude of the policy of "wait and see" when practised during a great war. Dr. Addison went on to say that already the output "has been increased at a gigantic rate and will increase very much more." It is also to be remembered that raids from the Ypres front are made "systematically and continuously" on the aerodromes in Belgium from which the marauders start, and we are inclined to answer in the affirmative Mr. Spencer Wilkinson's question when, in another letter published in the *Times* of October 3rd, he asks whether the right way to stop air raids on London is not to destroy the German aeroplanes in Belgium. His argument that it is better for our defence to send more British aeroplanes to France for the destruction of the enemy's aeroplanes than to make air raids on German cities, which can have no direct military purpose, is in accordance with the military traditions of the British nation—traditions which have been tested and not found wanting ever since the great sailors of the eighteenth century concentrated their strategy, in spite of much criticism at home, on seeking out and defeating the enemy fleets. It is, in fact, the application of the old medical principle that prevention is better than cure. The surest way of prevention in this case is to destroy the means of aggression.

A very ugly development of barbarous German methods is seen in the deliberate bombing of advanced hospitals on the Western front, both of the British and the French armies. At first the staffs at the British front believed that the damage done to casualty clearing stations was accidental, for these medical units must often be about as far back as heavy artillery posts; we believe, however, that those on the spot are now convinced that this charitable explanation is not true, and that one fact which has helped to produce this conviction is that air raids have recently been made over hospital bases on the French coast, during one of which an American surgeon was killed. The French staff was convinced of the deliberate nature of the bombing a month or six weeks ago; the story told of an aeroplane which flew low, backwards and forwards, over two adjacent advanced hospitals behind the Verdun front left, indeed, little room for doubt. We believe

that a considerable proportion of the casualties recently reported in the R.A.M.C., both among officers and men, have occurred in casualty clearing stations, and the country has been distressed to see in the casualty list issued on October 2nd the names of four nurses—three of the Army Nursing Service Reserve and one of the Territorial Nursing Service—among the list of wounded. As Mr. Frederick Harrison has well said, we cannot copy the crimes of the Germans and can take no hand in such abominations; here, again, it would seem that the real remedy is to give the German aerodromes no rest and to continue the policy of bombing them and setting them on fire that has been successfully practised during the last month or more.

It has frequently been asserted that the co-operation between the two air services the country possesses has not always been sufficiently close and cordial, and that in particular there has been competition between them to obtain early delivery of the newest types of machines. If the statement, apparently authoritative, that the War Cabinet has decided to create an Air Ministry prove correct, a unification in supply and distribution of machines and their strategical use may be achieved which will put a term to our present civilian discontents.

THE HEALTH OF THE SCHOOL CHILD.

THE annual report¹ for 1916 of the chief medical officer of the Board of Education, though slightly longer than its predecessor, is necessarily a much smaller volume than we were accustomed to before the war. In his prefatory letter to the President of the Board, Sir George Newman shows his consciousness of what Herbert Spencer called "physical morality" as a preponderating factor in the rearing and training of children. He defines school hygiene as the branch of public medicine which is concerned with all that affects the healthy physical development of the child of school age. Its foundations are laid, first, in a system of education favourable to sound physical growth; next in a suitable school environment; and, lastly, in the medical supervision of the individual child. School hygiene is thus an integral part—one might even say the mainspring—of the public educational machine. It likewise forms a part of the public system of State medicine. Presented in this way, the idea of school hygiene is seen as no narrow notion called "medical inspection," but as an ideal towards the realization of which much has been done in the past decade, though very much remains to be achieved. The war more than anything else has brought home to the public the conception of the child as a primary national asset. Writing of the "volume of national inefficiency, of unfitness and suffering, of unnecessary expenditure, and of industrial unrest and unemployability to which this country consents because of its relative failure to rear and to educate a healthy, virile, and well-equipped race of children," Sir George Newman lays down the principle that no investment and no national economy can compare in results with care for the rising generation. Even more important in our view is his insistence that the goal of primary education is not an industrial "hand" but a healthy human personality—a good citizen. Thus we are carried with him to his logical conclusion that no reconstruction of the State can wisely ignore the claim of the child.

Although progress has been made, and has been maintained even in time of war, there is no room for

complacency. The records of the findings of the school medical service in 1916 show all too much ill health, disability, and defect of mind and body. Uncleanliness, malnutrition, and mental backwardness debar tens of thousands of children from reaping proper advantage from the educational system provided by the country. Disease takes even heavier toll of the six million children in attendance at school. We learn that probably half the whole number need dental treatment, and not less than half a million need it urgently, while a further half-million are so defective in eyesight as to be unable to take reasonable advantage of their lessons. Another quarter of a million are seriously handicapped by diseases of the ear, throat, and lymphatic glands. A year ago it was estimated in round figures that a million children of school age were so defective or diseased in body or mind as not to be able to profit reasonably by education, and there are no grounds for supposing that things are appreciably better at the present day.

The investigations of the school medical service have thus revealed the gigantic size of the evil. What is to be done? In the opinion of Sir George Newman the evil is only remediable by systematic and continuous attention. The necessary machinery is in existence; "in some areas," he says, "it is yielding adequate returns; in other areas it is insufficiently applied, or misapplied, to the problems presented; and in other areas, again, particularly in regard to medical treatment, it is in abeyance, or wholly ineffectual, due in part to a failure to foresee the vital importance to the nation of the health of the children and in part, perhaps, to a sense of false economy or even parsimony."

The problem is by no means simple, nor can it be solved by merely applying the whip and the spur to inert and obstructive local education authorities, for persons and authorities outside their control share their responsibilities and their powers. At each stage of the child's passage from infancy to adolescence there is overlapping, confusion, and competition among the authorities charged with his care; and, indeed, it is so throughout the seven ages of man. It is recognition of this which has given such strength to the movement towards a Ministry of Health. As an official Sir George Newman naturally confines his suggestions for reform to the matter immediately in hand, but his words are capable of a far wider application. "What is needed," he says, "under existing circumstances and under existing law, is therefore an effective unification of all the powers having for their purpose the healthy upbringing of youth," and "an understanding of the whole problem as one and the same problem and an administration of the law affecting it as a unified and co-ordinated administration in every locality."

The introduction to the report concludes with a statement of the steps necessary from the medical point of view in order to secure the full value of the school medical service to every child of school age in each area. They are defined in a series of seven propositions, together constituting a minimum standard of the physical claim of the individual child. These requirements are as follows: (1) That every child shall periodically come under direct medical and dental supervision, and, if found defective, shall be "followed up." (2) That every child found malnourished shall, somehow or other, be nourished, and every child found verminous shall, somehow or other, be cleansed. (3) That for every sick, diseased, or defective child skilled medical treatment shall be made available, either by the local education authority or otherwise. (4) That every

¹ Annual Report for 1916 of the Chief Medical Officer of the Board of Education. [Cd. 8746.] London: H.M. Stationery Office. (Is. net.)

child shall be educated in a well-ventilated school-room or classroom, or in some form of open-air school-room or classroom. (5) That every child shall have, daily, organized physical exercise of appropriate character. (6) That no child of school age shall be employed for profit except under approved conditions. (7) That the school environment and the means of education shall be such as can in no case exert unfavourable or injurious influences upon the health, growth, and development of the child.

Simple, and we might add self-evident, as each proposition is, Sir George Newman admits that together they comprise a somewhat formidable policy of child welfare. They cannot all be realized immediately, but they embody principles which every local education authority should be compelled to recognize and to carry into practice to the best of its powers. By such means "the normal child, who after all is more important to the nation and to the future than the deficient child, may grow strong, healthy, and capable." With the information closely packed within the body of the report we hope to deal in a later issue.

GERMAN PRISON BRUTALITIES.

WHEN we in this country first began to realize that prisoners, both military and civil, in German hands were being ill treated, and kept under conditions which must inevitably lead to the spread of typhus and other epidemic disease, we had, in order to check the individual stories that came through, to depend largely on the official reports of the American Ambassador at Berlin and his staff. Taking these reports and the scientific descriptions of the epidemics given by British medical officers who escaped with their lives from the camps, especially that by Major Davy and Captain A. J. Brown on two thousand cases in a single prison camp (at Gardelegen) published in this JOURNAL on November 20th, 1915, it was pointed out that the German apologists had the choice of two alternatives, and two only: either they were acting with deliberate malice in the expectation, which was fulfilled, that large numbers of their captives would suffer horribly and that many would die, or they were displaying gross ignorance and incompetence. After a time Mr. Gerard's reports stopped because, it now appears, German officials affected to regard true statements as insults. Undoubtedly if they had not been true they would have been insulting. Mr. Gerard, in one of the chapters of his book *My Four Years in Germany*, which has been appearing in the *Daily Telegraph*, says: "I did not find the Germans at all efficient in the handling of prisoners of war. The authority was so divided that it was hard to find who was responsible for any given bad conditions. For instance, for a long period of time I contended with the German authorities for better living conditions at the civilian camp of Rühlleben. I was promised time and again by Colonel Friedrich, by the camp commander, and by the Foreign Office that these conditions would be remedied. In that camp men of education, men in delicate health, were compelled to sleep and live six in a box stall, or so closely that the beds touched each other; in hay lots, the outside walls of which were only four feet high. Finally, almost in despair, I wrote identical personal letters, after having exhausted all ordinary diplomatic steps, to General von Gessel, Commander of the Mark of Brandenburg, to the commander of the corps district in which the Rühlleben camp was situated, and to the Minister of War. The only result was that each of the officers addressed claimed that he had been personally insulted by me because I had presumed to call his attention to the inhuman conditions under which the prisoners were compelled to live in the Rühlleben camp." Mr. Gerard says, however, that undoubtedly the worst

prison camp was that of Wittenberg. At first he and his staff were unable to visit this camp owing to the outbreak of typhus fever, but one of his staff was able to converse with some of the prisoners from outside the barrier of barbed wire. Mr. Gerard states that the Russian soldiers arriving at Wittenberg were not properly disinfected and that the outbreak of typhus fever was the consequence. The British medical officers in the camp protested to the camp commander against the herding together of the French and British prisoners with the Russians, who were already suffering from typhus fever, but the camp commander said, "You will have to know your allies," and kept all his prisoners together; thus, as Mr. Gerard says, he "as surely condemned to death a number of French and British prisoners of war as though he had stood them against the wall and ordered them shot by a firing squad." Mr. Gerard confirms the statement that the camp during the epidemic was virtually deserted by the Germans, and that the German doctor did not make as many visits to the camp as the situation required. He also confirms the story that dogs were kept, not only outside the camp, but inside, where they attacked the prisoners. It is also undoubtedly true, he says, that the prisoners were knocked about and beaten in a terrible manner by their guards. In response to very vigorous protests by Mr. Gerard, the dogs were withdrawn, but the whole story reveals a mixture of incompetence and callousness which, until we were made acquainted with German mentality, would have been considered incredible in officers employed by a nation which considers itself civilized.

THE STUDENT'S OUTLOOK.

SINCE the war the inaugural address at the opening of the winter session of the medical schools has largely fallen into abeyance, but a few hospitals still maintain the custom. At Charing Cross Hospital, on October 1st, under the presidency of Sir Herbert Waterhouse, the prizes were distributed, and an address given by Dr. Christopher Addison, Minister of Reconstruction, a former member of the teaching staff. Dr. Addison first spoke of the shortage of medical students. He quoted from the figures which were given in a leading article in last week's JOURNAL, and reached much the same conclusion—namely, that for some years to come the medical profession will not be recruited in a sufficient measure to overcome the ordinary civil wastage, to say nothing of the losses directly due to the war. Hence the necessity for more recruits, and the obligation on those continuing their studies to make the best of their opportunities. Taking Sir George Newman's annual report, to which we refer this week, as a text, Dr. Addison spoke of the great work which lies before the profession of medicine in assisting to cope with the problem of national disability, and in taking its due share in a sustained and comprehensive programme of health effort. His own position in the Government added force to his remark that the tasks lying to the hand of the statesmen of medicine are great enough for the most ambitious, and that in their fulfilment the profession can, if it will, play a great part. Taking a wide view of the future, he came to the conclusion that there have not been for some generations brighter or better opportunities for those now entering the profession of medicine. At the London (Royal Free Hospital) School of Medicine for Women the opening ceremony was presided over by Dr. Louisa Aldrich-Blake, the dean, who stated that the addition of 110 new students brought the total numbers of the school up to 450. Dr. Louisa Garrett Anderson, in the course of her inaugural address, spoke of ambition in its best sense, and of the ideals which women medical students should keep before them throughout their career. In her belief the medical profession was the finest vocation for women, but beyond that it furnished the best training for public life. (Great as was the

importance to women medical students of personal success, this could not be so satisfying as the idea of enriching the profession they had joined and making it greater and more attractive.

MEDICAL NOVELISTS.

It might have been expected that doctors would have excelled as writers of fiction, especially of the psychological kind. Their training makes them skilful in observation and they see human nature as it is when divested of shams and affectations. Yet few of them have attempted this kind of literature and very few have succeeded in it. If a man is actively engaged in practice he has little time for the cultivation of any literary gift he may possess, and the very closeness of his contact with the grim realities of life interferes with the play of imagination and gives a hardness to his conceptions which makes it difficult to mould them into the forms of art. The doctors who have been successful as writers of fiction are nearly all men who have left their original profession for literature. But it is interesting to note how their medical knowledge reveals itself in their work. It is shown not only in the avoidance of the grotesque mistakes which even the most careful non-medical writer can hardly hope to escape, but in the clear notion they have of the intimate relation between the body and the mind and of the manner in which heredity and physical constitution shape the character. Zola made large use of the phenomena of disease and theories of heredity in his fiction; he collected facts with the most laborious industry, but want of first-hand knowledge often betrayed him into misconception and error. On the other hand, although Rabelais was a doctor only by second intention, so to speak, he had a regular training in the medical science of his day and actually practised as a physician. The result is that *Pantagruel* and *Gargantua* are pervaded and, in the scholastic sense, informed by his medical knowledge. Numerous illustrations from anatomy and physiology are to be found in his writings, and he planned out a scheme of education which proves how sound a conception he had of hygiene and of the need for physical as well as mental training in the education of the young. At the annual dinner of the Norwich Medico-Chirurgical Society in 1904 Sir Arthur Conan Doyle expressed the conviction that whatever line of life a man went into, as long as he was to use his brain, the medical training was absolutely the best he could undergo, for by no other means could he get to the fundamental and absolute facts of life. In connexion with this pronouncement we may recall the fact that Turgueniev frequently regretted that he had not studied medicine; he took every opportunity of repairing this omission by attending lectures on medical subjects. The creator of Sherlock Holmes has made considerable use of his professional experience in his novels, and in particular he has described the "qualified quack" with an insight that only what Iago calls his own gained knowledge could have given. Weir Mitchell has drawn a companion picture, but with less subtlety, in his *Autobiography of a Quack*. In *Roderick Random*, *Peregrine Pickle*, and elsewhere Smollett has given us the "form and pressure" of the medical profession in the eighteenth century. Goldsmith, who studied medicine in an erratic way at Edinburgh, Leyden, and Padua, used whatever knowledge he picked up chiefly in the exposure of quackery. Oliver Wendell Holmes, in his story *Elsie Venner*, which was unkindly called a "medicated novel," has described with great power a very abnormal and far-fetched instance of inherited instinct. And in the Autocrat's monologues on things in general medical illustrations occur almost on every page. Sir Henry Thompson tried his versatile hand at novel writing, but with indifferent success. Perhaps the best account of the advantages of medical study to a writer of fiction is given by Anton Pavlovitch Tchekhov, who died in 1904 at the age of 44. He was in the first rank of

contemporary Russian writers. He had studied medicine at Moscow, where he graduated in 1884, and his scientific training made his outlook on life more penetrating and far-seeing than it would otherwise have been. He had in an eminent degree the power of picking out the essential features of a phenomenon or an event, and entering into the minds of others and, as Goethe puts it, imitating their manner of conceiving. This he considered to be in a large measure the outcome of his medical training. He says in his autobiography: "That study (medicine) greatly enlarged the field of my observations, enriched me with knowledge of which the true value to me, as a writer, can be appreciated only by those who are themselves doctors. Those studies also exercised on me a directing influence, and it is probably thanks to medicine that I have succeeded in avoiding a number of errors. Knowledge of natural science and of scientific methods has obliged me to keep myself constantly on my guard. I took care, wherever possible, to conform to scientific truth, and when that was impossible I preferred not to write."

DIARRHOEA DUE TO EMETINE.

EMETINE, like some other valuable drugs—for example, arsenic—may, when given in considerable quantities, produce the symptoms which, when taken in more moderate doses, it tends to cure. Nearly two years ago Dale¹ threw out a warning as to the occurrence of chronic emetine poisoning based on experimental work, and now, from their clinical experience in China, Kilgore and Liu² show the importance of recognizing that emetine may cause diarrhoea, and record some cases in point. The difficulty is that the diarrhoeic stools due to emetine are almost indistinguishable to the eye from those of the amoebic dysentery for which the drug was given. Thus, a patient receives daily injections of emetine, with the result that the dysentery improves and amoebae disappear from the faeces which become more or less normal; then (emetine) diarrhoea occurs, with reappearance of mucus and blood, and if, under the assumption of a dysenteric relapse, the emetine is pushed, the condition becomes aggravated and death may follow, as in one case quoted by the authors. Fortunately, if the real cause of the secondary diarrhoea is realized and no more emetine given, recovery follows. Experiments by the authors and others show that in animals emetine may produce haemorrhagic gastro-enteritis with haemorrhages in the lymphatic glands, spleen, kidneys, and in the thymus of young dogs; these experimental animals die even if the emetine is discontinued directly symptoms appear. Kilgore, who previously wrote on peripheral neuritis following the emetine treatment of amoebic dysentery, will presently publish his observations on experimental peripheral neuritis induced by emetine.

THE MEDICAL INQUIRY COMMITTEE IN FRANCE.

THE committee appointed by the Secretary of State for War to inquire into various matters connected with the personnel and administration of the Army Medical Services in France and in the United Kingdom, which went to France on September 1st, has now returned to this country after visiting the various armies and bases, and examining a number of witnesses. It will, we presume, next proceed with its inquiry in this country, but we are inclined to think that it would be well advised to make an interim report at an early date with regard to army medical organization in France. We have no doubt that that report will show that the wounded and sick are being quickly, efficiently, and considerately treated, but it is to be anticipated that the committee will be able to make some recommendations as to economy of personnel, and these must, it is to be assumed, necessarily

¹ H. H. Dale, BRITISH MEDICAL JOURNAL, 1915, ii, 895.

² A. R. Kilgore and J. H. Liu, Arch. Int. Med., Chicago, 1917, xx, 178-185.

involve also some administrative suggestions. It will be remembered that the chairman of the committee is Major-General Sir Francis Howard, K.C.B., recently Inspector of Infantry, and that the other members of the committee are all medical men—namely, Sir Rickman J. Godlee, Bt., Sir Frederick Taylor, Bt., Sir W. Watson Cheyne, Bt., Lieut.-Colonel H. J. Stiles of Edinburgh, Dr. Charles Buttar, and Dr. Norman Walker; the secretary is Dr. J. B. Christopherson.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

THE general meeting of the profession to make better known the aims of the War Emergency Fund of the Royal Benevolent Fund and to nominate a general committee, which is to be held next Wednesday at the house of the Medical Society of London, 11, Chandos Street, Cavendish Square, will be presided over by Lt.-Col. Sir Alfred Pearce Gould, K.C.V.O., who will take the chair at 5 p.m. The means that can be taken to make the fund widely known, and to ensure its success, will be discussed, and it is hoped that the meeting will be largely attended. The fund was instituted last year to afford assistance to members of the profession who, in consequence of having to join the Army Medical Service, find themselves in temporary difficulties. Many medical men when called up had to leave on very short notice, without time to make adequate provision for the continuance and maintenance of their practices during their absence. Consequently they had to face a serious fall in income, even when supplemented by army pay, while many expenses, such as rent, insurances, taxes, family maintenance, and education could not be reduced. Although it may be hoped that in a year or two after their return those affected will recover their position, still in the interval help is and will be required. To be effective the grants made must be on a liberal scale, and the fund a large one. The amount obtained in 1916 was about £4,000, but at least £25,000 will be needed if even a small proportion of those requiring assistance is to be helped. The appeal is primarily to the medical profession, but is not restricted to it, and it is hoped that the public will be ready to bear its share, and to show by liberal contributions its appreciation of the special services so freely rendered by the medical profession to the country. The War Emergency Fund is a special department of the Royal Medical Benevolent Fund, and contributions should be made payable to the honorary secretary, War Emergency Fund, 11, Chandos Street, Cavendish Square, W.1.

WORMS AND THEIR SYMPTOMS.

ALTHOUGH it is impossible to name any particular group of symptoms which points clearly to the presence of intestinal worms, this is assuredly not because symptoms are wanting, but, on the contrary, because they are so numerous and at the same time so inconstant that no diagnostic value attaches to them. In children these parasites may determine convulsions and symptoms closely simulating the meningitic state. Most practitioners, too, have met with cases in which attacks of high fever, more or less resembling typhoid, turn out to be due to helminthiasis, in that all the manifestations disappear on the expulsion of the worm or worms. The ancients used to call this state "verminous fever." But it would be difficult to mention a symptom which has not at one time or another been noted in this connexion. Among those more frequently met with are: Cardiac arrhythmia, inequality of pupils, pruritus, attacks of giddiness or faintness, periods of pallor, photophobia, and spasm of the glottis. Nutrition may be gravely affected, so that in spite of a voracious appetite the subject grows steadily thinner and haematopoiesis is interfered with, leading to anaemia and more or less marked changes in the

leucocytic formula. Special local symptoms are associated with infestation by the *Ascaris lumbricoides* in consequence of its vagabond habits leading it into the larynx, nasal fossae, and the vermiform appendix. It has been credited with the causation of abscess of the liver, of intestinal obstruction, and has even been accused of setting up peritonitis. Recent publications make it clear that intestinal worms may determine symptoms closely resembling appendicitis. This recalls Metchnikoff's suggestion that, whenever there is a history of helminthiasis, or any reason to suspect its existence, it is well to try anthelmintic remedies before resorting to operation. Systematic examination of the faeces has shown the extraordinary prevalence of intestinal parasites among hospital patients, and therefore presumably among the general population. This method of diagnosis therefore deserves trial in obscure cases in which this etiological factor cannot be formally excluded.

TRAUMATIC LESIONS OF THE CERVICAL SYMPATHETIC.

THE multiplicity and various characters of wounds observed during the war have necessarily expanded our knowledge in many directions, and among such observations it is natural to extend a special welcome to those from the Belgian Army Medical Department. In an article entitled "Contribution à l'étude du syndrome Claude Bernard—Horner," a Belgian regimental surgeon, H. Burger,¹ discusses the manifestations of traumatic lesions of the cervical sympathetic. In 1858 Claude Bernard showed experimentally that paralysis of the cervical sympathetic caused (1) pseudo-ptosis due to paralysis of the involuntary muscle in the upper eyelid; retraction of the eyeball (enophthalmos) from paralysis of the smooth muscle fibres in the palpebral portion of Tenon's capsule, which normally antagonize the backward pull of the recti muscles; myosis with preservation of the pupil reactions; (2) dilatation of the blood vessels of the face and neck; excessive sweating; and eventually loss of tension in the eyeball and facial hemiatrophy. Clinically, traumatic lesions of the cervical sympathetic, long ago investigated by the late Sir J. Hutchinson, do not show such a constant syndrome; and though the motor phenomena are commonly present the other signs may be absent, as is brought out in Roche's recent analysis of eleven cases observed during the war. After touching on the various explanations of this dissociation and the light recently thrown on the subject by the effects of cocaine and adrenin on the iris, Burger argues that the frequent dissociation of the constituent signs of the syndrome depends on partial or slight damage of the cervical sympathetic, or possibly on a special susceptibility of some of its parts. In addition to the other signs he draws attention to transient diplopia, etiologically related to the enophthalmos.

THE Harveian Oration before the Royal College of Physicians of London will be delivered on Thursday, October 18th, at 4 p.m., by Dr. Robert Saundby of Birmingham.

THE Army Medical Exhibition in the Museum of the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., will be opened on Thursday, October 11th, at 3 p.m., by Sir Alfred Keogh, G.C.B., Director-General of the Army Medical Service, when the honorary fellowship of the College will be bestowed on him. The specimens which are to be on exhibition have been collected by officers of the R.A.M.C., and are being prepared and shown by members of the museum staff of the College.

¹ H. Burger, *Arch. méd. Belges*, Paris, 1917, lxx, 303-320.

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Wounded.

Surgeon A. E. PANTER, R.N.

ARMY.

Killed in Action.

CAPTAIN W. R. ASPINALL, M.C., A.A.M.C.

Captain W. R. Aspinall, M.C., Australian Army Medical Corps, whose death in action was recorded in our issue of August 18th, was born in 1893. He was the youngest son of the Rev. A. A. Aspinall, M.A., and was educated at the Scots College, Sydney, of which his father had been principal for twenty-one years, and won his college blue for cricket, football, and tennis. He studied medicine at Sydney University, and obtained the M.B. Ch.M. degrees with honours in 1915. Whilst at the university he was captain of the first football team, and gained his blue for interstate football. Before taking up his commission in the A.A.M.C. he was a resident medical officer at the Sydney Hospital. His three brothers, all medical men, have seen active service with the Australian Imperial Force.

Died of Wounds.

CAPTAIN W. J. EVANS, R.A.M.C.

Captain William Jones Evans, R.A.M.C., was reported as having died of wounds, in the casualty list published on September 26th. He was educated at Pontyvaun County School, at Cardiff Medical School, and at University College Hospital, London, took the diplomas of M.R.C.S. and L.R.C.P.Lond. early in 1916, and immediately afterwards entered the R.A.M.C. as a temporary lieutenant, becoming captain after a year's service. He was attached to the Gloucestershire Regiment when killed. He was the only son of the Rev. W. Evans, Baptist minister, Risca.

CAPTAIN F. HARDIE, R.A.M.C.(T.F.)

Captain Frederick Hardie, R.A.M.C.(T.F.), died of wounds on September 20th. He was the only son of Mrs. Hardie, of 12, Dalhousie Terrace, Edinburgh, was educated at Edinburgh University, and after graduating as M.B. and Ch.B. in 1900, went into practice at Southampton. He joined the Third Wessex (Portsmouth) Field Ambulance as lieutenant on October 28th, 1914, and was promoted to captain six months later. After nine months' field training in England he went to France, where he proved himself a keen and efficient field ambulance officer. He was mortally wounded by a shell just after returning from an arduous tour of duty behind the trenches, and died the same day. His commanding officer in a letter speaks of his constant cheeriness and the regard in which he was held by all ranks, and adds: "During his two years' active service he has done good work under many dangerous and trying conditions." Captain Hardie leaves a widow and two children.

Wounded.

Captain R. G. Abercrombie, R.A.M.C. (temporary).
 Captain F. Black, R.A.M.C. (temporary).
 Captain F. G. Flood, R.A.M.C. (temporary).
 Captain F. R. H. Laverick, R.A.M.C. (temporary).
 Captain G. A. Macfarland, R.A.M.C. (temporary).
 Captain M. McNiff, R.A.M.C. (temporary).
 Captain A. C. Ransford, R.A.M.C.(T.F.).
 Captain D. L. Tate, R.A.M.C. (temporary).
 Captain J. StG. Wilson, R.A.M.C. (temporary).
 Lieutenant G. H. Adam, R.A.M.C. (temporary).
 Lieutenant C. O. Bodman, R.A.M.C. (temporary).
 Lieutenant H. Dearden, R.A.M.C. (temporary).
 Lieutenant C. B. Simpson, R.A.M.C. (temporary).
 Sister M. Clarke, Q.A.I.M.N.S.R.
 Sister J. A. Herbert, T.F.N.S.
 Sister A. Redpath, Q.A.I.M.N.S.R.
 Sister M. B. Thomson, Q.A.I.M.N.S.R.
 Sister M. J. Weaver, Q.A.I.M.N.S.R.

Died on Service.

TEMPORARY LIEUTENANT R. F. HILEY, I.M.S.

Temporary Lieutenant Richard Farrar Hiley, I.M.S., died at Saidapur, Coorg, on March 20th, 1917. He was educated at Cambridge, where he graduated B.A. in 1884, and at St. Thomas's Hospital, and took the diplomas of L.S.A. in 1888, M.R.C.S. in 1900, and L.M.S.S.A. in 1909. After serving as medical officer of the Desaguedel Valle de Mexico, and of the Pyrites Company, Newfoundland, he became medical officer of the Planters' Medical Fund in South Coorg, Southern India. He left this post to take a temporary commission as lieutenant in the I.M.S. on January 27th, 1916, and after completing a year's service, during which he served in Mesopotamia, he resigned in bad health on January 27th, 1917, and returned to Coorg, where he died less than two months later.

ASSISTANT SURGEON A. R. UNDERWOOD, I.S.M.D.

Fourth Class Assistant Surgeon Alexander Russell Underwood, Indian Subordinate Medical Department, was accidentally drowned in Mesopotamia on September 13th. He was the second son of Captain A. W. Underwood, of the Indian Ordnance Department, was born on December 9th, 1890, and educated at Wyggeston School, and at the Universities of Bombay and Calcutta. He entered the I.S.M.D. on April 17th, 1911, was stationed at Lucknow before the war, and had been mentioned in General Sir S. Maude's recent dispatches from Mesopotamia.

LIEUTENANT J. F. ELLIOTT, R.A.M.C.

Lieutenant John Forster Elliott, R.A.M.C., died at Rostrevor, co. Down, on September 30th, aged 50. He was the son of the late Mr. O. F. Elliott, manager of the Northern Bank, Monaghan, and was educated at Trinity College, Dublin, and at the Ledwich and Carmichael schools in that city, taking the L.R.C.P.Ire. and L.R.C.S. Ire. in 1893. After practising for a time in Manchester he went to Natal, where he held the post of medical officer of the Indian Immigration Board. Returning home he started practice at Rostrevor, and last year took a temporary commission in the R.A.M.C. He was the author of a small work, *Hints to Ship Surgeons*.

DEATHS AMONG SONS OF MEDICAL MEN.

Bailey, John Bodley, Second Lieutenant East Yorkshire Regiment, only child of Dr. J. Elford Bailey, of Beverley, killed September 21st, aged 20. He got his commission on January 2nd, 1915, was wounded in July, 1916, and subsequently transferred to the Royal Flying Corps.

Chown, Francis Jack, Second Lieutenant R.F.C., killed in an aerial fight in the battle of Menin Road, on September 20th, aged 19. He was the only son of Dr. Chown, of Townshend, near Hayle, and was educated at Temple Grove and St. Paul's School. He passed for Sandhurst, but entered the R.F.C. direct from school, in July, 1916, and got his "wings" in May, 1917, when he was appointed an instructor. He went to France on August 18th, and was posted to a scout squadron only eight days before his death.

Eakin, Robert Andrew, Captain King's Shropshire Light Infantry, only son of Dr. J. W. Eakin, of Trinidad, died in Netley Hospital on September 24th, 1917, of wounds received in France in October, 1914. He was born in February, 1883, and served in the South African war, gaining the Queen's medal with four clasps. He got a commission in the Lancashire Fusiliers in June, 1904, was promoted to lieutenant on October 12th, 1907, and transferred to the K.S.L.I. on May 20th, 1908, getting his company in November, 1914.

Holt, W. P., Captain Army Service Corps, son of Dr. Crawshaw Holt, of Didsbury, Manchester, killed in June, aged 23. He was educated at Aldenham School, got a commission in the 4th Company of the Manchester Brigade, A.S.C. (T.F.), on August 9th, 1914, and after serving for two years at Khartoum and at Alexandria joined the Royal Flying Corps. He went to France last May, and was killed in an aeroplane accident the following month.

Lewis, M. G. N. H., Captain Monmouthshire Regiment, only son of the late Dr. David T. Lewis, London, killed in France, September 17th, aged 24. He was educated at Shrewsbury, when the war began was in the National Provincial Bank at Abergavenny, enlisted in August, 1914, got his first commission on October 21st, 1914, and went to France in August, 1916.

Mahomed, Claude Atkinson Elly, Lieutenant Scots Guards, only son of Mr. and Mrs. George Mahomed of Bournemouth, aged 31. He was educated at Salisbury School, and became an electric light engineer in Argentina. He was killed in the advance of July 31st, near Boesinghe.

Rooney, Richard Y., Captain Royal Engineers, died of wounds received on September 19th. He was the youngest son of Colonel J. P. Rooney, A.M.S., formerly P.M.O., Scottish Command. He joined the Argyll and Sutherland Highlanders as lieutenant in 1914, and on attaining the rank of captain was transferred to the Royal Engineers. His elder brother.

Major G. C. Rooney, R.M.L.I., H.M.S. *Queen Mary*, was killed in the battle of Jutland on May 31st, 1916.

Thomas, Owen, Captain Yeomanry, and Assistant Provost Marshal, son of the late Dr. Thomas, of Southampton and of Harefield, Bitterne, Hants, died suddenly on active service on August 21st, aged 37. He served in the South African Constabulary, in the South African war, gaining the medal, and in Gallipoli in 1915. He got a commission as captain in the Welsh Horse on August 30th, 1914, and had recently been mentioned in dispatches.

Tobin-Willis, Jack, Lieutenant R.F.C., killed in action in France on August 17th, aged 21. He was the only son of Dr. and Mrs. Willis, nephew of Dr. Tobin of Ilkeston, Derbyshire, and grandson of the late James Tobin of Tincurry House, Cahir, co. Tipperary. He was educated at St. Cuthbert's, Newcastle-on-Tyne, and afterwards by the Benedictines at Donai Abbey. He was a law student and an undergraduate of London University. He went to France in January, 1915, with a commission in the A.S.C., and was posted to the 1st Cavalry Division. Six months ago he volunteered for the Royal Flying Corps, and trained as gunner and observer. Having won his "wings" in France, he became more especially engaged in observation of German artillery as well as in aerial fighting.

West, H. M. P., Captain Northumberland Fusiliers, only son of Dr. West, of Jesmond, Newcastle-on-Tyne, killed September 20th. His first commission was dated November 13th, 1914.

White, Lewis Smith, Captain Royal Flying Corps, youngest son of Dr. E. White, of Bath, killed in a flying accident at Westgate on September 28th. He was flying instructor at that camp, and had been decorated with the Military Cross at the recent investiture on September 26th.

Workman, Charles Service, M.C., Lieutenant Cameronians (Scottish Rifles) and Royal Flying Corps, younger son of Dr. Charles Workman, of Glasgow, died of wounds on July 20th, aged 20. He got a commission in the 5th (Territorial) Battalion of his regiment on October 24th, 1914.

MEDICAL STUDENT.

Hughes-Jones, Kenneth H., Captain Rifle Brigade, fourth son of Mr. L. Hughes-Jones, of Chevet Hay, Wrexham, killed September 20th. He was educated at Bradfield School, where he gained a scholarship, and was in the O.T.C., and entered Guy's Hospital with an entrance scholarship in 1915. He enlisted in December, 1915, got his commission in July, 1916, and went to the front in October.

The initials of Captain J. K. Small, R.A.M.C. (temporary) were incorrectly printed in the list of officers wounded published in our issue of September 15th, p. 371.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on September 26th contains a further list of awards for gallantry and distinguished service in the field. The acts for which the decorations have been awarded will be announced in the *London Gazette* as early as practicable. The following medical officers are included in the list:

Bar to D.S.O.

Major James Samuel Yeaman Rogers, D.S.O., R.A.M.C. (D.S.O. gazetted January 14th, 1916).

D.S.O.

Major (temporary Lieut.-Colonel) Edward Charles Montgomery-Smith, R.A.M.C.

Captain (acting Lieut.-Colonel) John Darling Bowie, R.A.M.C.

Captain Gwelym David Watkins, R.A.M.C.

Temporary Captains: David Lees, M.B., R.A.M.C.; Ivan Clarkson Maclean, M.C., R.A.M.C.; John Boyd Orr, M.C., M.B., R.A.M.C.; Hubert Arnold Pallant, M.C., R.A.M.C.

Bar to Military Cross.

Captains William Barnsley Allen, V.C., M.C., R.A.M.C. (M.C. gazetted September 26th, 1916); Wilfred McFarlane, M.C., M.B., R.A.M.C. (M.C. gazetted December 11th, 1916); Hugh Roger Partridge, M.C., R.A.M.C. (M.C. gazetted October 20th, 1916); John Dover Proud, M.C., R.A.M.C. (S.R.) (M.C. gazetted June 18th, 1917).

Temporary Captain Robert Inkerman Harris, M.C., R.A.M.C. (M.C. gazetted November 14th, 1916).

Temporary Lieutenant (temporary Captain) Lancelot Gerard Bourdillon, D.S.O., M.C., R.A.M.C. (M.C. gazetted January 14th, 1916).

Military Cross.

Captains Cuthbert Delaval S. Agassiz, M.B., R.A.M.C.; Arthur Cyril Bateman, R.A.M.C. (S.R.); Kenneth Biggs, R.A.M.C. (S.R.); Ribton Gore Blair, M.B., R.A.M.C. (S.R.); Francis Dawson Blandy, M.D., R.A.M.C.; Thomas Frederick

Corkhill, R.A.M.C. (S.R.); William Ernest FitzGerald, M.B., R.A.M.C.; James Canute Gordon Glassford, A.A.M.C.; Herbert Myer Goldstein, N.Z.M.C.; James Alexander Paterson, M.B., R.A.M.C.; Gilbert William Rogers, M.B., R.A.M.C.; James Ellis Rusby, R.A.M.C. (S.R.); Herbert Mather Spoor, M.B., R.A.M.C.; Robert Alexander Stark, M.B., R.A.M.C.; John Stephenson, R.A.M.C. (S.R.); William Howard Edwin Stewart, R.A.M.C.

Temporary Captains: George Min Adam, M.B., R.A.M.C.; Stanley James A. Beale, M.B., R.A.M.C.; Geoffrey Andrew Bird, M.B., R.A.M.C.; Clarence Albert Brisco, R.A.M.C.; William Thomson Brown, M.B., R.A.M.C.; Wilfrid Thomas Channing-Pearce, R.A.M.C.; Francis Bernard Chavasse, R.A.M.C.; Victor Lindley Connolly, R.A.M.C.; George Theodore Cregan, M.B., R.A.M.C.; Douglas StClair Creighton, M.D., R.A.M.C.; Eric Payton Dark, M.B., R.A.M.C.; Harold Benjamin Day, R.A.M.C.; James Walker Dorling, M.B., R.A.M.C.; Robert Stuart Gibson, M.B., R.A.M.C.; John Charles Boileau Grant, M.B., R.A.M.C.; Norman Grellier, R.A.M.C.; Frederick Harris, R.A.M.C.; Howard Havelock Hepburn, M.D., R.A.M.C.; James Hill, M.B., R.A.M.C.; Archibald Forbes Laird, R.A.M.C.; George Edwin Lindsay, M.B., R.A.M.C.; Clement Richard MacLeod, R.A.M.C.; Daniel McVicker, R.A.M.C.; Jerome Ivo O'Sullivan, R.A.M.C.; William Hilton Parry, M.B., R.A.M.C.; Frederick Tavinor Rees, R.A.M.C.; Douglas Swan Robertson, M.B., R.A.M.C.; Alexander Hugh Dickson Smith, R.A.M.C.; James Anstruther Smith, M.B., R.A.M.C.; Thomas James Logan Thompson, M.B., R.A.M.C.; Edward Archibald Walker, M.D., R.A.M.C.; Hubert Francis Wilson, M.B., R.A.M.C.

Temporary Lieutenants: Gerald Woodforde Harrison, R.A.M.C.; Reginald Gordon Hill, M.B., R.A.M.C.; William Johnstone Isbister, R.A.M.C.; Ronald Sinclair Kennedy, R.A.M.C. (S. Lances R.); John Peter Ryan, R.A.M.C.; Thomas Charles Dalrymple Watt, M.B., R.A.M.C.

Sergeant-Major A. P. Hatt, R.A.M.C., has also received the Military Cross.

FOREIGN DECORATIONS.

The President of the French Republic has awarded the *Croix de Guerre* to Major (temporary Lieut.-Colonel) L. J. M. Deas, M.B., F.R.C.S., I.M.S., and temporary Captain A. L. George, R.A.M.C., in recognition of distinguished services rendered during the course of the campaign.

NOTES.

PENSIONS FOR DEPENDANTS OF I.M.S. OFFICERS.

THE India Office announces that the provisions of Part II of the Royal Pensions Warrant of August 1st, 1917, apply to the pensions of the widows, children, or dependants of officers of the Indian army, Indian Medical Service (permanent and temporary), and Indian Army Reserve of Officers, deceased in consequence of the present war. The benefits of the Royal Warrant, where it differs from previous warrants, have effect from April 1st, 1917. Pensions granted to widows and children of officers of the above classes have been, or will be, reviewed by the India Office, and, where necessary, readjusted without application, but in the following cases application is necessary: (1) Claims to education allowance; (2) claims of relatives of deceased officers other than widows and children. The application should bear a reference to any previous correspondence, and should be made in writing to the Under Secretary of State for India, Military Department, India Office, London, S.W. 1.

PENSIONS MEDICAL REFEREES.

It is announced that the Ministry of Pensions has now completed arrangements for the selection and appointment of medical referees, whose duty it will be to give expert advice both to the local War Pensions Committees, and to the Ministry in regard to discharged disabled men. The medical referees will examine disabled men and certify as to the institutional or other treatment suitable for each case, while their advice will be sought in respect to the physical capacity of men whom it is proposed to train for particular trades, or who apply for "alternative" pensions based upon their former earnings and their present earning powers. In the selection of medical men for appointment as referees the Minister of Pensions will be advised by a small committee consisting of representatives of the medical profession and of the public departments most concerned.

CAPTAIN JOSEPH ELLIS MILNE, R.A.M.C., of Aberdeen, who was killed in France on February 22nd, 1917, left estate valued at £16,792.

England and Wales.

CONFERENCE OF MEDICAL WOMEN IN MANCHESTER.

At a conference of the Medical Women's Federation held on September 29th at the Manchester University Union the proposal to establish a Ministry of Health was discussed. Dr. Jane Walker, who presided, expressed the view that such a Ministry was really coming, and was greatly needed. No doubt the most attractive proposal was to set up an entirely new body, but that would mean a great deal of undesirable dislocation. On the whole, she thought it would be best to rename the Local Government Board, and equip it with all the functions of a health administration. Had there been a Ministry of Health there would have been no need for the formation of a Ministry of Pensions, since the functions of the latter would automatically have been absorbed by the former. Any scheme for a Ministry of Health must as a primary condition comprise the public health sections of the Board of Education, the Insurance Commission, and the Local Government Board, each department retaining its other sections intact. Dr. Catherine Chisholm spoke particularly of the position of general practitioners under any scheme of reconstruction. She dwelt on the great services rendered by this section of the medical profession, but argued that while the demand for the general practitioner was still large the calling became less attractive every year. Lady Barrett spoke especially on infant welfare, pointing out that the control of infant mortality could not be discussed apart from the care of the mother. Such duties together with housing and the provision of sanitation, must come within the functions of a Ministry of Health. After full discussion it was resolved to refer to the local associations for reconsideration—first, the question of the advisability of establishing a Ministry of Health; and, secondly, in the event of a Ministry of Health being established, the question of which departments most urgently needed to be dealt with by such authority. In a further discussion, Dr. Ethel Cassie urged the importance of antenatal clinics, closely connected with which were prematernity wards, home visiting, the feeding of expectant mothers, and instruction at schools for mothers. Dr. Helen Fairley spoke of the need for ensuring the speedy attendance of a medical man in the case of mothers attended by certain midwives, since the death of the infant was often due to the midwife's failure to appreciate what was taking place. Dr. Ethel Stacy thought the general practitioner was not in a position to undertake specialized infant welfare work. He tended to become a kind of sorting officer. She urged that general practitioners should take up post-graduate work and that infant welfare centres should arrange for the attendance and help of the general practitioner. Dr. Esther Carling, in a paper on tuberculosis, said the Insurance Act had begun at the wrong end and the conditions were now in a state of chaos. The committees which provided the money were on the brink of bankruptcy and there was no unification of treatment. Dr. Margaret Sharp, in discussing venereal disease, said that the clinics at Bradford had now got as many cases as they could deal with. The mass of the patients were of the fairly respectable type, and most of them had been sent by private doctors.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

King Edward's Hospital Fund for London has published its statistical report on the ordinary expenditure of 109 London hospitals for the year 1916, prepared from the published accounts of these institutions and from returns made to the Fund. The introduction states that during the year upwards of 153,500 in-patients were admitted, while more than a million and a quarter patients attended at the several out-patient departments. The in-patients included 27,328 naval and military patients treated by understanding with the authorities. They represent 25 per cent. of the total average number of occupied beds, an increase of 4 per cent. as compared with 1915. A significant note states that 1,215 of the beds occupied by naval and military patients were taken from those previously used by civilians. On the other hand, the receipts from the authorities in aid of the expenditure on naval and military patients amounted to scarcely more than 14 per cent. of the total ordinary expenditure of the hospitals. The

growing cost of maintenance is shown by the fact that the total ordinary expenditure of the hospitals was more than 13 per cent. greater than in 1913. The cost of working at hospitals has been affected by the rise of prices, by the shortage of workers both skilled and unskilled, and by changes in the number of occupied beds due to the provision of accommodation for wounded soldiers. The last-named cause operates very unequally, sometimes decreasing the number of beds occupied and increasing the cost per bed, and sometimes increasing the number and decreasing the cost; in either case it often acts in a manner quite outside the control of the hospital management. For these reasons the customary calculations based on comparisons with average cost have again been omitted from the report. The prefatory note ends with a warning that conclusions must not be hastily drawn from the statistical tables, since these profess to give only the materials for a comparison of outlay, and to stimulate inquiry into the causes of high cost and the control of expenditure.

Scotland.

A MINISTRY OF HEALTH.

The Secretary for Scotland, Mr. Robert Munro, K.C., M.P., received on September 24th a deputation from the Scottish branch of the Society of Medical Officers of Health, consisting of Dr. Alexander Robb (Midlothian), Dr. A. Campbell Munro (Renfrewshire), Dr. A. K. Chalmers (Glasgow), Dr. Thomas Adam (Stirlingshire), Dr. G. Pratt Yule (Fife), Dr. J. Hunter (Motherwell), Dr. John Guy (Edinburgh), and Dr. Ralph Picken (Glasgow). The object of the deputation was to submit two resolutions passed by the society. The first was that the present system of health administration is inadequate and inefficient, that unification and expansion are needed, and that for effective reform all departments dealing with disease both in relation to prevention and treatment should be placed under one authority. The second was that the unit for public health administration should not be smaller than that adopted under the National Insurance Act, namely, areas with not less than 20,000 inhabitants. Dr. Robb, in introducing the deputation, said that they were of opinion that public health administration should be thoroughly reconstructed. Dr. Chalmers said that they desired to approach the question less from the point of view of which department was best equipped to carry on the work than from that of the public requirements. He also touched on the difficult question of whether there should be one Ministry of Health or three. Mr. Munro, in the course of a very guarded reply, balanced various considerations, but let fall nothing which could commit either himself or the Government to any definite line of action.

A GLASGOW CHILD WELFARE CLINIC.

A new building erected as a children's clinic in connexion with the Elder Cottage Hospital, Govan, was opened last week by the Duchess of Montrose; together with the hospital and nurses' training home it will be included as a unit in the child welfare scheme of the Glasgow public health authority. Antenatal cases are to be dealt with at the training home and children up to 5 years of age in the new clinic, which includes a large waiting-room, weighing and dressing rooms, a general consulting-room, a dental consulting-room, and a dispensary. Dr. John Macintyre, the chairman of the House Committee, who presided at the ceremony, said that the evil to be combated in order to improve the condition of the children in large centres of industrial activity was stupendous, but the means now being taken gave grounds for hope. The Duchess of Montrose said that the nurses from the clinic would follow up the cases at home with the co-operation of the lady health visitors of the district. Dr. Edward McConnell, speaking for the Child Welfare Committee of the Corporation, and Dr. A. K. Chalmers, Medical Officer of Health for Glasgow, both delivered addresses emphasizing the importance of child welfare work, and afterwards Sir George T. Beatson struck a hopeful note, saying that a great deal had been done within the past sixteen years to diminish infantile mortality, which had been reduced from

148 per 1,000 in 1900 to 83 per 1,000 last year. If so much had been done by spreading knowledge, by improving housing, and by safeguarding food, it was justifiable to look forward hopefully to the future.

Correspondence.

EPSOM COLLEGE WAR MEMORIAL.

SIR,—Two informal meetings of Old Epsomians have been held regarding the question of raising a memorial to old Epsom boys who have fought and fallen in this war. It was decided that a meeting was to be held at the offices of the College, 37, Soho Square, W.C., at 4 p.m. on Friday, October 12th. It is intended to get an expression of opinion at that meeting as to whether such a memorial shall be raised, what form such a memorial should take, and how should the money for it be raised. A treasurer and secretaries for this memorial should be appointed. The head master of the school, the Rev. W. Barton, and myself are acting as secretaries until the proper appointments are made. As addresses are so uncertain it seemed desirable to notify old Epsom boys of this meeting through the press. Will all who can, come to the meeting; and will those who cannot come, express their views in a letter addressed to me?—I am, etc.,

37, Harley Street, London, W.1.
Sept. 28th.

E. M. CORNER.

RECURRENCE OF ADENOIDS AND TONSILS.

SIR,—Owing to absence from London, I have only just seen the interesting lecture of Dr. Douglas Guthrie in your issue of the 15th inst., and the timely criticism in last week's JOURNAL by my friend Sir StClair Thomson of the statement that there is no such thing as recurrence after a thorough removal. I think most operators of long experience and sufficient clinical opportunity in large centres of population will readily admit a 5 per cent. margin of possible recurrence even after the most careful removal. In this connexion it may be well to recall the important series of papers on diseases of the upper air passages by my old friend Sir Felix Semon in this JOURNAL, beginning on November 2nd, 1901, in which the question of the proportion of what may be called inevitable recurrence was incidentally discussed. For my own part I cannot agree with Dr. Guthrie that even the most carefully constructed curette will, even in most cases, thoroughly remove "adenoids." From its nature a curette will necessarily shave them; but, though it may often even eradicate them, generally speaking, shaving is the result. A certain amount of adenoid tissue usually remains to form the smooth mosaic immediately left by this form of operation and to furnish the root-stock, so to speak, of a recurrence in favouring circumstances.

I had the advantage some twenty years ago of seeing Sir Felix Simon do some tonsil and adenoid operations, and was much impressed by the amount of care and deliberation which was allowed by the use of forceps guided by the left forefinger in the nasopharynx. Though I had previously used the curette I have invariably used forceps since that time, working from left to right, and in some cases using a specially curved instrument when the mass extended far forwards towards the choanae. When I at all use a curette it is merely for smooth shaving of the remaining surface. By this method no adenoid tissue is left to grow again like a sliced tonsil. From a long experience, including thousands of cases, I am convinced that this is the best way to guard against recurrence, and that if it should take place after this operation it must be only in those somewhat rare cases referred to by Sir StClair Thomson in which there is an inveterate hereditary tendency to the production of this tissue.

I should, perhaps, add that I reverse the order of the operation as commonly practised nowadays. Having first made sure of a thorough removal of the "adenoids" the throat is swabbed out and then the tonsils are removed—in children usually only by guillotine with some previous dissection when necessary. The patient is then turned into the semiprone position with the face downwards over a receiver and "drained." This operation has proved invariably successful as regards the immediate result of the operation in over 20,000 cases, and owing to the somewhat

peculiar circumstances of my hospital *clientèle* I have been able to follow up the histories of hundreds of them, some to the point of operating on their children. Amongst those so followed I can remember no case of recurrence, though I, of course, admit the wide margin of possibilities.

There is another point in Dr. Guthrie's lecture which hardly receives the prominence it deserves. I refer to the case of a boy of 7 who had neither adenoids nor tonsils, but a much-deflected septum. It is not in my experience to find any child of this age with such a septum without some adenoids, and usually, where no operation has been done, a considerable quantity. I take it for granted that Dr. Guthrie, in this instance, did not "avoid palpating the nasopharynx," and therefore willingly admit what he says, but only as a very rare experience. I should like to draw attention to the tendency of almost all children in whom a necessary operation for adenoids has been postponed after the fourth year to develop a more or less deflected septum nasi. I have seen it even earlier, but this seems a fair average time of incidence. I have collected a large number of cases to illustrate, amongst others, this point in a paper now in preparation. Amongst the conclusions suggested by this material one of the most prominent is that after the fourth year a deflected septum is the commonest structural cause of persistent mouth breathing even after a thorough removal of adenoids and tonsils, and furnishes another strong reason for their earliest possible removal after definite symptoms have been noted.—I am, etc.,

London, W., Sept. 28th.

JAMES DONELAN.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—I have carefully read Dr. Brackenbury's letter in the JOURNAL of September 29th, and while thanking him for the evident trouble he has taken with his exposition, I confess that I am still unable to see any difference in essentials between the proposed method of remuneration and that in operation with respect to temporary residents, with the one exception which I clearly mentioned in my letter of September 1st—namely, the making up of the pool to the necessary amount to meet the bills by the Treasury.

In support of my view I quote the letter, dated June 27th, 1917, addressed by Dr. Brackenbury's own Committee (the Insurance Acts Committee) to the Commissioners. In the second paragraph appear the following words: "I am instructed to inform you that the Committee . . . accepts . . . the proposal . . . whereby medical practitioners will be remunerated in respect of disabled soldiers and sailors discharged in future on the attendance basis at the same rates as temporary residents."

Dr. Brackenbury now admits that these detailed proposals were never before a conference, and I on my side am ready to agree with him that the whole question about these men has been before the profession for a long time. I may say it has been anxiously in my mind ever since the war began. But the point is, as Dr. A. S. Downton points out, "that Panel Committees, and through them panel practitioners, had no opportunity of considering those regulations before they were actually enforced."

The resolutions passed by the Conferences in 1915 and 1916—that the British Medical Association should be authorized to voice the opinion of Local Medical and Panel Committees as a whole in central negotiations—clearly meant that the British Medical Association (having asked for and received the opinions of such committees) should act as their mouthpiece in expressing those opinions to the Commissioners; and should take all necessary steps to have them carried into effect. Surely Dr. Brackenbury does not mean to imply that those resolutions conferred plenary powers on the British Medical Association to agree to anything they liked on our behalf? That would be equivalent to saying that the Panel Committees had passed a resolution saying that the British Medical Association should think for them!

I must here, in fairness to the British Medical Association, say that in my opinion the practitioners of the country, taken as a whole, have at times behaved in such a manner as to lead one to suppose that they had decided to let others do their thinking for them; and the apparent apathy of the British Medical Association on some occasions may well have been due to their total inability to

obtain a clear mandate from practitioners. Nothing is more calculated to fetter the activities of representatives than the apathy and indecision of their constituents. But I do hope and believe that the Conference on October 18th will furnish a mandate in such clear and unmistakable terms that there will be no option but to obey it.

I am delighted to hear that Dr. Brackenbury is going to move a resolution demanding a 10s. capitation fee, and I can promise him plenty of support from this part of the country. I am glad, also, to receive his assurance that the Insurance Acts Committee made this suggestion three months before we did. I grudge them none of the credit due to them.—I am, etc.,

Gloucester, Sept. 30th.

J. A. BELL.

SIR,—Dr. Brackenbury has made a mistake in his letter in the *JOURNAL* of September 29th, when he says I fail to keep the question of the remuneration for attendance on insured persons separate from that of increased payment for discharged disabled men. I deal with the latter question in the first two paragraphs of my letter in the *JOURNAL* of September 15th, whilst the third paragraph asks Panel Committees to vote for general increased panel remuneration. All the medical men I have spoken to are aware of the distinction between the two classes, but many were not aware of the exact nature of the terms of attendance on the disabled men, and expected full payment of the fees quoted and no check on the number of visits and attendances.

Dr. Brackenbury, in an earlier paragraph of his letter, writes: "All attendances, however many, will be paid for at this rate without any deduction whatever." Are we to understand that there is to be no system of checking excessive attendance, and that the Treasury will pay the full 95 per cent. of all accounts sent in?

I must apologize for not being quite accurate, and also, when I read the third paragraph again, not quite courteous to Dr. Brackenbury, in my reference to the last Panel Conference. (I hope Dr. Brackenbury has apologized to the Kent Panel Committee for the speech he made on a certain resolution sent by that Committee.) My inaccuracy was caused by my remembrance of Dr. Brackenbury's speech rather than of the exact wording of the motion, for several of the members of the Conference said to me afterwards that although the resolution stated we had a claim to increased remuneration, there was evidently never the slightest intention of pushing that claim.

My 25 per cent. refers to increase of the schedule of fees for attendance on temporary residents; in the first paragraph I quote 2s. 6d. for a visit, 2s. for a consultation, and the next paragraph begins: "This rate of remuneration . . . ; it ought to be increased by at least 25 per cent." But I really mean 25 per cent. The Insurance Acts Committee "thinks" there should be a generally increased remuneration of 35 per cent., which will probably mean an increase of from 10 to 15 per cent.; but it seems to me that the profession will demand an increase of nearer 50 per cent.—namely, from 7s. to 10s. per insured person. Further, that the 10s. will be an all-round capitation grant to include all returned sailors and soldiers.

Dr. Brackenbury in his letter writes that he moved a resolution at the last Conference, not as Chairman of the Insurance Acts Committee but as the representative of the Panel Committee which had given notice of it. I have for long had an intention of writing to you on this dual position held by Dr. Brackenbury. I think it is wrong, because it is difficult at times, when he is addressing the Conference, to decide whether he speaks as the chairman or as the representative. I hope that he and those who are calling the Conference together will consider this point of view and let him attend as Chairman of the Insurance Acts Committee, whilst his Panel Committee will appoint some one else as the representative.—I am, etc.,

Burnley, Sept. 29th.

JAMES GARDNER.

SIR,—A variety of criticisms of the new Regulations for Medical Benefit for Invalided Seamen and Soldiers, 1917, have appeared in various medical journals, and have been circulated to Panel Committees. A careful comparison of these with the actual Regulations, and with the explanatory Memorandum 234/I.C., reveals a serious misunderstanding on the part of some of them, and the matter can therefore be approached with an unbiassed mind. Both

the Regulations and the Memorandum present a complex system, which it is to be feared few of the panel practitioners (unless they have previously made a careful study of the system of remuneration for ordinary insured persons) will thoroughly grasp. It is well, therefore, to analyse the sources and the method of payment of this money, which is to go to provide medical attention for those men who, above all others, have the claim that their country should give them the best that can be procured. If the system is such that the attendance will have to be given as a part charity, it is bad, and public opinion, once enlightened, will not permit it.

In the succeeding paragraphs quotations refer either to the Regulations or the Memorandum above. "Soldiers' means invalided seamen and soldiers. "General fund" means the ordinary medical benefit fund as actually paid after deductions for inflation of lists, etc. "Soldiers' fund" means the special fund created for paying doctors for the treatment of invalided seamen and soldiers.

For the sake of clearness we will not consider the cost of drugs, the floating 6d., and the sanatorium 6d. separately, but take the 9s. nominally allowed for medical benefit as the basis of calculation as is done in the Memorandum.

1. *Source of the Money.*—For each soldier present in a district 9s. is deducted from the general fund and paid into the soldiers' fund (Regulations, 5), but this 9s. does not correspond to the original value of the soldier in the general fund. The amount of the general fund per individual on the Insurance Committee's list is less than 9s. by 20.6 per cent. (for 1916, probably still less now). Owing to the alleged inflation of lists each name on the list is only worth 7s. 2d., therefore, for each soldier in a district the general fund is further depleted by 1s. 10d. To reduce it to an absurdity, if 80 per cent. of the insured persons on the list were invalid soldiers, the whole general fund would become the soldiers' fund, and the remaining 20 per cent. ordinary insured persons would have to be attended for nothing.

2. *Method of Payment.*—Nine shillings having been deducted from the general fund as above, we now deal with the opportunities offered to panel practitioners for recovering it.

The schedule to the Regulations gives a scale of fees. But it must be particularly noted that this scale of fees is not the scale which will be actually paid. Like the capitation fee for insured persons, it is a nominal one only. The actual payments given to panel practitioners for the treatment of the soldiers depend upon a pooling system (Regulations, 6 (1), (2)), which at once renders the whole scale uncertain and subject to deductions. The fees will certainly be *something less* than those stated in the scale. The scale itself is plain enough, and it is for practitioners to say whether they consider it an adequate one as it stands, and even if they were not themselves finding the money to meet it. So far as this area is concerned the principal fee of 2s. (that for surgery attendance), is two-thirds of the minimum fee accepted by local practitioners for friendly society work on the same lines.

But there are other points to be considered in connexion with the method of payment. Accounts (duly arranged alphabetically, Memo. 20) must be sent in within seven days of the end of the quarter (Regulations, 3 (2)). But there is absolutely no time limit for payment of these accounts. Advance payments *may* be made (Memo. 30). The balance after deductions can still be withheld indefinitely. Our experience with the ordinary fees for National Health Insurance work teaches us what to expect; those for 1916 are still unpaid. Again, the chances of panel practitioners recovering the 9s. deducted from their general fund are notably lessened by the admission of non-panel practitioners. These can share in the chances of getting the 9s., but not in the inflation of panel lists, by which panel practitioners lose 1s. 10d. on each soldier. That is to say, the whole 9s. (taken out of the general fund in respect of each soldier originally worth only 7s. 2d.) can be earned by non-panel practitioners undertaking cases without the option of recovery in these cases by panel practitioners; for each soldier treated by a non-panel man, 1s. 10d. is irretrievably lost to the panel practitioners whether the non-panel man succeeds in getting it or not.

Finally, in the Memo. great stress is laid upon two points, upon which the Commissioners seem to base the hope that the Regulations will be agreeable to the profession: (a) An Exchequer grant is mentioned (Memo. 5),

and it is stated that should the 9s. be insufficient "to meet charges upon it," Exchequer funds will be forthcoming to supply the deficiency (Memo. 6). Does this mean that by means of an Exchequer grant the practitioners' bills will be met in full? By no means; the pooling system allows for indefinite deductions upon which practitioners can have no control. It merely means that the total bills after correction (by which the nominal fees may be reduced 20 per cent. or 50 per cent.) will be met, should they exceed in the aggregate 9s. per head. But we may rest assured that the Exchequer grant (which it is to be particularly noted is not mentioned in the Regulations) will not be required. What is offered with one hand can easily, under the Regulations, be withdrawn by the other. (b) It is repeatedly stated that the whole Regulations have been drafted at the request and with the approval of "The Medical Profession" (Memo., 3, 4, 19, 29). Of this statement it can only be said that it does not coincide with the facts. Panel Committees and Local Medical Committees, which alone represent the panel practitioners, and the whole of the medical profession, were never consulted, and have never seen the Regulations until, as now, they are stated to be in force, and to form part of our agreement with the Insurance Committees (vide letters issued by Insurance Committees to all panel practitioners). This is a flagrant breach of the promise of the Insurance Commissioners in 1915 that all new Regulations should be submitted to the profession in time for discussion before coming into force, and in any case should not be brought into force during the course of any given year except in a serious and unforeseen emergency. The Insurance Acts Committee of the British Medical Association appears to have agreed to them, but it has done so without consultation with the Local Medical and Panel Committees which it professes to represent. It appears that a direct challenge has been issued by the Commissioners to panel practitioners.

If we accept these Regulations as they stand, we are not merely agreeing to a system which will mean a heavy financial loss, and endless trouble; we are allowing the National Health Insurance Commissioners to ram new regulations down our throats without discussion or protest.—I am, etc.,

J. C. LYTH,
Honorary Secretary, York Local Medical
and Panel Committee.

October 1st.

N.B.—The above letter has been endorsed by the York Local Medical and Panel Committee, whose views it expresses.

SIR,—Many letters on this subject have appeared in the JOURNAL during the last few weeks, which I have read with varying interest. It appears to me away in the far North that in the wrangle about the payment for these men there is at least one very important point which has, so far as I know, not been thought of or alluded to. Everything seems to be at sixes and sevens, and every one has his own ideas and views—whether it be that A is satisfied with the promised remuneration of 95 per cent. of the scheduled rates, or that B will have none of it but demands a 10s. or a 12s. 6d. capitation rate. Again, some men are not clear about the method by which the pool for disabled men is made up. They are up in arms because they think, or are certain, that it is to be made up out of the medical benefit fund, and that therefore it is not fair that non-insured sailors and soldiers returning to civil life should benefit at the expense of men who have been insured since the inception of the Acts. I do not think they need trouble themselves about that, since the pool is to be made up out of the army and navy fund.

The point to which I wish to draw the attention of insurance practitioners is that of the present remuneration. This consists of 6s. per head per annum paid by the societies, 6d. for domiciliary treatment, and the Treasury grant of 2s. 6d. In order to earn this grant Mr. Lloyd George demanded three *quid pro quo's*:

1. That the attendance given to insured persons should be such as would have the approval of the Commissioners.

2. That the doctors should issue the required certificates.

3. That the doctors should keep medical records of all cases.

Every one knows that the medical records were allowed to lapse in 1916, in deference to the depletion of the ranks of insurance practitioners and to ease their work. As yet the system has not been re-established. Making a simple calculation, the 2s. 6d. may be divided into three sums of 10d. each—that is, 10d. for each of the three conditions. I am not advocating the ways and doings of the Commissioners, but when they agreed to withdraw the keeping of the records no one can say that they suggested the withdrawal of the so-called 10d. for record keeping. They might have done so in a perfectly legal manner, seeing that they were getting nothing for something. May I ask practitioners to think for a moment what this 10d. means? There are, say, 14 millions of insured persons in the country, and 14 million pence amounts to nearly £600,000, which are distributed among the panel practitioners each year for doing nothing by way of earning it. In consideration of this free gift to the profession, I would counsel practitioners to cease their squabbling and accept the scheduled rate of the Regulations for attendance on disabled sailors and soldiers, who are deserving of the best doctors can give them, even though the latter should get only a dividend of 95 per cent.—I am, etc.,

Edinburgh, Oct. 3rd.

MICHAEL DEWAR.

SIR,—Would it be of any avail if the Association were to beg the Insurance Commissioners to withdraw the present regulations about discharged soldiers and reissue them in simple, plain, and unmistakable language, as it is fully proved by the letters in your and other journals that medical men do not understand them, and paragraphs in the lay press show that different meanings are read into them? Why should the phrasing of every document sent out by the Commissioners be so obscure? A gentleman on the staff informed me that no one in the office understood what was meant, and gave an explanation which I had better not repeat.—I am, etc.,

London, S.W., Sept. 29th.

JAMES HAMILTON.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS.

SIR,—At last, after waiting nine years, I have induced Sir Ray Lankester to reply to one of my letters on this subject. The facts related in that letter (BRITISH MEDICAL JOURNAL, September 15th, 1917), as well as in all my previous communications, are unassailable. Sir Ray Lankester, therefore, has recourse to a few *obiter dicta* and offensive remarks, as is his wont.

In all my publications, as a matter of mere justice, I have always given the credit to Castellani:

1. "Of having first discovered the trypanosome in the cerebro-spinal fluid of sleeping sickness patients." Sir Ray Lankester states that this is true, and no one has ever denied it. I of course agree with him.

2. "Of having connected the trypanosome he discovered in the cerebro-spinal fluid with the etiology of the disease." According to Sir Ray Lankester, this is not true, as Castellani gave no importance to the trypanosome. I beg to refer again to an incident recorded in my letters to the *Times* of 1908 and 1913, which will tax Sir Ray Lankester's ingenuity to explain away. On our arrival in Entebbe, Castellani would only tell Colonel Bruce about having found the trypanosome in sleeping sickness patients *on condition that I was not informed of the fact*. Does this look as if he attributed no importance to the observation? I beg leave also to quote the following extract, taken verbatim from Report 1 of the Sleeping Sickness Commission of the Royal Society.

Report 1, entitled *Presence of Trypanosome in Sleeping Sickness*, by Aldo Castellani, M.D. On page 10 of this report Castellani says, "Influenced by my last investigations, I would suggest as a working hypothesis on which to base further investigations that sleeping sickness is due to the species of trypanosome I have found in the cerebro-spinal fluid of the patients in this disease, and that at least in the last stages there is a concomitant streptococcus infection which plays a certain part in the course of the disease."

3. "Of having first published it." This, Sir Ray Lankester says, is true, but no credit should be given to Castellani, as it was Bruce who wrote Castellani's report. Sir David Bruce certainly corrected the English of Castellani's paper, but this surely does not entitle him or any one else to claim Castellani's discovery. The Goanese

clerk who typed Castellani's report will next put in a claim for the discovery.

In this connexion I would also quote the following extract from the Royal Society's reports, and would particularly call the attention of the reader to the passage I have marked in italics, showing that Colonel Bruce evidently expected Castellani to publish the report.

Report 2, entitled *Progress Report on Sleeping Sickness in Uganda*, by Lieut.-Colonel David Bruce, F.R.S., R.A.M.C., and David Nabarro, M.D. On page 12 it states, "Dr. Castellani informed us of the work he had done, one especially interesting observation being that he had discovered trypanosomes in the cerebro-spinal fluid in 5 out of 15 cases of sleeping sickness. Dr. Castellani remained in Entebbe for three weeks after the arrival of the new Commission, and during this time he examined 29 further cases for trypanosomes, with the result that 70 per cent. were found to contain those parasites. *Dr. Castellani, we presume, has already published these results.* After his departure the Commission continued to pursue this line of work."

Lastly, I would quote a statement made by Colonel Bruce himself on page 5 of the *Further Report on Sleeping Sickness in Uganda*, and be it noted that the historical account found in this report was inserted by Bruce without my knowledge. After referring to Castellani's "most interesting discovery" which put the Commission "on the right track and led to the rapid and easy elucidation of the etiology of this hitherto mysterious disease," Colonel Bruce states: "Without the knowledge of his observation they (that is, the Commission) might have worked for months in the dark, and in truth they might even have returned to England still ignorant as to the true cause of the disease." What further evidence can Sir Ray Lankester, or any one else want, as to the great part played by Castellani in the elucidation of the etiology of sleeping sickness?

As regards myself, according to Sir Ray Lankester's ridiculous statements, I should not be entitled to any credit for the development of the discoveries, the foundations of which were so surely laid by Castellani, and for the discovery that the trypanosome of sleeping sickness is carried by a tsetse fly; my claims are "illusory," to use Sir Ray Lankester's word, and this, although I was associated with Colonel Bruce the whole time he was in Uganda, and the share of the work I did was certainly not less than that of Colonel Bruce, and the reports were joint reports. Truly, Sir Ray Lankester's mentality is of a peculiar kind.

In conclusion I should like to ask your readers to keep in mind the fact, omitted by Sir Ray Lankester in all his communications, that the Commission sent out to Uganda in February, 1903, by the Royal Society consisted of *two members only—Colonel Bruce and myself.* I am, therefore, in a unique position to know the history of the investigation.—I am, etc.,

London, W., Sept. 25th.

DAVID NABARRO.

"BARCOO ROT."

SIR,—In your issue of June 9th an article by Lieut.-Colonel C. J. Martin gives some observations on "barcoo rot." This is a very loosely applied term. The original "barcoo rot," as experienced by the older bushmen, was scurvy pure and simple. Owing to the improved conditions of living this is now practically extinct, but the younger bushmen, hearing their fathers talk of "barcoo rot," have applied the term to any superficial obstinate sore, never having seen the genuine "barcoo rot" themselves. There are two varieties: a staphylococcal infection of skin abrasions, naturally mostly on the hands, seasonal, occurring generally in the autumn; and the other is deep-seated trichophytosis of the hand.—I am, etc.,

Allora, Queensland, Aug. 5th.

FRANCIS PAIN.

THE SCABIES PROBLEM ON ACTIVE SERVICE.

SIR,—The prevention of scabies and impetigo in the army is a matter of regular inspection, early detection, isolation, and treatment by the medical officers, but it is also most essential that there should be constant and systematic inspection of those affected with these diseases, no matter what treatment may be decided upon. Orders must be carried out and discipline maintained in order to effect cures successfully and rapidly.

Sulphur vapour has been suggested as a remedy for scabies, and lately chlorine gas,¹ both of which are

troublesome irritants. Liq. calcis sulphurata or Vlemingx's lotion (quicklime 2 drachms, sulphur 4 oz., water 20 oz.) was also once in vogue, but some years ago an Army Medical Service memorandum was issued stating that much irritation was caused by this preparation, and that its curative effects were inferior, and not equal to a weak sulphur ointment properly used, and this still holds good.

Cases come before medical officers in all stages, from mild attacks of scabies to those more severe, in which eczema or impetigo and septic sores have developed and which require special treatment, so that it is impossible to adopt a hard and fast routine, or lay down any one remedy as suiting all cases. A lotion or ointment which is all right for one man may, in small quantity, cause violent irritation to another. The old-fashioned rule of thumb practice will not do. Individual idiosyncrasies must be taken into account.

The secondary impetiginous condition so frequently seen, and which necessarily makes treatment more complicated and difficult, is caused by the entrance of staphylococci and streptococci into a skin which has been irritated and excoriated by scratching and tearing with dirty nails, especially when the case has been neglected and the acarus has gained a footing all over the body, but it may also supervene when the skin has become inflamed by excessive treatment or the use of strong remedies. Therefore, it is the individuality and knowledge of the medical officer directing the treatment upon which the result depends, and consequently the keynote should be regular and skilled inspection, with treatment adapted to the various types of cases.—I am, etc.,

S. W. ALLWORTHY, M.A., M.D., D.P.H.,

Belfast, Sept. 21st.

Captain R.A.M.C.(T.C.).

SIR,—Major MacCormac's paper in the *BRITISH MEDICAL JOURNAL* of September 22nd, 1917, on the scabies problem is very instructive. One or two questions, however, suggest themselves. What actually is the evidence that blankets are the chief means of disseminating infection? Has the acarus been found on blankets? What is meant by frequent disinfection? What is the minimum percentage of Clayton sulphur vapour, and the minimum time required to kill *Acarus scabiei* and its ova on blankets, and how has this been established?

Has Major MacCormac tried dilution of the sulphur ointment in order to eliminate dermatitis and sulphur itching? Why is it considered advisable to soak a patient in grease twice daily for three days if a liquid preparation of sulphur (which soon dries, and is neither greasy nor messy) is, as he says, undoubtedly efficient? And if, as he remarks, Vlemingx's solution is particularly liable to produce dermatitis, can this objection not be excluded by dilution with water?

Finally, what are the items in the experience necessary for its satisfactory employment?

If Major MacCormac, or other person of experience, will answer these questions, he will confer a favour on many an army medical officer who at this moment is looking for guidance in the management and rapid and effective and simple and yet non-messy treatment of this *bête noire* which causes such a vast amount of ineffectiveness.—I am, etc.,

September 24th.

AN ARMY M.O.

SIR,—In connexion with the treatment of scabies by chlorine gas, the subject of a paper by Captain Clark and Captain Raper, published in the *BRITISH MEDICAL JOURNAL* on July 23th, I should like to quote an interesting case which occurred in the regiment to which I am at present attached as medical officer. About ten days ago the regimental gas officer came to me complaining of "eczema" of a fortnight's duration, due, he thought, to the irritation of the gas fumes. On examination I found his fingers, arms, and especially his buttocks and legs a mass of typical scabies spots, which he said were very itchy at night. He was the worst case of uncomplicated scabies I have seen for some time, and he assures me that, since it started, he has been several times exposed to the chlorine gas fumes in the "gas hut." He has now practically recovered under a course of sulphur baths and inunction.—I am, etc.,

J. A. C. MAGEE, M.B., B.S.,

September 6th.

Captain R.A.M.C.(T.)

¹ *BRITISH MEDICAL JOURNAL*, July 28th, 1917.

CEREBRO-SPINAL FEVER AND ITS TREATMENT.

SIR,—With reference to the leading article on cerebro-spinal fever and its treatment published on September 22nd in your journal, in which you reviewed the work of Dr. Fairley and myself, I would like to furnish some additional information gained by myself in 1916. I do so in order to emphasize the extreme importance of pushing antimeningococcal serum by intravenous and subcutaneous administration as well as the ordinary intrathecal medication. The value of intravenous serum has not received the acknowledgement to which it is entitled, and a wider use of this method will assuredly lead to a lessening in the mortality.

The following figures were incorporated in an article published in the *Australian Medical Journal* of April 21st this year, and are based on 201 cases treated by myself during the year 1916 at the Alfred Hospital, Melbourne. Including hopeless and elderly cases the gross mortality was 38 per cent., compared with 253 cases and 49 per cent. mortality in 1915.

The following table shows the results of the various lines of treatment adopted in 1916, and speaks for itself:

Treatment.	Gross Figures.			Excluding Hopeless Cases and those of 35 years of age and over.		
	Cured.	Died.	Mortality.	Cured.	Died.	Mortality.
Lumbar puncture only (all mild cases)	16	6	27.2 %	13	4	23.5 %
Antimeningococcal serum intrathecally only (mostly mild cases)	14	10	41.6 %	14	4	22.2 %
A.M.S.* intrathecally and subcutaneously (all grades of cases)	71	50	41.3 %	62	23	27 %
A.M.S. intrathecally, subcutaneously, and intravenously (all severe cases)	17	11	39.2 %	14	3	17.6 %

* A.M.S. = Antimeningococcal serum.

Comment on the above is unnecessary, except to state that in the corrected column recoveries as well as deaths in those over 35 years of age have been excluded.

As regards dosage, it has been my practice to give 100 c.cm. of serum intravenously and repeat daily for two or three days if necessary, 50 or 60 c.cm. being sufficient for these subsequent doses. In addition, 300 c.cm. is given as the initial dose subcutaneously and daily doses of 200 c.cm. repeated for two or three days if necessary.—I am, etc.,

Weymouth, Sept. 30th.

C. ALWYN STEWART, M.D. Melb.

THE MENINGOCOCCUS.

SIR,—In a footnote¹ Dr. E. C. Hort explains that he does not propose to include the meningococcus among the ascomycetes in the newer mycology, but gives reasons for interning it among the hemiascomycetes which suggest that he is devoid of humour.

In any case, without wasting valuable space, I may be permitted to point out that it takes more than preconceived opinion and an oil immersion lens to demonstrate the existence of an endospore. Nevertheless, if present in his aldermanic meningococci, this ought to be within the power of any intelligent worker with a bacteriological microscope in ordinary daylight. And when Dr. E. C. Hort proves that he has an endospore to deal with and not an assumption his paper will belong to the literature of science.—I am, etc.,

London, W., Sept. 23rd.

ROBERT CRAIK.

TREATMENT OF VINCENT'S ANGINA.

SIR,—I have been much interested in the division of opinion between Captain Emrys-Roberts and Dr. Frank Taylor on the treatment of Vincent's angina. I observe that while the former eulogizes a mixture of hydrogen peroxide, ipecacuanha, and glycerin, the latter says the proper treatment is a "topical application of salvarsan."

With all due respect for these opinions, may I venture to say that a "topical" application of ordinary tincture of

iodine twice a day has cleared up four cases I have seen since July, 1915, in a few days. I would suggest that if Captain Emrys-Roberts oxidizes the spirilla out of existence and Dr. F. Taylor poisons him as rapidly with arsenic, free iodine may be equally fatal, as it is held to have a specific action on another well-known spirilla—that is, if form and constitution vary together.

Of the four cases I have seen, the first occurred in July, 1915, in a sergeant who was sent into the Seaford Military Hospital with a shallow grey excavated ulcer of the posterior fauces and a diagnosis of syphilis; as the swab showed only the familiar fusiform bacillus and spirilla, he was treated with tincture of iodine and recovered within a few days.

The other three cases have been seen during the last eighteen months in my private practice; all occurred in young women; all simulated diphtheria, and were treated with antitoxin (2,000 units) as a prophylactic; in two of them there was a very definite yellowish-white membrane partly involving the uvula; the other was complicated by pneumococci. Under similar treatment all were well in a few days.

It may be of interest, though for all I know it is common knowledge, that in these cases (I can only speak of the four I have seen) there is no albumin in the urine or loss of knee jerks.—I am, etc.,

Clebury Mortimer, Sept. 29th.

L. SCARGILL.

SIR,—I have been interested in following the correspondence of Major F. W. Bowman and also that of Dr. F. E. Taylor and Captain W. H. McKinstry, with reference to the treatment of Vincent's angina. On March 3rd, 1911, I had several cases which had occurred in a large residential boys' school, brought to me by the medical officer for diagnosis and advice. Deep scrapings from the cases were submitted to bacteriological examination, and upon verification thus I strongly advised the medical attendant to use freely hydrogen peroxide solution, and at the same time to have destroyed the tooth-brushes which were in use, and which I suspected were causing conveyance of infection from the original cases to others. The outbreak under the measures adopted was limited, there being only the same number of subsequent cases discovered on further investigation. I attribute the good results entirely to the liberal use of fresh solution of hydrogen peroxide, which was used as a gargle and mouth wash by all the scholars. The discovered cases were thoroughly swabbed three or four times a day.

I am writing, as I agree with Major Bowman, but would point out that the main virtue lies in the hydrogen peroxide. It is a non-toxic remedy that can be used quite lavishly, whereas the treatment by salvarsan is expensive and unsatisfactory for general use.—I am, etc.,

G. CLARK TROTTER, M.D., D.P.H., F.R.S.E.,
Paisley, Oct. 1st. Medical Officer of Health.

Obituary.

DAVID CHARLES REES, M.R.C.S., L.R.C.P.,

DISTRICT SURGEON AND PORT MEDICAL OFFICER, PORT ELIZABETH.

In the *Medical Journal of South Africa*, June, 1917, the death of Dr. D. C. Rees from typhus fever, in his fiftieth year, is announced. Dr. Rees was educated at Charing Cross Hospital Medical School, and after obtaining the diploma of the Conjoint Board in 1895 went out to Nigeria with General Lugard's Frontier Force. He went up the Niger, saw service there, and gained considerable experience in the diseases of the country. On his return, the London School of Tropical Medicine was just being opened, and Sir Patrick Manson (then Dr. Manson) was fortunate enough to secure his services as the first Superintendent (or as it was then called Medical Tutor) of the School. The first session opened on October 1st, 1899, and Dr. Rees was responsible for organizing the lectures and other details of the course. So well did he do this that the general scheme adopted by him has held, with additions of course, till the present day. Dr. Rees was an able teacher, and had a happy knack of interesting the pioneer students in the laboratory work, most of which was, of course, quite new.

In the summer of 1901, during the vacation, he visited

the experimental house, set up by the School in the Roman Campagna for the malarial experiment, and he stayed there for several days with Drs. Sambon and Low, the experimenters. He then returned to the School for the fourth session, and worked in London till the end of the year; finally, to the sorrow of all his fellow teachers, giving up his appointment to take up the very important post of district surgeon and port health officer at Port Elizabeth, Natal. Here the opportunity of combating plague and small-pox presented itself, and ably dealing with these, Dr. Rees made a name for himself in this line. That he should have died of typhus, a disease he was trying to stamp out, is very sad—a fate, however, which others who have gone before have also shared. After taking up his residence in South Africa, he did not have the time or opportunity to come much to London, but he visited it on the occasion of his marriage, and again three or four years ago, when he visited the School of Tropical Medicine and renewed his old associations with that institution.

There is little doubt that if Dr. Rees had stuck to tropical medicine, he would have made a name for himself in that line of research. Before leaving for Africa, he wrote on tropical subjects to the journals, and these contributions were always well written and carefully thought out. Work in Port Elizabeth did not allow him apparently to keep up his literary efforts. Dr. Rees has left a widow and two children to mourn his loss. To them the London School of Tropical Medicine and all its teachers who knew and were associated with him offer sincere sympathy.

Universities and Colleges.

UNIVERSITY OF LONDON.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

THE two Goldsmid entrance exhibitions, offered annually for competition in September, have been awarded to Mr. H. L. Heimann and Mr. V. R. Khanolkar, both of University College, London.

UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examinations indicated:

M.B., CH.B.—*Medical Jurisprudence and Public Health (New Regulations)*.—J. D. Arthur, A. S. Bisset, A. Black, D. C. Bowie, W. G. Burns, M. J. Cahalane, H. A. Cochrane, H. L. Coulthard, E. M. E. Cumming, A. M. Davidson, J. Donald, J. C. Dow, A. B. S. Drysdale, W. Edgar, D. Finlayson, G. O. Grant, J. S. M. L. Gray, J. A. Hamilton, W. R. D. Hamilton, J. G. Harrower, A. Henderson, H. J. Hollis, M. Hyman, J. Irving, R. P. Jack, J. A. Jenkins, J. P. Kilby, A. C. Lindsay, J. Lipschitz, A. J. Macartney, D. MacCorm, T. McGowan, J. A. C. MacGregor, J. W. Mackay, D. Maclean, W. S. L. McLeish, J. Macleod, W. M. Linden, A. W. M'Rorie, J. M. Melvin, W. Napier, B. F. Niblock, J. Nicol, I. L. Oluwole, N. B. Peacock, J. W. Peden, R. J. Peters, J. B. Potter, A. Riddell, J. M. Ritchie, W. Scotland, R. P. Smith, J. C. Vaughan, W. A. Walker, J. A. Walls, H. Wands, G. M. Wishart, W. Young, Ellen D. Anderson, Grace Chatterton, Mary B. Gillespie, Alison M. Hunter, Elizabeth C. Loudon, Mary J. Macdonald, Isabella Q. M'Fadzean, Maud E. D. MacKinnon, Margaret G. M'Vey, Margaret M. Morton, Elizabeth B. Y. Paterson, Margaret M. C. Steedman. (*Old Regulations*).—C. O. Anderson, P. Macdiarmid, J. S. Neighan, J. A. O'Connor, D. Stewart, K. Young, Lillias B. Hardie.

* Passed with distinction.

FOURTH (FINAL) M.B., CH.B.—Maud C. Cairney, B. W. H. Fergus, J. B. D. Galbraith, K. J. A. Gillanders, W. M. Kerr, F. R. Lubovius, Elizabeth C. M'Hattie, J. Macleod, Alice J. Marshall, Margaret M. Morton, A. Riddell, S. M. Riddick, I. M. Robertson, Jessie N. Robertson, J. A. Stewart, J. T. Taylor, W. H. Wallace, J. P. White.

Medical News.

It is announced that Major John Utting, R.A.M.C. (T.F.), will be the next Lord Mayor of Liverpool.

A LECTURE on sanitary work in the army will be delivered at University College, London, by Major Arthur J. Martin on Thursday, November 1st, at 5.30 p.m. The chair will be taken by the Hon. Sir John McCall, M.D.

DR. MARCUS PATERSON, Medical Director of the King Edward VII Welsh National Memorial Association for the Prevention of Consumption, has resigned that appointment owing, we regret to learn, to continued ill health.

A MEETING of the Medico-Legal Society will be held at 11, Chandos Street, Cavendish Square, W.1, on Tuesday, October 16th, at 8.30 p.m., when an address will be given

by the president, Sir Samuel Evans, and a discussion on the Criminal Law Amendment Bill (1917) will be opened by Dr. F. J. Smith.

THE Automobile Association and Motor Union, Whitcomb Street, Coventry Street, W., has been in communication with the Ministry of Munitions regarding the use of coal gas on cars. The reply of the Ministry is to the effect that coal gas is not regarded as a petrol substitute, and that the Home Office is being consulted regarding its unrestricted use.

THE following entrance scholarships have been awarded at Guy's Hospital Medical School: Senior Science Scholarships for university students, £75, R. Gainsborough, Magdalen College, Oxford; Junior Science Scholarship, £120, A. T. Rogers, Preliminary Science Class, Guy's Hospital. Scholarships in Arts: £50, G. R. M. Apsey, King's School, Canterbury; £50, C. H. C. Toussaint, St. Bees School.

PROFESSOR H. G. PLIMMER, F.R.S., will give a course of about ten lectures on tropical hygiene on Tuesday during the first half of the winter session. The lectures will be given in the Botany Department of the Imperial College of Science and Technology, Prince Consort Road, South Kensington. Further particulars can be obtained on application to the Registrar of the College. The fee for the course is £1. The first lecture, which will be given on Tuesday next, October 9th, at 4 p.m., will deal with general principles and the classification of disease causes; the second with the definition and nature of infectious diseases; the third, fourth, and fifth with directly infectious diseases, especially enteric fever. The remaining lectures will deal with other diseases prevalent in the tropics, the last two being concerned with general advice as to the maintenance of health in the tropics and the treatment of minor complaints and injuries.

A CONFERENCE of representatives of friendly societies and other organizations connected with national insurance was held at the Central Hall, Westminster, on September 29th, in order to discuss the question of the setting up of a Ministry of Health. Mr. Kingsley Wood, who took the chair, stated that during the Parliamentary recess proposals had been formulated, and a bill drafted for the establishment of a Ministry of Health, at the instance of the great national insurance organizations. He claimed that this was the first definite scheme that had been put before the nation, that it was an urgent war measure, and that it must be put into force before demobilization. The bill provides for central organization only. Under it a Minister of Cabinet rank would be assisted by a board of health containing representatives of the medical profession, of the local health services, of national insurance interests, and of labour.

NOTICES.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 423, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are:

1. EDITOR of the *BRITISH MEDICAL JOURNAL*, *Attitology, Westrand, London*; telephone, 2651, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2650, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2654, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

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NOTE.—It is against the rules of the Post Office to receive *postes restantes* letters addressed either in initials or numbers.

THE CANADIAN ARMY MEDICAL SERVICE.

BY

SURGEON-GENERAL J. T. FOTHERINGHAM, C.M.G.,

DIRECTOR OF MEDICAL SERVICES, INVALIDS, C.E.F.; LATE
A.D.M.S. SECOND CANADIAN DIVISION.

The adage, "Cast thy bread upon the waters, and thou shalt find it after many days," had never truer exemplification than in the relations found existing in this great war of all the ages between the R.A.M.C. and the Canadian A.M.C. The latter is the lusty progeny of the former, and well pleased that the physique and lineaments of the parent can be seen in the child. In all matters of present-day organization, equipment, and even uniform, the two services are closely homologated and interchangeable. But in spirit, and sympathy, and attainments, and just and generous emulation their relations are more fraternal than parental.

During the somewhat troubled years which followed in British North America after the rebellion of the American colonies the British troops who helped, as in the war of 1812-1815, to safeguard the feeble settlements of Nova Scotia, Lower Canada, and Upper Canada, had their medical officers—army doctors as they were known. Not a few of these well-trained men left the service to settle down to practice in Canada, and in most cases at once secured a commanding professional position in the new community. Their superior education and good social position gave to many of them great influence with the authorities, especially in Upper Canada—now Ontario—and this influence was always exerted in favour of sound legislation on all matters pertaining to education, both general and professional. The provinces were thus from the outset, to a very large extent, protected from the evils of free and unlicensed medical practice, from which the United States are only now with much effort and delay beginning to shake themselves free. British ideals in both teaching and practice have in the main prevailed everywhere in Canada, the precedent and example of the medical legislation in the older provinces being closely followed in the newer as they were organized, so that all the medical faculties in Canada have always drawn their inspiration, neither from American nor German sources, but from the great schools of London, Edinburgh, and Dublin.

With this heritage, nothing could be more natural and legitimate than that the Canadian Army Medical Service should both give and get, in this time of sore trial for all British hopes and ideals, absolute mutual co-operation and goodwill in its relations with the Royal Army Medical Corps and Service. The opportunity of comradeship and common service in the stricken field and in the cause of empire and civilization is keenly realized and most highly prized by all ranks.

The intimacy between the two services is evidenced by the circumstance that many scores of Canadian graduates hold temporary commissions in the R.A.M.C., and the value of their services is freely acknowledged by their fellow officers. Furthermore, the Canadian laboratory man has been given his chance and has made good in both British and Canadian laboratories in the field, and the friendly rivalry and hearty good comradeship of their work has gone far to make permanent for all time the good relations which are and can be based only upon mutual respect. One dreams of the day when the degree or licence of any reputable faculty in the empire may run and be recognized as valid in all the parts of the empire.

A summary of the activities of the C.A.M.C. may be made under the three topics:

1. Preventive medicine;
2. Clinical progress in medicine and surgery; and
3. Laboratory and research work.

PREVENTIVE MEDICINE.

With reference to preventive medicine the two outstanding features of the situation are:

- (a) Preventive inoculation.
- (b) Sanitary control in the field.

(a) Preventive Inoculation.

On the Western front, where most of the Canadian medical troops have been employed, this has been mainly against the typhoid group, small-pox, and tetanus.

The percentage of inoculated men as regards the first two runs very high, practically 100 per cent., as the conscientious objector is not recognized by the Canadian authorities and legitimate means have been found for overcoming the objections of the very few who were at first disinclined to submit.

Antitetanic serum has been administered in all main dressing stations to all wounded, and latterly to trench foot cases, at the time of their admission, the dose being entered on field medical card and in the admission and discharge book. The dose has been, as a rule, 1,500 units. The serum has been to a large extent, but not exclusively, obtained from the Canadian Red Cross Society, and is that manufactured in the laboratories of the University of Toronto through the thoughtful provision of a wealthy benefactor there. The regular source of supply through the advanced dépôts of medical stores has also been drawn upon. Comparisons and results are not available as yet, but there is no doubt in the minds of all in a position to judge that, as a preventive measure, the procedure is proved to be indispensable.

The same remark holds true, if possible more positively, with regard to antityphoid inoculation. When regard is had to the practical absence of true typhoid and to the extraordinarily low incidence of the other diseases of the enteric group on the one hand, and to the universal contamination of the water supply by the colon group on the other, one may truly say that a new chapter may now be written in the history of military medicine, and that the world at large owes to Sir William Leishman and the R.A.M.C. a debt which it can never repay; and it should not be forgotten that the millions of men now in the war zone and far from their accustomed strains of enteric infection represent, without inoculation, virgin soil for the ravages of the disease.

Small-pox has been practically non-existent among the Canadian troops, as each man signs in his attestation papers an undertaking to undergo vaccination, which is universal.

Dysentery has occurred in a slight, sporadic form, but not as either epidemic or endemic. Such cases, even though only suspected, are sent to a special hospital in each army direct from the field ambulance, admitting by motor ambulance convoy car.

(b) Sanitary Control in the Field.

The two important parts of this many-sided problem are water control and disposal of waste. The organization necessary is briefly as follows:

1. Battalion and unit sanitary sections, specially detailed and trained by unit medical officers and employed under their direction. Responsibility rests with each O.C. for his own lines, the M.O. acting as adviser.

2. Divisional sanitary section under a specially qualified medical officer, who is also divisional sanitary officer, under command of A.D.M.S. of Division, reporting to him, and employing the other ranks of his unit as inspectors over the whole area occupied by the Division with reference to water supply, disposal of waste, and conservancy arrangements of every sort.

The opinion has been steadily growing that for the semi-siege type of warfare so far prevailing on the Western front, too frequent moves of these divisional sanitary sections detract seriously from their usefulness, and that they should, within limits, be made more permanently responsible for the areas with which they have become familiar, after the manner in which town majors and camp commandants are employed.

With respect to the protection of the water supply, in addition to the supervision maintained by the divisional sanitary sections, which is good, the Canadian corps has in action a water patrol. This patrol places a second check upon the chlorination of water.

Experience has shown that a water which gives a good reaction for the presence of free chlorine half an hour after the addition of chloride of lime can be considered a safe water. The requisite amount—1 gram (1 scoop), or more, to 110 gallons (the capacity of the water-cart)—is gauged by testing at frequent intervals during the day, the amount varying according to the organic content of the water. Small cases are supplied to the British Expeditionary Force, whereby sanitary or regimental medical officers may so test water and establish the amount of chloride of lime necessary to produce sterilization. Mobile laboratories are

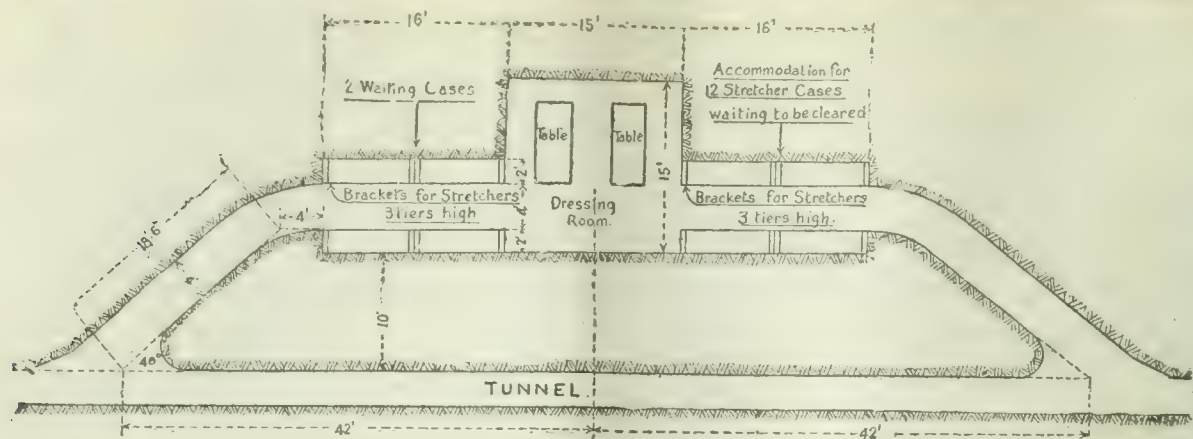


FIG. 1.—Regimental Aid Posts in a Tunnel. Accommodation, 24 cases.

available to examine and give any information on request. Muddy water must first be filtered, otherwise sterilization will not be complete, the chloride of lime failing to penetrate to the centre of particles of mud.

Water patrols, covering a Canadian corps area, are in charge of an officer under the "Q" Branch. A survey is made, maps prepared, and information collected. The corps area is then subdivided into patrol sections, each section being patrolled by one N.C.O. and five men (permanent base). The duties of these patrols are as follows:

- (a) To see that rivers, streams, ponds, wells, and springs are not polluted.
- (b) To see that no washing and no watering of horses are done at any but authorized points.
- (c) To see that no material connected with the corps water system is destroyed or removed without corps or divisional orders.
- (d) To visit daily each of the water tanks, stand-pipes, etc., where water carts are filled, collecting the daily report from the "divisional control" in charge.

Divisions are responsible that all orders regarding chlorination and "water details" are carried out, and also all instructions, such as those mentioned in paragraph (b). Any unit not complying with instructions regarding water supply is reported by the water patrols to the water patrol officer, but this does not relieve divisions from their responsibility for seeing that all instructions are carried out. Where a unit is reported to the water patrol officer a report is forwarded to the division concerned. Should the same unit be reported a second time, a report is forwarded to corps head quarters. Men belonging to, or attached to, the divisional sanitary sections are detailed as "water controls" by the O.C. sanitary sections for all authorized supplies in the divisional area. These water controls keep a "daily tank report" in triplicate, which sets forth the condition of carts drawing water, condition of lime, etc. A copy of these reports is forwarded daily to the divisional sanitary officer, one copy to water patrol officer, and one copy is retained as record by the water control. The divisional sanitary officer is responsible that the necessary steps are taken to prevent a recurrence. The O.C. water patrols summarize these daily tank reports once a week; a copy of this is sent to the D.D.M.S. A record is thus kept.

Other matters pertaining to the water supply are also reported to the D.D.M.S., and thus the medical services work in conjunction with the other branches to maintain as adequate and good a supply of drinking water as possible.

The incidence of water-borne diseases in the Canadian corps has been low, and it may be said has only occasioned anxiety when conditions were such as to interfere with, or prevent, the maintenance of those measures which have been indicated above.

Reference should be made to the very important topic of baths and laundries. In most British divisions it is understood that these establishments are under the control and administration of the A.D.M.S. for the "A and Q" branch of the staff. In the Canadian divisions the practice has been to relieve the medical service of this

responsibility and to place in charge a capable business man who is an officer seconded from his unit to the staff of the division. This has given excellent results, and would seem to be less wasteful of the special training of the medical officers, though close co-operation always exists between the A.D.M.S. and the officer in charge of baths and laundries through the A.A. and Q.M.G. The Foden-Thresh lorry disinfecter, for instance, which is on charge to the sanitary section and under the control of the A.D.M.S., is kept in operation at the divisional baths, where the men exchange their soiled clothing for fresh. Ordnance by arrangement makes issue of socks and underwear through the baths officer.

CLINICAL PROGRESS IN MEDICINE AND SURGERY.

The barest reference alone is possible to so wide a subject; a few topics of interest have been selected.

1. Injuries and Diseases of the Lung.

In a general way we have come to a set method of treating wounds of the lung, which usually reach the base hospital not earlier than the fifth day after infliction. Gun-shot wounds rarely, shell wounds frequently, are complicated. Haemothorax is usually demonstrable, and the history of haemoptysis is generally present. The rapidity with which blood is spat up after wounding depends on whether the upper or lower part of the lung is wounded, the haemorrhage being most prompt in the case of the former. Fever is usually present in the earlier days, often disappearing by the sixth or seventh day. When the fever continues we draw off blood from the pleura for the purpose of culture; such cultures usually prove sterile. As a usual thing we draw off by aspiration the blood about the tenth day; sometimes the blood so drawn off is replaced in a few days by effusion, so that subsequent aspirations may need to be made. The blood so drawn off is sometimes replaced by oxygen, the outflow of blood and the inflow of oxygen being made through separate needles at the same time. Of late we have not felt so keenly the necessity for the use of oxygen; our idea was that the replacement allowed a less chance of disturbance of the bulk of the lung, with consequent haemorrhage. An uncomplicated case is fit to travel, we judge, about the thirteenth or fourteenth day. The possibility of seasickness and vomiting is the chief reason against allowing cases to travel at an earlier date, as the repair of the lung wound seems to be relatively slow.

With shell wounds of the lung, and in cases where the foreign body remains in the chest cavity, no set method of treatment is possible. The x rays and the fluoroscopic screen are used to the fullest extent in all these cases; a certain small percentage of patients with foreign body are found amenable to early operation with removal. The relative infrequency of infection of the pleural blood is remarkable. I have personally seen only two cases of gas infection of the pleural blood, both of which recovered. A number of other infections by large bacilli, which might have been gas bacilli, but were not certainly so, have been treated as empyema and drained, and, so far as we know, with recovery in all cases.

In a winter such as 1916-17, there was a great prevalence of infection of the respiratory tract, including

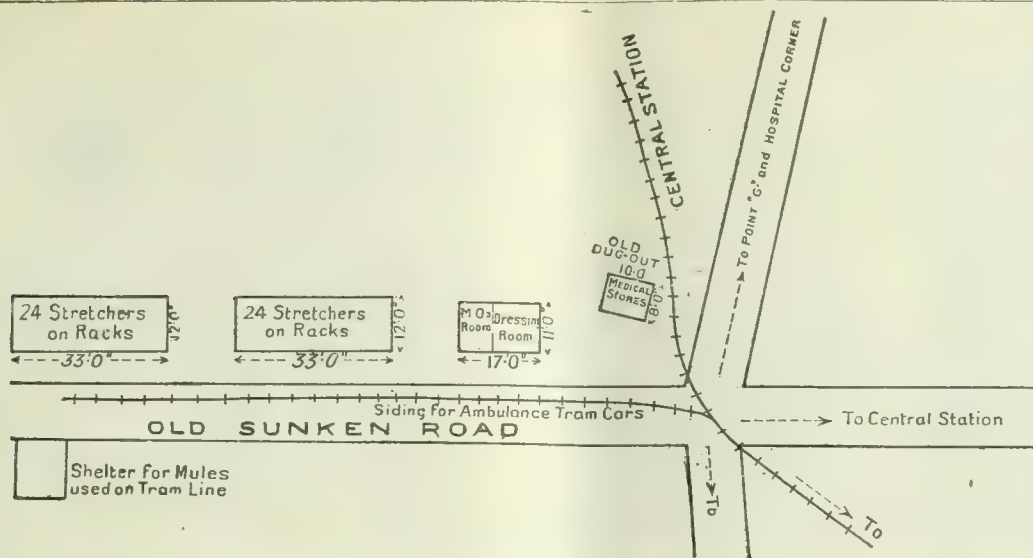


FIG. 2.—Advanced Dressing Station. Accommodation, 40 cases. This dressing station is situated in an old sunken road, and is fragment-proof. A siding has been placed in front of the station for hospital tram-cars, and a shelter has been built in the cut bank for the mules used in hauling tram-cars.

pneumonia, but it is remarkable how little prevalent lobar pneumonia has been. Severe cases of bronchitis, tracheitis, and laryngitis are common, and loss of the speaking voice is very often seen. It is difficult to distinguish mild bronchopneumonia from severe cases of bronchitis, and the presence of pneumococcus is in no sense diagnostic, as most cases show it to be present. The diagnosis has to be made on clinical grounds, and most frequently a high degree of physical disturbance, continued high fever, and the presence of blood streaks, blood or rose colour in the sputum, is used to determine the diagnosis in favour of bronchopneumonia.

A tendency to extension of the disease from one part of the lung to another at different times in the course of the malady is remarkable, so that sometimes patients are ill for weeks, with apparent extensions of the disease; the final chart of such a patient looks like a typhoid fever chart: so true is this, that in many cases we have been compelled to make agglutination tests for typhoid and paratyphoid fever, with almost constantly negative results. The absence of sunny, clear weather in winter in the northern parts of France seems to be responsible for the slow convalescence of many patients suffering from disease of the respiratory tract.

2. Continued Fevers (or "P.U.O." Cases).

Considering the cases of continued fever (or "pyrexia of unknown origin") coming to the hospital, it becomes necessary to divide them into the constituent diseases—namely, typhoid and paratyphoid fevers, so-called trench fever, and other less specific infections. Since the whole army is inoculated, the clinician is no longer able to determine on clinical grounds whether a case of continued fever be typhoid, paratyphoid, or another. The classical signs of enlarged palpable spleen, rose spots, etc., are too often absent. A dirty tongue implies gastro-intestinal disturbances but is in no wise specific. The old-fashioned Widal test is useless because it is positive by reason of inoculation. It therefore becomes necessary to make a quantitative agglutination test, which is done in series; this is done at intervals of not less than four days, and the positive diagnosis of typhoid or paratyphoid "A" or "B" may be possible by observing that there is an agglutination curve and not a stable agglutination line. From this it will be inferred that a diagnosis is sometimes made by a quantitative fall in agglutination power as well as by a rise, the fall or rise depending upon the phase in agglutination power which the blood shows at the time it is taken. No longer is the typical typhoid temperature chart to be seen. Regular, more or less continued fever, or even an acutely relapsing fever is to be seen; patients belonging to this group show very frequently myalgic pains, pains in the neck, pains in the thighs, pains in the shin bones, so that a diagnosis of the so-called trench fever upon clinical grounds becomes as difficult as a diagnosis of typhoid and paratyphoid fever. All the cases admitted into one base hospital during a certain period last winter with the pro-

visional diagnosis of pyrexia of unknown origin—that is to say, cases which were clinically transient pyrexias with no symptoms beyond the elevation of temperature and malaise—were examined bacteriologically, and it was demonstrated that 68 per cent. were typhoid or paratyphoid. Blood cultures and examinations of the stools for typhoid and paratyphoid fever were singularly useless. During the winter 150 cases suspected of typhoid or paratyphoid, whose stools were examined three times in succession, gave no positive result on any occasion.

3. Methods of Localizing Foreign Bodies.

A large percentage of the work done in an operating room of a base hospital in war time consists in the removal of foreign bodies. It is essential that this should be done with the least possible amount of traumatism, and this means that the position of the foreign body should be definitely known before the operator begins to work. The localization of these foreign bodies becomes therefore almost an art in itself, and the development of that art—if one may so call it—in the course of this war would be perfectly amazing to a civil surgeon. It is proposed, therefore, to give as briefly as possible, an account of the different methods used to locate accurately any foreign body.

For foreign bodies of known dimensions—for example, rifle bullets and shrapnel balls—a Canadian radiographer, Captain A. Howard Pirie, has devised a very ingenious scale, based upon the fact that the shadow of the foreign body increases in size as the plate is removed farther from the body. Suppose, then, the plate to be in contact with the skin, all that one has to do is to measure the size of the skiagram of the foreign body, and compare it with the scale, which will at once indicate the depth from the skin surface of the foreign body. A reference to the cross section atlas will then at once give one the position of the foreign body.

The Mackenzie Davidson method, by triangulation, of localizing the depth of a foreign body from a mark, placed previously upon the skin, is in constant use for all foreign bodies, such as pieces of shell, which are of unknown size.

If there is reason to believe, after measuring the depth of the foreign body and comparing it with the atlas, that the foreign body is in the thorax or the abdomen, a stereoscopic view is then taken and the location of the body is easily determined by looking into the adjustable stereoscopic apparatus.

As aids in the operating-room, we place first the large electro-magnet bearing the name of Bergonié of Paris. By its use can be determined the exact position of all electro-magnetic substances, and, fortunately, German bullets are electro-magnetic, whilst the English and French bullets are not. Even when these bodies are deeply situated, and their vibration cannot readily be made out by the hand, it can easily be heard by the stethoscope, placed on the skin opposite the electro-magnet. A sound, very like a steam-boat whistle, indicates the nearest point to the foreign

body, and the skin is marked at that point. In the case of non-magnetic foreign bodies, such as lead, brass, and nickel, or in the case where a magnetic foreign body is embedded in bone, and therefore cannot vibrate, we have recourse to the use of the telephone probe or, rather, forceps. This is of great assistance in locating the foreign body, either in the soft tissues or in the bone, and enables us to extract it with a minimum of damage to the tissues. In other cases, again, when the foreign body will not vibrate, or has possibly changed its position in the soft parts since the *x*-ray picture was taken (and this is notably so with foreign bodies in joints), we operate under the fluoroscopic screen.

It should be borne in mind that practically all the stationary and general hospitals sent by Canada have come from the medical faculties of the universities. A list of these it would not at the present juncture be wise perhaps to publish, but the fact that each one includes in its personnel the selected specialists and teachers in all branches of medicine and surgery from every medical faculty in the country, ensured from the outset a very high standard of professional efficiency. In addition, effective military administration has in most cases been secured, as in most of the universities there were medical men of military experience, both in the militia and in the South African war, and in the Canadian permanent service.

It is no improper divulging of official secrets to say that, both in the Mediterranean area and in France, the highest army medical authorities state that they have found these Canadian units second to none in the whole service. Their facilities for good service, too, are enhanced by the possession in several instances of large funds subscribed by the friends of their universities at home for additions to their equipment and supplies.

LABORATORY AND RESEARCH WORK.

The third main topic suggested at the outset of this article was laboratory and research work. Again, figures and statistics may not be given, and in any case could be as yet only partial. But valuable work has been done by Canadian workers, both in Canadian mobile laboratories and in collaboration in British units, in Britain, in France, and in the Mediterranean.

An enormous volume of work has been done also as part of the daily routine of the general and stationary hospitals, which requires time for the making of generalizations. Special researches of which one has heard have been made upon continued fevers, pyrexias of unknown origin, nephritis, trench fever, stomatitis, meningitis, and epidemic jaundice.

DENTAL SERVICES.

No account of the work of the C.A.M.C. would be adequate which failed to recognize the good work of the dental officers.

The dental profession in Canada is entirely distinct from the medical in respect of both training and control. There are separate Acts of Parliament for each of the professions in all the provinces. It may be that these circumstances underlay the decision of the late Minister of Militia to establish a separate Canadian Army Dental Corps. Members of the dental corps are posted one to each field ambulance in the field, and to each casualty clearing station and stationary and general hospital. In addition, there is a corps dental laboratory, where artificial dentures are made and repaired with very little loss of time or delay, such as was the case when there was no laboratory nearer than the base in France. The loss of military time from dental causes has been reduced to a minimum.

Apart from the value of their professional services to the troops at the front, which cannot be overstated, the dental officers with field ambulances take their full share of military duty in their units, on the same footing as the medical officers, and have thus still further proved their indispensability.

In France the dental service has been placed completely under the medical service, as it was realized that only one channel would be permitted for which a man might, for reasons connected with health, be allowed to escape duty. The arrangement has been completely effective and satisfactory to both dental and medical officers.

The thanks of the writer are due for their collaboration in the production of this article to various officers, and among them:

Lieutenant-Colonel A. P. Bazin, O.C. — Canadian Field Ambulance.

Lieutenant-Colonel F. S. L. Ford, C.M.G., A.D.M.S., — Canadian Division.

Lieutenant-Colonel John McCrae, Lieutenant-Colonel J. M. Elder, — Canadian General Hospital.

Major A. C. Rankin, D.D.M.S. Staff, Canadian Corps.

Major J. S. Jenkins, D.A.D.M.S., — Canadian Division.

ON THE ETIOLOGY OF TRENCH FEVER.

(A Preliminary Communication.)

BY

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H. N. VERMILYE, 1ST LIEUTENANT, M.O.R.C.,

AND

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The following observations bearing upon the etiology of trench fever are presented at this time because of the importance of this disease from a military viewpoint, and the desirability of having other workers confirm or refute our findings while material for the study of the disease is available in abundance.

Since our work is incomplete in many particulars, we shall at this time present merely a brief note of our experience, reserving a full publication for a later date. The literature has been available to us only in abstract form, but having no information that similar organisms have been described in connexion with the disease, we shall withhold a discussion of the work of others in this field for a later publication.

I. The Occurrence of an Organism in the Blood of Trench Fever Cases.

On June 26th, 1917, while examining a blood smear from Pte. B., a typical case of trench fever, there were found great numbers of small, circular or slightly oval, bluish-purple bodies lying upon the blood cells, or free in the plasma. They were distinctly outlined, often somewhat paler in the centre, and with a minute, intensely stained granule of pigment or chromatin at the periphery. The size of these bodies varied somewhat, averaging about one-fifth or one-sixth the diameter of a red blood cell, or approximately 1 to 1.5 microns. Not infrequently two or even several of them were found lying upon a single red corpuscle. They were not present within the leucocytes.

Since this first observation, a systematic study of blood smears of cases of trench fever admitted to the hospital has been made. Bodies of identical appearance have been found in nine cases, over 150 patients having been examined, some of them repeatedly. In some of these a few fairly typical forms have been found after long search, but in the nine cases referred to the bodies were extremely numerous, and assumed the form described. Their appearance in numbers in the circulating blood appears to be exceptional and transitory. For example, in one case (R.) a smear obtained at 3.30 p.m. showed innumerable typical forms; in smears taken at 9 p.m. none was found after prolonged search. Our records are not sufficiently complete to determine whether the appearance of the bodies in the blood coincides with febrile paroxysms and the exacerbation of the clinical symptoms. It is our impression that such is the case, although we have repeatedly failed to find the bodies during a pyrexial attack.

For the staining of the bodies Wright's, Giemsa's, and Leishman's stains have all been found satisfactory. After fixation of the films in bichloride-alcohol or Zenker's fluid the bodies stain more intensely than after fixation in methyl alcohol. Care has been taken to eliminate the possibility that the bodies observed might be artefacts. The stains have been diluted with freshly distilled water, and many controls prepared with the identical stains have been studied. The films in some of the positive cases were made on cover-glasses which had been boiled in nitric acid, so that the possibility that we are dealing with contaminating bodies on the glass seems remote.

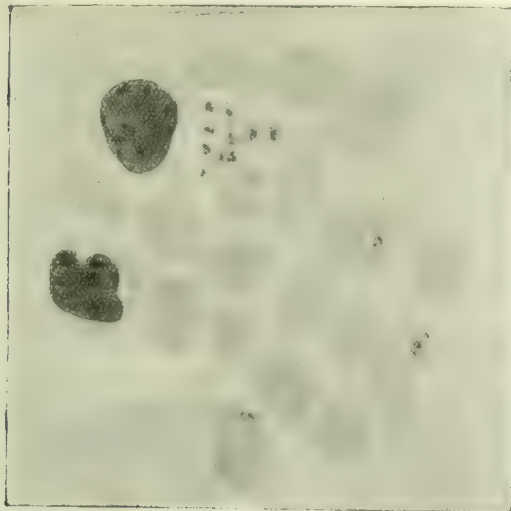


FIG. 1.—Pte. S. Blood smear; methyl-alcohol fixation; Giemsa stain. Three blood cells containing typical bodies with peripheral granule. A group of blood platelets shown for comparison.

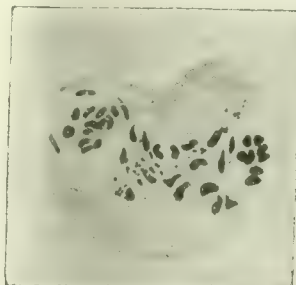


FIG. 2.—Section of muscle; Zenker fixation; Giemsa stain. A group of organisms scattered about the adventitia of small blood vessel.

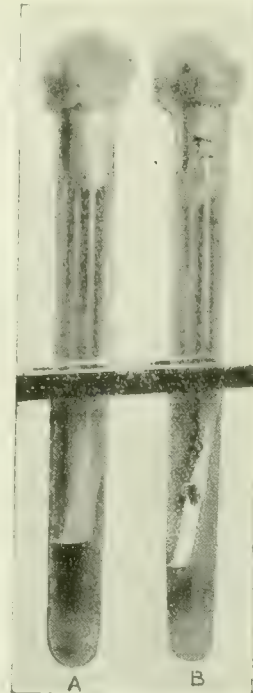


FIG. 3.—Pte. G. Nine-day culture on slant agar of excised periosteal tissue. Note clouding of media about tissue fragments and condensation water. A. Control; B. Culture.

II. The Occurrence of Similar Organisms in Periosteum and Fascia.

With the voluntary consent of the patients small fragments of periosteum, fascia, and muscle tissue have been excised under general anaesthesia from the tibial region of nine cases showing marked local tenderness. The tissue was fixed in alcohol, Zenker's fluid, and formalin and stained with haematoxylin, Wright's and Giemsa's stains. A portion of the tissue in each case was reserved for cultural experiments, which are described below.

Bodies similar to those found in the blood smears are present in considerable numbers in the periosteum and fascia. They show a somewhat less clearly defined structure and a greater variation in size, the individuals ranging from a minute granule to a discoid body as large as a blood platelet. They are quite intensely stained in Wright and Giemsa preparations, with a somewhat more purple tinge than those found in blood films. A peripheral granule can be made out in some of the larger forms, but is not seen in the smaller bodies.

As regards their distribution in the tissue, they are found in loose aggregations about the adventitia of the smaller blood vessels, or scattered sparsely amongst the collagen fibrils. A few typical forms have been seen also within the small nerves, lying between the medullated fibres. They appear to be practically absent in the muscle tissue proper, only occasional isolated bodies being found.

They appear to produce no degenerative changes in the tissue, and to call forth no inflammatory reaction. Although most cells are abundant, and their granules resemble in their staining reaction the organisms described, the variation in size and the occurrence of large aggregations and single bodies at a distance from any nucleus enables one to distinguish between organisms and mast cell granules.

III. The Isolation of the Organism in Cultures from Excised Tissue.

The fragments of periosteum, fascia, and muscle excised from nine cases under strict asepsis were cut into smaller pieces and implanted directly into the condensation water of meat infusion agar slants. Apart from a few tubes showing easily recognizable bacterial contamination, no visible surface growth occurred. There developed, however, after forty-eight hours, a faint clouding of the medium in the vicinity of the condensation water, or in some tubes where the fragment of tissue was later withdrawn to the upper part of the slant above the condensation water; the opacity developed also about the tissue. After continued incubation at 37° C. the cloudiness extended

and increased, until after three weeks a large part of the agar became opaque. This progressive clouding of the medium has been found to be a typical and constant phenomenon, and is due to the growth of the organisms through the substance of the medium. This can be shown by examining smears obtained from cylinders of agar removed with a capillary pipette, or more convincingly by fixing discs of agar in Zenker's fluid and finding the organisms in the stained sections scattered through the agar.

The condensation water after twenty-four hours shows an increasing number of organisms in the hanging drop. These appear as moderately refractile granular or discoid bodies, with an active Brownian motion, but no evident amoeboid activity. They may form a uniform suspension, giving a distinct turbidity to the condensation water, or may be aggregated into smaller and larger clumps. Often they appear as sharply contoured rings in which, by careful focussing, it is possible to distinguish a single refractile granule, either in the centre or at the periphery.

Stained smears from the agar and condensation water have shown a puzzling variety of form and stain. Often the presence of the agar seems to prevent the permeation of the stain, so that the bodies appear as clear faintly bluish or purplish rings about which there is a condensation of the stained ground substance. In other cases the bodies are more deeply stained, and resemble closely those found in sections of periosteal tissue and blood smears. Sections of the tissue fragment after several days' incubation show conclusively that a multiplication of the organism has occurred on the surface of the tissue. In such sections the finer structure of the bodies was very distinctly shown, the central pale area and the peripheral granule being easily seen. Forms were found which were interpreted as indicating division. The discs appear to become oval, then bacillary in form, assuming the shape of a short, plump rod with rounded ends. The more deeply stained chromatin (?) accumulates at the poles, leaving an unstained clear space in the centre, through which presumably division occurs. Many diploid forms, with the deeply stained granule at opposite poles, were found, and interpreted as having undergone binary transverse fission.

In several of the cultures forms were encountered which suggested a different cycle of development, or possibly an involutional change. The small bodies became surrounded by a broad, unstained, sharply limited capsule. The central mass then appeared to increase in size, being still surrounded by a capsule, until the entire body became almost as large as a red corpuscle. Fragmentation of this central

* We are greatly indebted to Lieutenant W. F. Cunningham, M.O.R.C., for his co-operation in these experiments.

mass into five or six somewhat irregular and often rod-shaped bodies appeared to follow, and finally a further subdivision into numerous small granules, each surrounded by a clear capsule. With the rupture of the original limiting capsule these small bodies which seem to form the starting-point of the cycle are again set free.

We have not as yet been able to follow these changes in the living organisms, and are unwilling to interpret them as indicating sporulation until further studies have been made. The appearances, however, are suggestive, especially in view of the forms seen in the intestinal tract of the louse, reference to which will be made later.

Transplants have been made from the condensation water upon the following media: hydrocele-agar, dextrose, lactose, saccharose, maltose and mannite broth, lactose-bile broth and Loeffler's blood serum. In none of these media has a growth of the organism been obtained. A transplant, however, made upon human citrated blood broth after one week developed an increasing turbidity, and examination of fresh and stained preparations showed typical organisms in great abundance.

The original cultures from periosteal muscle tissues have also been transplanted to tubes containing sterile human tissue obtained at autopsy, but with varying success. The experiments are being continued, but so far we have not obtained regularly a growth in the second generation. We have attempted, without success, to substitute sterile rat connective tissue and muscle.

IV. Culture from the Circulating Blood.

In two cases we have succeeded in cultivating the organism directly from the circulating blood. A small amount—less than 1 c.cm.—of citrated blood was poured into agar tubes containing sterile human periosteal tissue obtained at autopsy. Growth occurred slowly, but showed the same characteristic clouding of the media that was found in the periosteal and fascial cultures.

Two other blood cultures obtained at the same time from cases of supposed trench fever upon the same medium remained sterile.

V. Animal Inoculations.

Rabbits, guinea-pigs, and white rats have been inoculated with the blood of patients and with suspensions of the tissue. In none of these animals were there obvious signs of illness; temperature charts of guinea-pigs and rabbits were continued for four and a half weeks without showing a febrile reaction, and examination of the blood on numerous occasions has failed, thus far, to show the presence of the parasite. Further experiments on animals are being undertaken.

VI. The Possible Occurrence of the Organism in the Louse.

Upon the arrival of convoys at the hospital lice were collected from the clothing of the patients and placed in small tubes labelled with the diagnosis upon the admitting card. Smears were made by teasing out the tissues and the intestinal contents on a slide, and stained with Wright's stain. A certain number of lice have also been sectioned and stained. While it is too early to report definitely upon this phase of our work, it may be said that there are present in a number of the smears small ring-shaped bodies identical in appearance with those observed in our cultures and blood smears. We have also observed larger forms, surrounded by a capsule, and transitions between the small discs and these larger bodies. In sections we have found within the alimentary canal large encapsulated globular bodies resembling the sporulating (?) encysted forms observed in the cultures. We are not yet, however, ready to present in detail our finding, but regard this merely as a suggestive observation.

General Discussion.

It will be seen from the above that we have up to the present succeeded in finding a characteristic organism in blood smears, in cultures from the blood, in sections of periosteum and fascia, and in cultures from these tissues.

The morphology of the organism obtained varies somewhat under different conditions. It is most definite and

constant in the blood smears, whereas in the sections of the tissue and in the cultures smaller forms are met with the relation of which to the organisms present in the blood requires further study. So also the significance of the larger encapsulated forms seen in certain of our cultures. Since, however, we have repeatedly found, both in the cultures and in the sections of muscle, forms practically identical with those observed in the blood, we are of opinion that we are dealing with varying forms of the same organism.

As to the nature of the organism, we cannot yet commit ourselves definitely. That it is not bacterial seems probable, (1) because of its characteristic morphology and the changes which it undergoes in culture; (2) because of its peculiar staining reaction, which distinguishes it from ordinary bacteria; (3) because of its failure to grow on the usual bacterial media; (4) because of the absence of all inflammatory reaction about the organisms in the tissue.

While it is impossible to classify the organism finally until its life-cycle shall have been more completely studied, we would provisionally assign it to the genus *Piroplasma*.

We are much indebted to Miss May G. Robson and Mdlle. Scheu for their valuable assistance in the collection of histories and preparation of specimens.

A METHOD TO FACILITATE THE ISOLATION OF THE CHOLERA VIBRIO AND OTHER ORGANISMS.

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The method here described is based on the action of specific and non-specific agglutinins on the bacteria with which the cholera vibrio is most frequently mixed in the material (stools) to be examined.

To explain the general principle on which the method is based the following experiments may be made:

Action of Specific Agglutinins.

I.

Take two tubes of peptone water: inoculate Tube No. 1 with *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B.

Inoculate No. 2 tube with the same germs, but immediately before or after inoculation add:

- 3 to 5 drops agglutinating typhoid serum,
- 3 to 5 drops agglutinating paratyphoid A serum,
- 3 to 5 drops agglutinating paratyphoid B serum, and shake well.

Instead of the individual mono-serums, 3 to 5 drops of a high titre trivalent serum may be used derived from a rabbit inoculated several times with typhoid, paratyphoid A, paratyphoid B. Incubate both tubes at 37° C. for twelve hours and examine. No. 1 tube will show diffuse cloudiness; in No. 2 tube, on the other hand, there will be no diffuse turbidity, the growth taking place at the bottom; the medium will be quite clear, or will contain only a few flocculi, which will very quickly go to the bottom on centrifuging.

II.

To a tube of peptone water add

- 3 drops typhoid serum,
- 3 drops paratyphoid A serum,
- 3 drops paratyphoid B serum.

Or instead of the mono-serums 3 to 5 drops of high titre trivalent serum may be added, derived from a rabbit repeatedly inoculated with typhoid, paratyphoid A, and paratyphoid B.

Shake well; inoculate the tube with *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, and *Vibrio cholerae*.

Incubate at 37° C., and examine after twelve hours. The medium will show diffuse cloudiness, often more marked towards the surface (with at times a pellicle), due to the growth of *V. cholerae*, and also a certain amount of bottom growth, and occasionally some flocculi due to agglutinated typhoid, paratyphoid A and B bacilli. These three bacteria have been influenced by the specific serums, which have had no action on the cholera vibrio. In carrying out this experiment care of course should be taken to use typhoid and paratyphoid serums containing no coagglutinin for the cholera vibrio, or only in very small amount. Certain powerful typhoid and especially paratyphoid A serums may contain quite an appreciable amount of cholera coagglutinin, which is, however, in very small amount in comparison with the other coagglutinins, and may be removed by absorption.

III.

To a tube of peptone water add 3 to 10 drops of polyvalent *B. coli*, *B. pseudo-coli*, *B. coli tropicalis*, *B. neapolitanus* serum, or 3 to 5 drops of each of the respective mono-serums. Inoculate with *B. coli*, *B. pseudo-coli*, *B. coli tropicalis*, *B. neapolitanus*, and shake well. Incubate at 37° C., and examine after twelve hours; the medium will be clear. Repeat the experiment, inoculating the medium with the same bacteria plus *V. cholerae*, and examine after twelve hours' incubation at 37° C.; the medium will show diffuse cloudiness, often more marked towards the surface (and at times a pellicle), due to the growth of the cholera vibrio, which has not been influenced by the serums added. Care of course should be taken to use serums containing no cholera coagglutinin, or only in minute amount.

Action of Non-specific Agglutinins.

I.

Add to a peptone water tube 3 to 5 drops of a very powerful agglutinating paratyphoid B serum, rich in specific and non-specific agglutinins. Inoculate the tube with *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, *B. aertrycke*, *B. enteritidis* (Gaertner), and examine after twelve hours; there will be no homogeneous growth, and no diffuse turbidity. The growth is at the bottom, and at times under the form of flocculi in the medium, which will quickly go to the bottom on centrifuging.

If, instead of a very powerful agglutinating paratyphoid B serum, one of low titre is used, containing only a very small amount of coagglutinins, the medium will show a diffuse turbidity, due to the growth of the *B. typhosus*, *B. paratyphosus* A, *B. enteritidis*, while bottom growth and flocculi will be present, composed of agglutinated paratyphoid B bacilli, and also *aertrycke* bacillus, because generally any paratyphoid B serum contains nearly as much agglutinin for *B. aertrycke* as for *B. paratyphosus*. These two bacteria can be differentiated only by my absorption method, as demonstrated by Boycott, Bainbridge, O'Brien, and others.

II.

Add to a tube of peptone water 3 to 5 drops of a very powerful agglutinating paratyphoid B serum containing coagglutinins for the typhoid-paratyphoid group of micro-organisms.

Inoculate with *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, *B. aertrycke*, *V. cholerae*. Inoculate at 37° C., and examine after twelve hours. There will be diffuse turbidity, due to the growth of the *V. cholerae*, and flocculi and bottom growth due to the typhoid, paratyphoid, and *aertrycke* germs; the flocculi may easily be got rid of by a short centrifugation which will have no effect whatever on the non-agglutinated cholera vibrios. After a few hours longer there may be a distinct pellicle composed of vibrios. Of course, in carrying out this experiment, care should be taken to use a paratyphoid B serum which contains no coagglutinin for *V. cholerae*, or only in very small amount.

From the above experiments, and similar ones, a general method can be devised to facilitate the isolation of the cholera vibrio, the typhoid bacillus, and other germs. The method consists simply in adding to the medium in which the material is going to be sown, serums influencing—that is, agglutinating, and delaying the growth of—the germs we do not intend to isolate, while they do not hinder appreciably the growth of the particular germ, or group of germs, we want to grow.

Cholera.

For the isolation of the cholera and paracholera vibrios from stools the following technique may be followed:

Inoculate peptone water tubes with the faecal matter in the usual way, but before or immediately after making the inoculation add to each tube:

- 3 to 5 drops polyvalent lactose fermenters faecal bacteria serum (*B. coli*, *B. pseudo-coli*, *B. coli tropicalis*, etc.), or the respective mono-serums may be used.
- 3 to 5 drops polyvalent non-lactose fermenter faecal bacteria serum (*B. proteus* group, etc.).
- 3 to 5 drops paratyphoid B serum.

The addition of the last named serum is made with the object of agglutinating and delaying the growth of the bacilli of the paratyphoid B and *aertrycke* type, which, in the tropics at least, are not very rarely found in the intestinal fluid. Care should be taken, of course, to use serums containing no coagglutinin for the cholera vibrio, or only in very small amount. Or serums can be used from which the cholera coagglutinin—which is always in very much smaller amount than the other coagglutinins—has been removed by absorption.

The tubes are placed in the incubator, and the further steps in the investigation are carried out in exactly the same manner as with the ordinary methods.

1. From the very surface of the medium a loopful of liquid is taken, examined microscopically, and the agglu-

tionation reaction with cholera serum carried out straight-way.

2. A small loopful from the very surface is smeared in the usual way on gelatine plates, bile salt neutral red agar plates, etc., and any suspicious colonies which will grow are further investigated.

The method may be applied to the isolation of the typhoid group of bacilli.

Typhoid.

To facilitate the isolation of bacilli of the typhoid-paratyphoid group the following technique may be used:

1. Inoculate with the faecal matter to be investigated several tubes of taurocholate of soda peptone water, or Browning, Gilmore, and Mackie's telluric acid peptone water might be used.

2. Immediately after, or better immediately before, the inoculation, add 5 drops polyvalent lactose fermenter intestinal bacteria serum, 5 drops polyvalent non-lactose fermenter faecal bacteria serum (*B. proteus* group, etc.), taking care to use serums containing only a very small amount of typhoid coagglutinin; or serums can be used from which the typhoid coagglutinin has been removed by absorption.

3. Incubate for twelve or twenty-four hours, then make plates on MacConkey, Conradi-Drigalsky, or similar media, from the most superficial portion of the liquid medium, and investigate further any suspicious colonies which may develop, testing them with typhoid, paratyphoid A, and paratyphoid B serums, etc. When there are many flocculi of agglutinated bacilli also in the upper portion of the tube, these may be got rid of by a short centrifugation. A short centrifugation with an ordinary electric centrifuge will cause the agglutinated bacilli to fall to the bottom, while it has practically no effect on the non-agglutinated germs in young cultures.

REMARKS.

In theory the method I have described is simple, and it should be possible by means of it to isolate in absolutely pure cultures the germs we want to grow to the exclusion of all those we do not want to isolate. In practice things are not so easy, and several difficulties are encountered: (1) The intestinal bacterial flora found in association with the cholera vibrio varies to a certain extent from country to country, from epidemic to epidemic, and even from individual to individual. Therefore, the serums used may have to be varied, and serums have to be prepared influencing a large number of intestinal bacteria. (2) The preparation of powerful agglutinating serums against certain intestinal germs is far from easy. (3) Occasionally certain intestinal micro-organisms are at first inagglutinable by their homologous serums, becoming agglutinable only after several transplantations on artificial media.

In practice, therefore, we seldom succeed in agglutinating and retarding the growth of all the species of germs we do not want to grow, but merely succeed in agglutinating and retarding the growth of a certain number of them. Even this result is, however, of practical importance, and greatly facilitates the isolation of the germs we want to grow.

ADAPTATION OF THOMAS AND JONES SPLINTS TO OBTAIN FIXATION OF THE ARM IN AN ABDUCTED POSITION WHILE THE PATIENT IS AMBULATORY.

BY

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THE war has demonstrated quite clearly that the ring and wire splints of Hugh Owen Thomas and those which Sir Robert Jones has devised are wellnigh universally adaptable. As surgeons become familiar with their use, and appreciate the soundness of their simple mechanical principles, they are becoming more and more the method of choice, and the results obtained are becoming more perfect.

The principle of extension by traction and counter pressure makes of these splints a unit apparatus which provides easy and comfortable transportation, and allows the detailed treatment in the base and home hospital to be continued with complete satisfaction without change of

the apparatus, which may be and now usually is applied at the casualty clearing station or even at the dressing station. Their comparative cheapness of manufacture, their small bulk, and easy packing, are other advantages possessed to the same degree by no other splints with which we are familiar.

We question, indeed, the wisdom of devising other forms of splints at the present time, since the benefits of unit constitution and universal use are so obvious that it seems

rather that all surgeons should train themselves in their use; nor is that training difficult.

Many orthopaedic surgeons have been accustomed to use plaster-of-Paris, and feel that equally good results may be obtained with these dressings in combination with metal or plaster bridges. It is clearly our duty at the base hospital to abandon these bulky casts, which are time-consuming in application, and demand the acquirement of a certain specialized technique. It is our opinion, after a

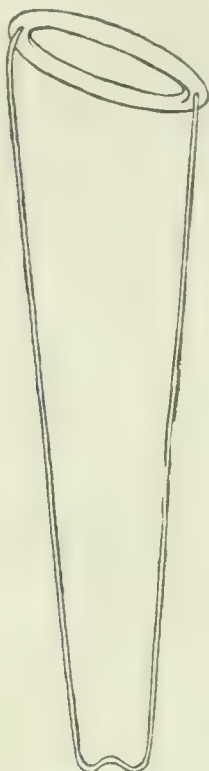


FIG. 1.

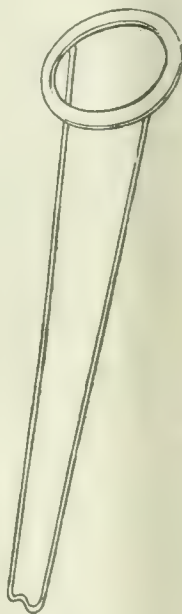


FIG. 2.

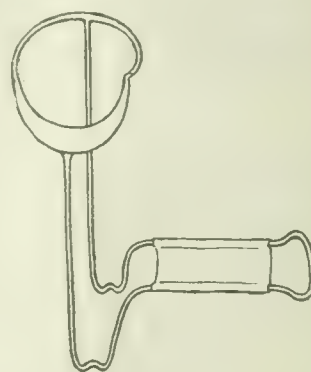


FIG. 3.



FIG. 4.

DESCRIPTION OF FIGURES.

[The diagrams are to scale about one-eighth natural size.—ED. B.M.J.]

FIG. 1.—Thomas knee and leg splint.

FIG. 2.—Thomas arm splint.

FIG. 3.—Jones humerus extension splint.

FIG. 4.—Jones "cock-up" or "crab" wrist splint.

FIG. 5.—Adaptation of Jones humerus splint (Fig. 3) to retain abduction and some degree of immobilization of the shoulder and upper arm. Splint turned upside down. Axillary rutch fits over humeral crest. Wire designed to extend above shoulder should be padded and obtains its bearing below crest, between the anterior superior spine and the great trochanter. One padded perineal strap and another padded crest strap hold splint fast to pelvis.

FIGS. 6 and 6A.—Adaptation of Jones humerus splint (Fig. 3) and Thomas arm splint (Fig. 2) used in combination. Extension portion of humeral splint bent out to fit over bars of arm splint and retained as they cross by adhesive plaster or metal tape. Purpose: To retain arm in abduction with elbow flexed and arm outwardly rotated to any degree, depending upon the bend of the forearm portion of the Jones humeral splint. Patient ambulatory. Extension on humerus in direction of shaft obtained by adhesive plaster or (better) glued strips. More perfect immobilization of humerus is obtained than in Fig. 5.

FIG. 7.—Same combination as in Fig. 6, but well arm passed through ring of Thomas arm splint, whose bars are bent out somewhat to fit over front and back of chest. Counter extension obtained by soft swathe fastened to ring and extending around thorax of injured side. This adaptation leaves axilla and shoulder girdle of injured side free from apparatus.

FIGS. 8 and 8A.—Combination of two Thomas arm splints (Fig. 2). Purpose: To retain arm in abduction, immobilize the humerus, and provide for hypertension of wrist while patient is ambulatory. One of the Thomas arm splints is applied in the usual way with extension. The other Thomas arm splint has its ring bent (with two monkey wrenches) downward towards the uprights in order to make it fit more perfectly over the pelvis. The uprights of this splint are bent upward to any desired degree, and the splint acts as a bracket. Where the two splints cross (the pelvic over the arm splint) the arm splint is bent with a slight inward angle, and the pelvic splint is bent with a slight outward angle. Splints are fastened together where they cross by adhesive plaster or metal tape. The hypertension of the wrist is obtained by suspending hand to the projection of the pelvic splint above the arm splint. Perineal and crest straps as in Figs. 5, 6, and 7.

FIGS. 9 and 9A.—Adaptation suggested by Captain E. C. Cutler, M.R.C., U.S.A. Combination of two Thomas arm splints (Fig. 2). Purpose: To retain arm in abduction with extension and leave injured shoulder and axilla free from apparatus, while patient is ambulatory. The arm splint is bent downwards an inch or two from its end, while the pelvic splint is bent at the ring, as in Fig. 8, and fastened to pelvis by the same straps. At the point where the pelvic splint meets the arm splint it is bent in a horizontal direction, running parallel to the arm splint and fastened to it by adhesive plaster or metal tape. Extension straps run to end of pelvic splint and counter extension transmitted to pelvis and thoracic bands running from ring on well side to about thorax on injured side.

FIG. 10.—Adaptation of Thomas knee and leg splint (Fig. 1) for shoulder and humerus. Purpose: For quick application in injuries of shoulder and upper arm. Ring of leg splint passed over well arm. Bars bent out to fit front and back of thorax. Ring retained in position by soft swathes passed through it and about thorax of injured side. Shoulder straps to hold bars in place. Leaves shoulder free on injured side. Extension in usual way to end of splint, and counter extension by means of thoracic swathe. The patient may be ambulatory to some extent, but on account of its weight the splint is more useful for bed treatment. Patient, however, may sit up easily for dressings.

FIGS. 11 and 11A.—Combination of Thomas arm splint (Fig. 2) and Jones "cock-up" crab splint (Fig. 4). Splint may be described as a "yoke" splint. Purpose: To obtain fixation of shoulder girdle and humerus, leaving back of thorax free, and in case of pelvic or upper thigh wounds avoiding necessity of a pelvic support while the patient is ambulatory. The weight of the arm is borne by the roof of the neck like a water-carrier's yoke. The forearm is supported with the elbow flexed on a Jones "cock up" crab splint (Fig. 4), the iron bar bent flat and then twisted about an angular bend near the end of the anterior thoracic bar of the Thomas arm. The single rivet in the Jones "cock-up" crab splint hand bar allows the splint to extend forward at any angle from the arm splint, and thus any degree of flexion of the elbow maintained. Extension on the humerus in the usual way to the end of the Thomas arm splint against a counter pull on the thoracic swathes extending from the ring on the well shoulder about the thorax on the injured side.

FIG. 12.—Simple method of maintaining tight extension straps with Thomas leg or arm splints, devised by Lieutenant F. R. Ober, M.R.C., U.S.A. A four or five inch wire board nail is inserted between the extension bands above knot, and twisted like the tightening stick in a "buck saw" or a Spanish windlass. The head of the nail is caught under or over one of the bars of the Thomas splint. Any degree of steady traction may thus be obtained. [There is an error in the drawing: the number of twists above and below the nail should of course be the same.]



FIG. 5.

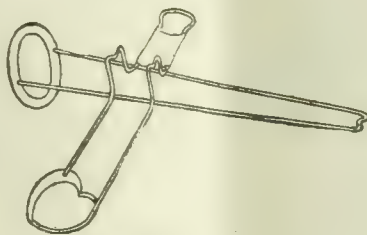


FIG. 6.

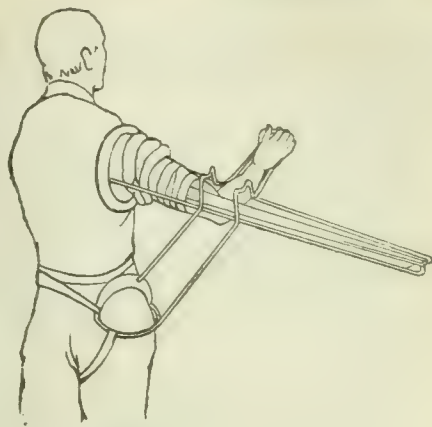


FIG. 6A.



FIG. 7.

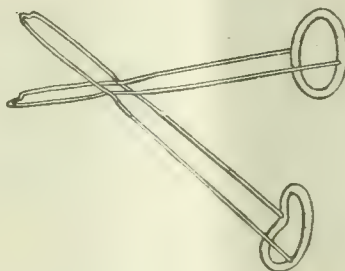


FIG. 8.

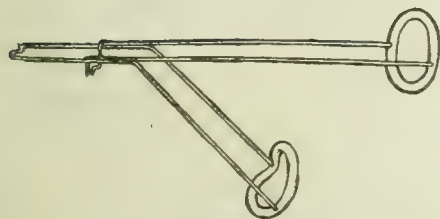
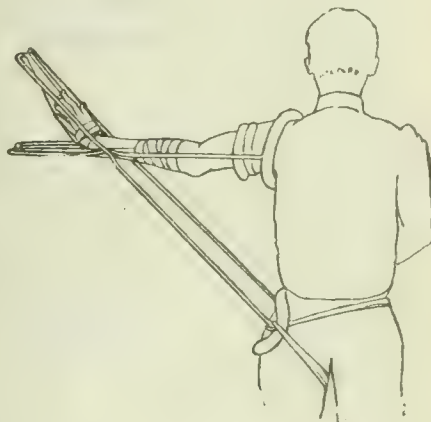


FIG. 9.

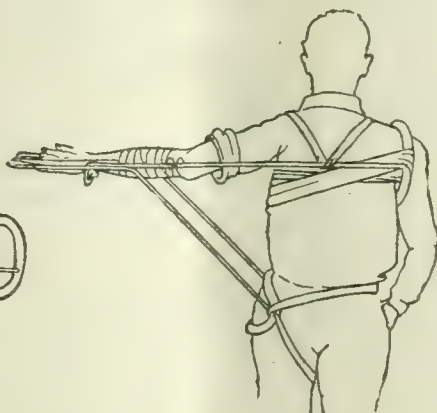


FIG. 9A.

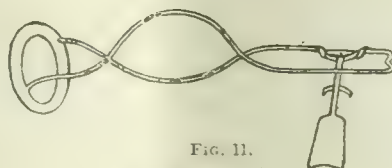


FIG. 11.

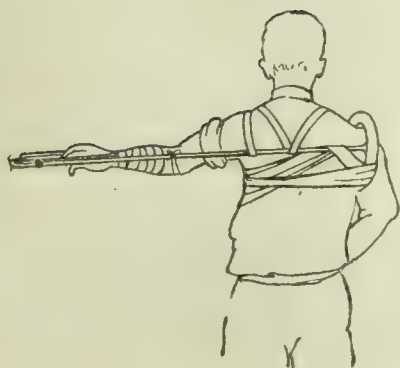


FIG. 10.

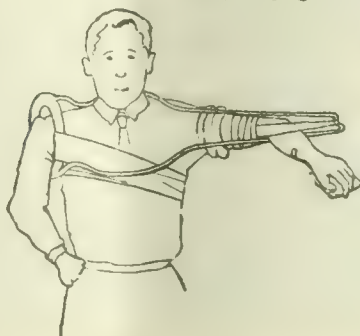


FIG. 11A.

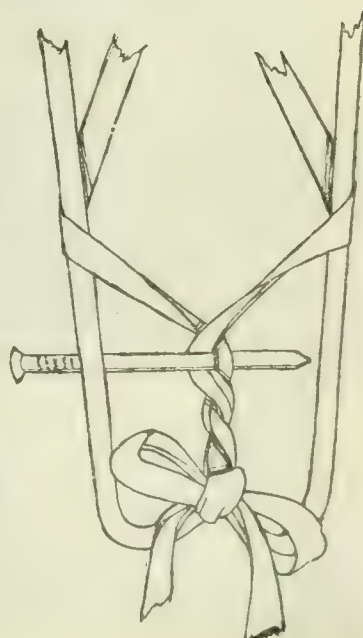


FIG. 12.

war experience in which we employed almost exclusively and with satisfaction plaster-of-Paris dressings, that, except in the occasional case, equally good, perhaps better, results may be obtained by the use of the Thomas and Jones splints.

The suggestions made in this note are in no way modifications of these splints, but only adaptations which may possibly be found to increase their usefulness.

In fractures of the head or neck of the humerus and in injuries to the bones or muscles of the shoulder girdle we have been impressed with the value of fixation with extension in the abducted position. In our experience there are a surprisingly large number of these injuries. Not only may better alignment and more speedy subsidence of the septic process be gained by the abduction, but the

comfort of the patient seems greater in this position. There can be no doubt that future function is favoured also. As Sir Robert Jones has pointed out, even a stiff shoulder with the arm in at least 60 degrees of abduction provides a surprisingly useful limb. As soon as the septic process begins to subside and the temperature is under control, ambulatory treatment increases the resistance of the patient, and greatly simplifies his care.

It is with these ends in view that these adaptations have been planned. Sufficient trial has been given in the wards and in transport to England to seem to prove their practicability. Many other adaptations may easily be made, indeed have been made. These figures with their legends are merely suggestive and demonstrative of certain forms we have found useful.

A SPLINT FOR THE TREATMENT OF GUNSHOT WOUNDS INVOLVING THE SHOULDER-JOINT.

By J. CAMPBELL, CAPTAIN R.A.M.C.(S.R.).

THE treatment in a base hospital in France of a large number of gunshot wounds involving the shoulder-joint has impressed on me in the first place the great necessity for securing adequate rest and fixation, combined with extension, and in the second place the absence of any useful method for attaining them. Many cases, that came under my care last year after being treated for some time, showed a considerable degree of toxæmia, and not infrequently had the elbow close-in to the side, a bad position for ankylosis owing to the subsequent limitation of movement in the limb. The method of treatment I formerly adopted was merely to bring the arm to the fully abducted position, and secure it there by means of weight extension over a pulley. The abducted limb was slung in place from a Balkan frame placed crossways of the bed, at the level of the shoulders. Care was taken that the patient was never

the uppermost malleable band, is also turned forwards in the same way. To the extremities of these rigid, forwardly curved bands are attached the side pieces of an ordinary Thomas arm splint, in a position of almost complete abduction with very slight forward flexion. The splint is applied in the following way: The patient is placed on his back on the padded frame with the affected shoulder region lying over the gap in the frame, and securely fixed by bending the malleable iron bands to the contour of his body (Fig. 3). He is prevented from slipping up or down on the frame by shoulder and perineal bands fastened as shown. The affected arm is supported by rigid bands of perforated zinc, and fixed extension is applied, *not to the forearm, but to the upper arm*. In this way the elbow can easily be passively moved and thereby prevented from becoming stiff—a most important consideration in treatment. By passing a bandage, impregnated with French chalk, from side to side between the body and the frame several times a day, any tendency to a sore back is easily overcome.

By the use of this splint I have found that the patient can be easily nursed and the dressings changed without pain or discomfort, and without the general reaction described above. Certainly such cases as I have treated on this frame settled down more rapidly and required less interference than had formerly been the case. Furthermore, patients can be transported in it with ease.

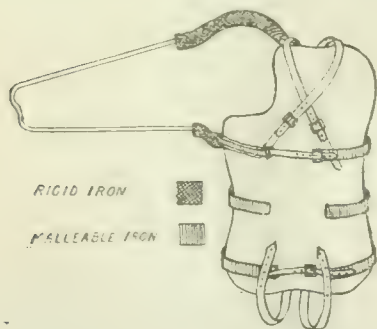


FIG. 1.—Frame, front view.

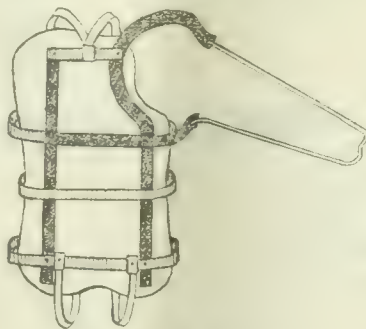


FIG. 2.—Frame, back view.

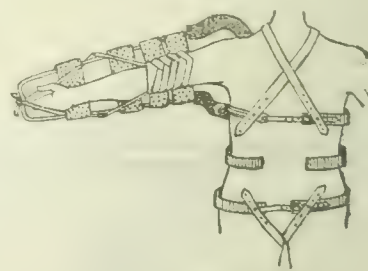


FIG. 3.—Frame applied.

moved. The dressings were changed only once in five to ten days after slightly raising the patient's shoulders and pushing the bed from underneath towards the sound side, till the patient was lying on the edge of the bed with the scapular region exposed behind. The dressings could then be done with but little movement; in spite of this, however, there nearly always followed a not inconsiderable rise in temperature and pulse rate, lasting several days.

Accordingly the idea suggested itself that a splint made after the principle of a Jones's abduction frame for the lower limb would prove useful for such cases, and after having used it in several instances I am quite convinced of its efficacy.

The splint consists of an iron frame, as shown (Figs. 1 and 2), covered by a thick, firm pad. The frame and pad are cut away in such a manner as to allow of free access to the greater portion of the scapular region. Three pairs of malleable iron bands, running transversely, embrace the body (a) just above the trochanters, (b) at the level of the lower ribs, and (c) at or just above the level of the nipples. The upper and lower bands are joined together in their respective pairs by straps and buckles. On the side for which the splint is intended the uppermost malleable iron band is replaced by a rounded rod of stouter metal carefully padded—this acts as the point of counter extension. The band of the frame on this same side also is curved round above the shoulder and then turned forwards, and a stout bar, running transversely at the level of

After the period of acute sepsis subsided the cases were put up in plaster with the limb still in the abducted position, but with the elbow flexed, and windows were cut out to allow of access to the wounds. The cases were then sent to England as walking cases.

My thanks are due to Surgeon-General Sir George Makins, K.C.M.G., for the help he kindly gave me in having the splints made at the Base Dépôt Medical Stores, Boulogne.

THE Paris house of Masson announces that it has made arrangements to publish in two annual volumes papers founded on the work done at the Ambulance de l'Océan, La Panne, Belgium. The publication will be directed by Dr. Depage, with the assistance of Drs. A. P. Dustin and G. Debaisieux.

SCHWARZE (*Deut. med. Woch.*, August 2nd, 1917), in some comments on methods of treatment of bacillary dysentery in the field, is rather pessimistic as to the so-called specific treatments, such as antiserum, bismuth, etc. He has had the best results with daily injections of adrenalin up to six doses, combined with two or three injections of atropine. The colic and tenesmus were greatly relieved, and the styptic action of adrenalin was of value in severe and debilitated cases.

PNEUMOCOCCAL MENINGITIS.

BY

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The following observations are based upon a study of nine cases of pneumococcal meningitis which have come under our direct care, the ages of the patients varying between the wide limits of three months and forty-one years. In five cases the disease was the so-called primary form—that is, no lesion conceivably due to active pneumococcal infection was discovered elsewhere. This diagnosis, in three cases, was confirmed by *post-mortem* examination; in the remaining two an autopsy was not obtainable, but, clinically, no other lesion could be detected. In four cases meningitis occurred as a secondary infection.

PRIMARY MENINGITIS.

Of the five cases, two were infants, aged three and four months respectively, one was a boy of 11, and two were adults aged 22 and 41. The adults had had catarrhal "colds" for three or four days, followed by severe headache, prior to the appearance of meningeal symptoms, while the younger infant had had sudden convulsions. Following the appearance of headache, vomiting occurred in four of the five cases, and delirium rapidly supervened in the two adults.

SECONDARY MENINGITIS.

Of the four cases in which meningitis occurred as a secondary infection to a focus elsewhere, in two the primary lesion was a lobar pneumonia, in one middle-ear disease, and, in the last, an empyema of the sphenoidal sinus. The number of cases of pneumonia in which a secondary meningitis occurs is probably less than 2 per cent.

Lobar Pneumonia.—The first case, that of a child aged 14 months, was admitted to hospital with a temperature of 103° F., pulse 140, and respirations 80. The only physical sign was distinctly impaired resonance over the upper lobe of the left lung, with somewhat diminished breath sounds; on the following day, however, bronchial breathing was present over this area, both in front and behind, and also numerous râles over the rest of the left lung. Neck rigidity was also present, the head showing a tendency to retraction, and the fontanelle increased internal tension. Lumbar puncture yielded a turbid fluid, showing numerous polymorphonuclear cells, with Gram-positive diplococci; on culture a growth of pneumococci was obtained.

The second case, a girl aged 5 years, was first seen with an ordinary lobar pneumonia affecting the lower lobe of the right lung. On the fourth day of illness extreme restlessness and irritability were noticed; neck rigidity and Kernig's sign were elicited, and lumbar puncture showed a turbid fluid containing pneumococci.

Middle-ear Disease.—The patient, a man aged 23, had had an ear discharge eight months previously, which persisted for a few weeks and then ceased. Five days before admission to hospital he complained of severe headache, and the discharge recurred next day. Two days later he vomited and became delirious the same evening.

Empyema of Sphenoidal Sinus.—In this patient, a man aged 26, headache had been present for a few days when one morning it became increasingly severe and he vomited. During the evening he was found to be quite delirious and sent to hospital. He had made no complaint of any symptoms referable to a pathological nasal or post-nasal condition, and the empyema of the sphenoidal sinus was discovered only upon *post-mortem* examination.

COURSE.

From the day of onset the course of the disease varied from three to fifteen days' duration in different cases. With two adults, aged 22 and 41, both cases of the primary form confirmed by *post-mortem* examination, the course of meningitis was extremely acute, lasting only three days; the temperatures were never below 101°, and often reached 104°. Five other cases were also acute; the one in which, *post-mortem*, the sphenoidal sinus was found filled with pus died four days after the commencement of headache. Both the children in whom meningitis occurred secondarily to

lobar pneumonia lived only two days after the appearance of meningeal symptoms. In none of the above cases did any lasting improvement follow the evacuation of cerebro-spinal fluid from the intrathecal space. A man aged 23, in whom meningitis occurred secondarily to otitis media, ran a course of nine days' duration, being continually delirious in spite of the daily withdrawal of 55 to 100 c.cm. of cerebro-spinal fluid, before sinking into coma. An infant of three months also continued for eight days acutely ill and with occasional convulsions. The courses of two other cases, both primary forms, were somewhat subacute; one was an infant, aged 4 months, who lived for twelve days with retracted head, arched spine, and occasional vomiting. Towards the end convulsions were frequent. The second subacute case is deserving of special mention.

The patient, a boy aged 11 years, complained of a headache and appeared generally unwell; three days later he vomited and seemed somewhat drowsy. For four days following this his condition remained about the same, the temperature remitting between 101° and 104°. When seen on the fifth day his mental condition was quite normal, neck rigidity moderate, and Kernig's sign positive. The heart, lungs, ears, and nose showed no abnormality. Lumbar puncture was then instituted, the fluid obtained being slightly opalescent and under moderate pressure; direct examination of films showed the presence of numerous polymorphonuclear cells but no organisms. On culture, however, a growth of pneumococci was obtained. Lumbar puncture was continued until the day before death, which occurred on the fifth day of illness; the withdrawal of 30 to 50 c.cm. of cerebro-spinal fluid was invariably followed by a fall in temperature, usually to normal or 99°. Throughout, the patient complained of headache of varying intensity. His condition continued with little or no alteration, either in the clinical signs or in the microscopical characters of the cerebro-spinal fluid, until the eleventh day. Muscular rigidity was then more marked, and during the evening he became delirious and incontinent for the first time. Lumbar puncture next day revealed a purulent fluid, which on microscopical examination showed numerous Gram-positive lanceolate diplococci; this was the first occasion on which organisms had been seen, in spite of prolonged search, on direct examination. Delirium and restlessness increased, flocculation and carphology appeared, and two days later the patient died.

SYMPTOMS AND SIGNS.

Temperature.—In the seven acute cases the temperature generally remained at a high level, varying between 101° and 104°, and seldom indeed falling below 100°. Lumbar puncture was without effect on the temperature in five of these cases; in one infant, a primary form, it was occasionally followed by a fall of about two degrees (103° to 101°), and in a second patient, with meningitis secondary to otitis media, the initial lumbar puncture produced a fall from 104° to 100°. Subsequent punctures had little or no effect on the pyrexia, although large amounts (85 to 100 c.cm.) of purulent fluid were obtained daily.

Of the two subacute cases, one has already been dealt with; the other, an infant of four months, admitted with a temperature of 102°, showed a fall to normal following the first lumbar puncture. After two days it gradually rose, with a few intermissions, to reach 103° on the ninth day, thereafter never falling below 100° and frequently reaching 105°. In all cases some rise of temperature occurred as death approached.

Pulse.—The pulse-rate was more frequent than is usual in either meningococcal or tuberculous meningitis. In one case only was it below 100 per minute on admission to hospital or when meningitis was discovered; in this case the pulse was 88, but after the third day it gradually increased to 140 towards the end of the course. After the first few days the subacute case, aged 11, running a course of fifteen days, showed a pulse-rate varying between 84 and 96, with an increase to 100 to 120 during the last three days. In all other cases it varied between the limits of 120 and 160. Excepting in very acute cases, the pulse-rate showed a greater tendency to vary directly with the temperature than is usually seen in meningococcal meningitis.

Respiration.—With the exception of the two cases with lobar pneumonia, the respiratory rate was at first comparatively slow, being 24 to 30 per minute in adults and 30 to 40 in children; the respirations increased in frequency towards the end of the course. In adults, both Cheyne-Stokes respiration and Biot's respiration were observed.

Vomiting, etc.—Apart from that occurring at the onset, vomiting was present in one case only, an infant aged 4 months. Profuse diarrhoea occurred at the onset in

another infant, and, early in a course of nine days, in one adult.

Mental Condition.—Delirium, varying from incoherence to noisy restlessness, was the general rule in adults; in the cases continuing for only three days it was rapidly succeeded by coma. Screaming occasionally occurred in one infant, while, in a subacute case, the mental condition remained normal until the eleventh day, when delirium appeared, the patient dying on the fifteenth day. All cases died comatose.

Sphincters.—Excluding infants from consideration, retention of urine was present in two cases on admission, followed later by incontinence. The subacute case showed no change in the sphincter condition until the eleventh day, when, with the onset of delirium, incontinence occurred. The remaining patients were incontinent throughout.

Cervical Muscles.—Pronounced retraction was present in the three infants, in the girl aged 6 years, and in one adult, a primary form, aged 22. In all other cases there was rigidity of the neck muscles throughout the course, including the subacute case; no retraction, however, appeared in these cases.

Kernig's Sign.—In infants of under 2 years of age, Kernig's sign is of no definite value in the diagnosis of meningitis; some authors state that it is a normal phenomenon at such an age, but this is incorrect. As a matter of interest, in one infant aged 13 months the sign was negative throughout the course of six days; in a second, aged 4 months, it was absent until the fourth day of illness, when it developed on the left side only, thus persisting until death on the twelfth day. In the last infant, aged 3 months, Kernig's sign was present on both sides throughout a course of eight days. In all other cases it was well marked.

Spine.—Spinal rigidity was observed in all cases. The infant aged 4 months died on the twelfth day in extreme opisthotonos, which had gradually developed during the previous days. Both the other infants also showed some degree of opisthotonos.

Deep Reflexes.—In one patient only, aged 23, were the knee and ankle jerks absent throughout the course of meningitis; in all the infants they were at first slight, but disappeared during the last two or three days. In one adult they were distinctly exaggerated; with the super-vention of coma they disappeared. Definite ankle clonus was not observed in any case.

Superficial Reflexes.—Plantars: Extensor responses were elicited in two patients only, aged 22 and 23. Active withdrawal of the leg on plantar stimulation, so frequently observed in early cases of cerebro-spinal fever, was present in four cases. Abdominals and epigastrics: These reflexes were absent throughout in all cases excepting three. They were slight at first in two adults, but disappeared later. In a subacute case they remained present until the eleventh day, disappearing with the onset of delirium and incontinence.

The reflexes, both deep and superficial, as a general rule, are directly proportional to the consciousness of the patient, being present in mild delirium and absent in more profound delirium and coma. The superficial reflexes disappear at an earlier stage than the knee and ankle jerks and, consequently, their absence, in the presence of other signs, rather favours diagnosis of meningitis.

Cranial Nerves.—The pupils were usually slightly dilated and reacted sluggishly to light; they were widely dilated throughout the illness in one adult dying on the fourth day. Inequality in size of the pupils was present in two cases only, an infant of 4 months and a boy aged 11; in the latter it developed on the twelfth day. This case was the only one in which definite strabismus was observed; it also appeared on the twelfth day, with an increase in meningeal symptoms, and was apparently due to an involvement of the right sixth nerve. One case, a man aged 23, had left facial paralysis, but this was due to involvement of the facial nerve by the infection from the middle ear, from which his meningitis originated; *post mortem*, pus was found in the Fallopian aqueduct.

Motor Disturbances.—Convulsions occurred at the onset in two infants; both showed recurrences during courses of nine and twelve days respectively. Catching at imaginary objects and picking at the bedclothes (flocilation and carphology) were present in two other cases.

Urinary Changes.—Glycosuria occurred on the eighth day of illness in a patient, aged 22, whose meningitis was secondary to chronic otitis media; he died on the ninth day. The glucose amounted to 5.8 grams per litre and its presence was confirmed by the phenyl-hydrazine test. The occurrence of glycosuria during the course of meningitis has occasionally been noted; it is possible that it may be associated in some way with a disturbance of the floor of the fourth ventricle, such as pressure from within by distension of its cavity, or irritation of its ependymal lining. In the above case *post-mortem* examination showed the fourth ventricle to be somewhat distended with turbid fluid. Glycosuria also occurred in two cases of meningococcal meningitis coming under our care; in both, the appearance of glucose in the urine was coincident with symptoms of a degree of hydrocephalus. Both patients eventually recovered. Albuminuria was present in four adult cases.

The Cerebro-spinal Fluid.—A turbid fluid was obtained at the first lumbar puncture in the four cases of six years and under; the fluids were withdrawn on the first day of meningeal symptoms in the two cases secondary to pneumonia, and on the third and fourth day respectively in the two primary cases. Of the remaining five, the cerebro-spinal fluid was definitely purulent in four adults, even at the first withdrawal, on the second or third day following the onset of illness. The first specimen of fluid from the last patient, aged 11 (the subacute case), was not obtained until the fifth day of illness; it was at first only slightly opalescent, and did not become purulent until the eleventh day. In the majority of cases there was a considerable increase in tension. In all, excepting the subacute case, pneumococci were both seen on direct examination of stained films and obtained in culture from the first specimen of fluid withdrawn. In the exception no pneumococci were seen in films until the eleventh day, when for the first time the fluid was purulent; the organisms were obtained in culture, however, from that evacuated at the first withdrawal. Cytologically all fluids invariably showed numerous polymorphonuclear cells, and occasionally a few mononuclears. On testing with Fehling's solution, no glucose was ever detected in any of the cerebro-spinal fluids, with the single exception of that obtained from the subacute case, aged 11, on the first day of withdrawal (fifth day of illness). Following this, however, it disappeared next day, and remained absent.

MORBID ANATOMY, ETC.

Post-mortem examinations were made on seven of the nine cases; the two in which permission could not be obtained were apparently instances of the primary form of meningitis, in that no lesion was discoverable elsewhere, the chest, abdomen, ears, and accessory sinuses of the nose all appearing normal.

Primary Meningitis.

Of the three cases examined, two were infants aged three and four months respectively, and one was a man aged 41 years. In all cases the convulsions were flattened and well marked; purulent meningitis was present. In two cases greenish-yellow pus was more abundant over the convexity of the cerebrum, almost completely obscuring the cortex; there was less purulent exudate over the cerebellum, and very little in the pons and medullary regions.

In the third case, an infant, there were patches of purulent exudate over the convexity of the cerebrum, with abundant greenish-yellow pus at the base, over and around the cerebellum, pons and medulla, being more plentiful anteriorly than posteriorly.

There was no pus found in the middle ears, in the frontal or sphenoidal sinuses, or in the ethmoidal air cells; nothing abnormal could be seen in the nasal fossae.

Secondary Meningitis.

1. **Lobar Pneumonia.**—In both cases the meninges were very red and injected, and showed patchy gelatinous exudate over the cerebral cortex, with occasional pus along the course of the blood vessels. There was also considerable sero-purulent exudate over the pons and medulla, and, in one case, over the cerebellum also. In the infant aged thirteen months the upper lobe of the left lung was consolidated; there was also oedema of the lower lobe, with adhesions at the base. The other case showed consolidation of the right lower lobe.

2. **Chronic Otitis Media.**—A well marked purulent meningitis was present, limited chiefly to the basal region of the brain and extending over the pons, medulla, and cerebellum; pus could be traced extending along the sides of the blood vessels up the lateral aspects of the cerebrum. The right middle ear showed old-standing purulent otitis; pus also extended along the

petrous bone to its internal tip, involving the inner ear, and appearing to be conveyed along the auditory nerve to the meninges. There was a small collection of thick pus lying between the dura mater and inner half of the petrous bone; in the Fallopian aqueduct pus was also found. No sinus thrombosis was present. Microscopical examination of films from both the meningeal exudate and the pus in the middle ear showed pus cells with numerous pneumococci; examination of the discharge from the external auditory meatus, during life, had shown *Staphylococcus aureus* and a Gram-negative bacillus, but no pneumococci were seen or cultivated.

3. *Empyema of Sphenoidal Sinus*.—The autopsy showed well marked meningitis with massive fibrino-purulent exudation, limited almost wholly to the basal region of the brain; there were a few small patches of purulent exudate in the neighbourhood of the great longitudinal fissure. The sphenoidal sinus was found to be filled with pus and also the posterior ethmoidal cells; the nasal fossae and other bony sinuses appeared normal. Films of the pus, both from the sphenoidal sinus and meninges, showed pneumococci.

In all cases the purulent exudate extended down the spinal cord. With regard to organs other than those already mentioned, the heart, liver, and kidneys invariably showed cloudy swelling; the spleen was occasionally enlarged and the pulp somewhat soft.

DIAGNOSIS.

Meningitis having been diagnosed by the rigidity of the neck muscles, Kernig's sign, etc., its causative organism can only be determined by bacteriological examination of the cerebro-spinal fluid. Even in the presence of pneumonia meningitis is not necessarily pneumococcal, as, in occasional cases of cerebro-spinal fever, a bronchopneumonia may at first mask the meningeal symptoms. The majority of the cases described above were sent into hospital with a diagnosis of cerebro-spinal fever; it was only upon finding pneumococci in the cerebro-spinal fluid that their true nature was revealed. It is frequently possible to diagnose tuberculous meningitis clinically, but, at the present time, it is safer to regard any other examples of meningitis as meningococcal until proved otherwise.

PROGNOSIS.

The prognosis of pneumococcal meningitis is exceedingly grave, and it is doubtful if any severe cases ever recover. Hemenway¹ reported the case of a child, aged 2 years, suffering from pneumonia, who on the twelfth day developed head retraction and signs of meningitis. Lumbar puncture revealed a clear fluid under pressure, from which pneumococci were cultivated. The meningeal infection, however, must have been very mild, as the cerebro-spinal fluid was clear, showing no cellular reaction, and the case recovered. Four cases of recovery are mentioned by Broadbent,² three being children and one a soldier. The latter does not appear to have lost consciousness, although the cerebro-spinal fluid was cloudy, and yielded a growth of pneumococci; the course of meningitis was of about twenty days' duration. Netter Shand³ and Carnarvon Brown⁴ have also recorded instances of recovery; that of the latter observer was a severe case, but unfortunately, beyond the statement that pneumococci were found in the cerebro-spinal fluid, nothing is said of the bacteriological findings. Shand's case was apparently very mild, the patient, aged 28 years, showing no deviation from normal consciousness, and recovering after a few days.

TREATMENT.

The treatment of pneumococcal meningitis is at present most unsatisfactory. The nine cases recorded here serve to demonstrate the failure of repeated lumbar puncture. Each patient was punctured at least once daily, and in some cases every twelve hours, the subarachnoid space being drained on each occasion, until practically no more fluid would flow. As a result of the drainage the symptoms were occasionally alleviated for a time, but the ultimate result was not affected. Vaccines may be of value, but it is seldom that a case lasts sufficiently long for vaccine therapy to have an effect.

We have found hexamine of no value in the treatment of meningitis. Since the chief therapeutic properties of the drug appear to be due to its oxidation into formaldehyde, which takes place only in an acid medium, it probably has little or no action in meningitis. In the course of the chemical examination of numerous samples of cerebro-spinal fluid from cases of meningitis, we have found less than 2 per cent. giving a very faintly acid

reaction. The fluid is usually faintly alkaline, but occasionally neutral; the indicators used were litmus, phenolphthalein and methyl orange. Hexamine can be detected in the cerebro-spinal fluid within an hour of administration by the 'mouth', but the Burnam-Ramini test fails to demonstrate the presence of free formaldehyde.

Lamar,⁵ working with monkeys, showed that sodium oleate attacked and dissolved pneumococci, and, when combined with a specific antipneumococcal serum, had a decided therapeutic effect on pneumococcal meningitis, even when the organisms were multiplying in the blood stream. The action, however, is restricted to the particular type of pneumococcus from which has been produced the immune serum in the mixture of serum and sodium oleate. When the infecting pneumococcus was different in type from that represented by the immune serum, no therapeutic action resulted. When, therefore, a satisfactory polyvalent immune serum is forthcoming, the most promising method of treatment would seem to consist in the intrathecal injection of the antipneumococcal serum mixed with a solution of sodium oleate.

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- ¹Hemenway *Archives of Pediatrics*, 1906, vol. xxiii, p. 276. ²Broadbent: *BRITISH MEDICAL JOURNAL*, October 28th, 1916, p. 586. ³Shand: *Journ. R.A.M.C.*, January, 1917. ⁴Carnarvon Brown: *Lancet*, September 16th, 1916. ⁵Lamar: *Journ. Exper. Med.*, 1911, xiii, 1.

AN INQUEST ON A LEG.

BY

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On April 6th, 1917, J. J., a master miller, disappeared from home. No trace of him was discovered until September 1st, when a fisherman found the remains of a leg in the river. In the hope that the rest of the body might be found the coroner ordered the river to be searched. This proving fruitless, the coroner decided to hold an inquest on the leg, and asked me to examine it and give evidence at the inquiry. The following notes of my examination may prove of interest.

On September 7th, five months and one day after the man disappeared, and six days after the leg was found, I made the examination. On the foot was a boot, which was identified by the village shoemaker as one he had made for the missing man. Under the boot was a stocking foot of blue homespun, joined to the leg portion behind the heel, the greater part of the front of the stocking being torn and missing. The missing man's wife identified the stocking, and also a bandage beneath it found round the ankle. It was clear, therefore, that the leg was that of the missing man.

The remains consisted of all the bones of the lower limb of the right side, more or less denuded of flesh. The femur was bare, except around the knee, from which the remains of the soft tissues, gradually tapering off, reached a point 4 in. above the middle of the patella. The head of the thigh bone, though denuded of cartilage, was undamaged; the neck was thick, strong, and sprang obliquely from the shaft; and all the bony prominences and depressions were strongly marked. The bone was a compact whole, without trace of epiphyses. There was no antero-posterior bowing of the shaft. It was the bone of a man in the prime of life.

The patella was in position, but bare, and, though the fibula was covered and the structures of the calf were present, the anterior surfaces of the tibia were bare, except close to the knee and the ankle. The foot was attached to the limb only by the tendo Achillis. There was no trace of the ankle ligaments, and the articular surfaces of the joint denuded of cartilage were exposed. The foot was shrunken and black, but, protected by the boot, the skin had not disappeared. Over the heel the papillary ridges were visible to the naked eye. Across the sole along the roots of the toes was a ragged cavity filled with soft soapy material, into which the structures had been converted.

The soft tissues of the calf and around the knee were dense and shrunken. An attempt was made to find the popliteal artery, to form an estimate of the man's age from the condition of its walls. But although the thick trunk of a nerve was isolated, the artery could not be found among the dense mass of homogeneous structure into which the soft tissues had been changed. Though the surface of the soft tissues was uniformly black, their substance was changed into dense white structures, and patches of white material studded their exterior.

There was no sign of old or recent injury, but on the upper third of the outer side of the femur the round shaft had been worn flat. The flat, slightly excavated surface was exquisitely smooth, and could have been caused only by long-continued friction, such as would occur if the limb had been caught and nipped, and swayed about by the current of the river. With the foot in its natural position the limb measured from the top

of the great trochanter to the sole of the foot 33½ in. The femur was 17½, the tibia 13½, and the fibula 13½ in. long. Since the inquiry I have learnt that the stature of the man was about 6 ft. 6 in.

When asked by the coroner if the man from whom the leg came was dead I had no hesitation in answering in the affirmative. A leg disarticulated at the hip-joint must have been separated from the body either by some one with anatomical or surgical knowledge, or by the maceration caused by long exposure to the elements. The possibility of its removal by deliberate surgical operation can be dismissed, for surgeons do not remove limbs with hob-nail boots, stockings, and dirty bandages upon them, nor, after the operation, throw them into the river. If the limb had been criminally disarticulated the man was certainly dead. All the factors of the case suggest that the separation of the limb from the body was due to the force of the current of the river, which the macerated tissues were unable to withstand. The smooth flattened surface at the upper third of the femur suggests that the thigh may have been caught with the body hanging free; when, owing to the weight and leverage of the trunk, separation of the trunk from the limb, rather than tearing of the limb from the trunk, took place.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

EMETINE DIARRHOEA.

In a paper on the treatment of amoebic dysentery, published in the *BRITISH MEDICAL JOURNAL* of November 13th, 1915, I drew attention to the fact that emetine hydrochloride, given hypodermically, produced diarrhoea in many instances exactly in the same manner as ipecacuanha when used in large doses for the treatment of amoebic dysentery. Since that time such diarrhoea has been described by some as an evidence of emetine poisoning, an eventuality to be avoided. An annotation on diarrhoea due to emetine, published in the *JOURNAL* of October 6th, 1917, endorses this view, and quotes an observation—a somewhat late one—by Kilgore and Liu, published in the *Archives of Internal Medicine* (Chicago, 1917), calling attention to the importance of recognizing this condition. The same authors make the statement that the diarrhoeic stools due to emetine are almost indistinguishable to the eye from those of the amoebic dysentery for which the drug is given, and that when emetine diarrhoea occurs blood and mucus reappear.

In the old days the *rationale* of the ipecacuanha treatment was to press the remedy until a profuse diarrhoea was produced, the stools then becoming liquid and of a canary-yellow colour. After the cessation of the drug, solidity of the stools was quickly obtained, and to all intents and purposes many of the cases were cured clinically. Whether this was a real cure or not, it is not altogether easy to determine now, because in those days the cysts of the amoebae were unknown and prolonged microscopic examinations of the stools after treatment were not carried out. Some of the cases certainly did relapse clinically and others, in the light of our present knowledge, very likely became cyst carriers.

Since the oral administration of emetine, in the form of emetine bismuth iodide, has come into vogue, diarrhoea has become even more marked than when the drug was given by the needle. This, however, as I have just said, is exactly what one aimed at in giving ipecacuanha. In addition to the specific action of the drug, the bowel is thoroughly washed out, and this mechanical process is beneficial and not detrimental. (Compare the saline treatment of bacillary dysentery.) A few days after the termination of the course (twelve consecutive nightly doses of 3 grains of emetine bismuth iodide) the stools begin to become solid, and in a few days more, if cure has taken place, are formed and of a normal consistence. The liquid stools produced by the emetine, apart from the absence of amoebae and cysts in them, are, as a matter of fact, easily distinguishable from the true dysenteric stools, and there is no excuse for any one pushing the remedy to such an extent as to cause dangerous symptoms and even death. One

might in a similar manner produce equally dangerous symptoms, namely, weakness and collapse, by giving repeated excessive doses of ordinary magnesium sulphate. If the diarrhoea is excessive it can easily be controlled by tincture of opium.

Reappearance of blood during treatment is very rare; when it does occur it is often due to piles, and this source of fallacy must be excluded before it can be said that the blood is coming from the bowel ulceration. As regards other toxic symptoms of emetine, though not denying that peripheral neuritis may occur if the drug is given in excessive doses, I have not yet seen it in a long series of cases treated by ordinary courses.

It must be remembered that all drugs are poisonous if given in too large quantities and over too prolonged periods of time, and emetine is no exception to the rule.

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TREATMENT OF PAINFUL SHINS, FOLLOWING TRENCH FEVER, BY ELECTRO-THERAPEUTICAL METHODS.

EVERY physician connected with troops on active service knows the condition which is now officially diagnosed as "trench fever." He also knows that were it not for the "painful shins" which almost invariably follow, the vast majority of "trench fever" cases would be fit for duty in a very short space of time, whereas, in fact, thanks to these "painful shins," the convalescent stage of the disease is very long and disappointingly prone to exacerbation.

During the early part of last winter I tried many things electrical for the relief of this condition, watching the cases in their wards as well as in the electro-therapeutical department, and by the end of November I had come to the conclusion that the best remedy was ionization combined with faradism. My method is as follows:

Using liquor iodi fort., a patch 1½ in. wide and 3 in. long is painted, well outside and parallel with the anterior border of the tibia, in the middle third of the leg, and ionized for ten minutes, at the maximum of 10 milliamperes, the negative electrode being placed over the painted area, a thick pad well soaked with 2 per cent. sodium salicylate in 3 per cent. sodium chloride being placed between.

On the second day, ionization, with sodium chloride only, is applied over the original site, the negative electrode being placed as before. Ionization is now stopped, and for the next three, and subsequent days, the muscles of the calf and leg are exercised for ten minutes daily with faradism.

As a rule the men tell one at their second or third visit that they have experienced immediate relief from pain; that they have slept better and feel much better in themselves, and where they do not do so the fact soon becomes obvious from their general appearance. I watched the earlier cases for some weeks, keeping them to see if there was any tendency to recurrence, and having satisfied myself that there was not, I proceeded to carry out the above course as a routine.

Statistics of 100 Consecutive Cases received from the Wards for Treatment.

Days under Treatment.	No. of Cases.	Days under Treatment.	No. of Cases.
1	0	10	12
2	3	11	1
3	6	12	2
4	14	13	1
5	11	14	3
6	14	16	1
7	10	20	1
8	15	21	1
9	2	22	1

Sent to England as unlikely to be well in three weeks 2

100

Average stay under treatment = 7.50 days.

It will be noted that 2 per cent. were sent to England after treatment had been begun, owing to slow recovery, and that 98 per cent. were sent to duty "A" or convalescent dépôt, the latter means of evacuation being only used where it was thought that the man's general condition required a little longer rest.

ALFRED J. H. ILES,
Captain R.A.M.C.(T.F.).

Reports of Societies.

THE EFFECT OF WAR BREAD ON HEALTH.

At the meeting of the Medical Society of London on October 8th, after the President, Sir STCLAIR THOMSON, M.D., had delivered an address on "The Founder and the Foundation of the Medical Society," a discussion on war bread and its effects on health was introduced by Dr. ROBERT HUTCHISON and Dr. E. I. SPRIGGS.

Dr. HUTCHISON said that the wheat berry consisted of three parts—the pericarp, germ, and endosperm. In making ordinary white (pre-war) flour only about 70 per cent. of the wheat berry was used, the germ and pericarp being entirely discarded and used mainly for fodder. In order to economize wheat it was now compulsory for millers to extract 80 per cent. of the wheat berry as flour, and some of the pericarp and germ was included. This Government regulation (G.R.) flour was the basis of war bread. Chemically such flour was richer in every constituent except starch than white flour, and in particular it was richer in vitamins and phosphorus. The question of its absorptibility as compared with white flour was still *sub judice*, but there was no reason to suppose that it was inferior in this respect to white flour provided it were finely ground. War bread, however, was not always made from G.R. flour only. The addition of other cereals (maize, barley, rice, oats) up to certain limits was allowed. The proportion of these added by different millers varied, and it had been found impossible to standardize the flour for the whole country. None of the added cereals, however, could be regarded as injurious, and all were valuable foods. Maize had come in for most popular criticism, but if properly ground there was no harm in it, and much of the hostility to it was due to prejudice. As regards the bread, it must be recognized that it was impossible to prepare from the present flour a bread which had the same *aesthetic* qualities as pre-war bread. The darker colour was of no importance, but the relatively lower proportion of gluten, especially when other cereals were added, caused the bread to be less porous. This drawback would become less as bakers acquired more experience with the flour. As regards its effect on health, it seemed certain that there was nothing *chemically* injurious in war bread; indeed, it was superior from a chemical point of view to white bread. Any ill effects could only be due to its *mechanical* properties (presence of grit, doughiness, etc.), and could only affect the digestive organs. The quality of the bread produced in different parts of the country, and even by different bakers, varied greatly in these respects, but from fairly wide inquiry there was no real evidence of any serious disturbance of digestion by the bread in the great majority of individuals. It must be remembered that patients were apt to find in the war bread a convenient explanation of any disturbance of health for which they could not otherwise account. In cases in which the bread seemed to disagree the effect of toasting and more thorough chewing should be tried. Dr. Hutchison added that he had not seen any patient in whose case he was convinced that the bread had affected the digestion unfavourably.

Dr. E. I. SPRIGGS said that he had not found it necessary to order white bread for the patients in Duff House, although there was always a good number of sufferers from digestive complaints. The war bread was, however, much better in some districts than in others. The complaints which followed the measures taken by the Government to make good the lack of wheat by the use of other kinds of corn were due to several reasons. The change in flavour was one. Another was the lack of skill and experience in making the bread with the new kinds of flour. Further, the mass of the people did not realize before the war that the cereals given to animals were good human foods; and did not know that by eating oats, barley, or maize themselves they could get from them many times the food value that was obtained by turning them first into animal food. He referred to the figures of Professor T. B. Wood,¹ who calculated that of nearly 17 million tons of various kinds of corn used in this country before the war only 5 million went for human food. This was less than the average production of home grown corn, which amounted to 6½ million tons. Dr.

Spriggs said that he had advocated the use in home-made bread of a mixture of barley flour or meal, oatmeal, rice or maize, in the proportion of one part of the meal to two parts of wheat flour or war flour. This was a higher proportion of other cereals than millers were using at present. Examples of these different kinds of bread were shown to the meeting, and tasted by the members. Breads were also shown in which the added cereal had been boiled before mixing with the flour, making a spongier loaf. In order to compare the digestibility of such bread with that made from wheat flour, experiments had been made by Mr. A. B. Weir, B.Sc., chemist at Duff House, and himself. The subject was a healthy young man, who took a mixed diet containing the same foods and in the same quantities every day, each article being weighed or measured accurately. The diet was as follows. *Breakfast*: Eggs, butter, bacon, marmalade, cocoa, milk. *Dinner*: Fillet of beef, potato, cabbage, rice pudding, tinned pears, butter, cream, black coffee. *Tea*: Butter, jelly, milk, cocoa. *Supper*: Clear soup, haddock, butter, cheese, coffee, milk. With this a loaf of bread weighing about a pound was eaten daily. The bread was composed of two-thirds of white flour, and a third of the meal or flour to be tested, and was made as described in Chapter IX of *Food and How to Save it*.² These breads were compared with bread made from white flour alone, also with a war bread containing 10 per cent. barley and 10 per cent. maize. All the breads were palatable, and were preferred by the subject to baker's bread with the exception of that made with maize, the proportion of which (33 per cent.) was too high for making nice bread. The war bread, which contained 10 per cent. of barley and 10 per cent. of maize, was thought to be one of the nicest. Each experiment lasted three days. The flours were analysed separately. The other foods were all minced, mixed together, and analysed. The excreta for each three days were collected and their composition determined. The results showed that although there were differences in the amount of protein, carbohydrate, and fat assimilated yet the variations were not of importance, the total amount of foodstuff assimilated when expressed in calories being almost the same in each experiment, namely, between 95 and 96 per cent. of the food value eaten. The experiments demonstrated that bread composed of mixed cereals in the proportions recommended was palatable, and, in this subject, proved as nutritious as white bread.

Professor W. H. THOMPSON, Adviser to the Ministry of Food, said that it was important to get protein food from a number of sources, because all proteins were not "adequate" for both growth and maintenance. Even maize had about one-third of its protein of the adequate type. He thought that much of the trouble was due to ignorance in milling and baking. In the early days millers had not the apparatus to grind maize to a sufficient degree of fineness. Observations were now being carried out which he hoped would enable that difficulty to be overcome. Samples of bread complained of had been sent to the Ministry of Food, but in no case could anything be found wrong except the colour.

Dr. E. KINGSCOTE said that in North Italy before the war a large part of the community lived altogether on maize, many having no other food, but they were well nourished and healthy. He thought that the admixture of two flours might be the cause of the difficulty. The grinding of the maize was not equal to the grinding of the wheat, and in baking, each required a different amount of time to arrive at perfect cooking.

THE PRESIDENT said that it was to be gathered from Lettsom's writings that the price of the quartern loaf in 1774 was 8d., but by 1800 he wrote that the quartern loaf was 1s. 6d., "a sum truly oppressive to the poor." With our present day quartern loaf at only 9d., after three years of world war, our population might take courage by seeing what our forefathers had to endure in the Napoleonic struggles. In 1774, Lettsom, amongst his numerous essays, printed one entitled *Hints Respecting a Substitute for Wheat Bread*. The substitute he warmly recommended was the fine flour of Indian corn, to be mixed with that of wheat in equal proportion. He added that, if rightly managed, the colour would be about the same as the standard wheaten bread,

¹ BRITISH MEDICAL JOURNAL, August 25th, 1917, p. 261.

² H.M. Stationery Office. 1917. Price 3d.

and about 2d. in the quartern loaf cheaper than the fine wheaten, when that might be at 8d. per quartern. After insisting on the great nutritive value and the agreeable sweet flavour of maize, he wrote that "Some, indeed, did not so easily reconcile themselves to it, which often arose from the mismanagement of grinding the corn or baking the bread." The bakers, he said, had not acquired the best method of preparing and mixing it with wheat flour; as to the grinding, he advised that the millstones should first be set so wide as only just to burst the thick farinaceous part of the grain, which should then be passed through a sieve, so as to separate "the part of the interior edge of the grain composed of a ligneous spongy substance, the middle of which was of a dark brown colour and of a bitter taste, which, if ground into the flour, gave it a disagreeable flavour." When this deleterious part had been separated on the sieve, the remainder was to be ground with the stones set so as to render it sufficiently fine. Lettsom also suggested the use of potatoes as a partial substitute for bread, and recommended the use of one-fourth of potatoes, and stated that if a little ground rice were added the bread was prevented from crumbling, a matter of consequence in a large family.

Reviews.

TREATMENT OF WAR WOUNDS.

DR. W. W. KEEN, Emeritus Professor of Surgery in Jefferson Medical College, Philadelphia, has compiled a report on the treatment of war wounds for the United States National Research Council, and especially for its Medical Committee, of which Dr. Victor C. Vaughan is chairman. It has been published recently in a volume¹ in Philadelphia and London, and is of great interest in that it presents in a brief form a review of the recent literature on military surgery, written by a surgeon whose experiences go back to the American Civil War of over fifty years ago.

After a short account of the respects in which the present war differs from previous wars, in which special attention is given to the effect of the large numbers engaged and to the severity of the infection of wounds, Dr. Keen devotes a special chapter to the Dakin-Carré treatment as described in the *JOURNAL* of February 24th, 1917, p. 264; it has been brought to perfection by Carré at Compiègne and by Depage at La Panne. Dr. Keen adds a note on the recent use of an oily solution of dichloramine-T as described in our columns by Dakin and Dunham on June 30th, 1917, p. 865; as an application for the treatment of gunshot wounds it is still under trial.

After a short chapter on the removal of foreign bodies Dr. Keen gives a chapter to tetanus, founded largely on the inquiries carried out by Surgeon-General Sir David Bruce. In the chapter on gas infection and gas gangrene Dr. Keen states that he saw no case of gas infection during the Civil War in America and only one case in civil life since then. With regard to gas gangrene, he accepts fully the doctrine that not only must all foreign bodies, including clothing, be removed from the wound, but all dead tissue also, the wounds being kept open and frequent antiseptic dressings used; he states his impression that Dakin's fluid, Taylor's quinine chlorhydrate, and possibly some other antiseptics, when properly used in connexion with these absolutely necessary means, will enable the surgeon to conquer the infection at the start if he sees the patient within the first twenty-four hours.

With regard to head injuries Dr. Keen quotes with approval Dr. Harvey Cushing's conclusion, as to which there is fairly universal agreement, "that almost all cranial wounds produced by projectiles, even though they appear trivial, require surgical investigation," the possible exceptions being tangential longitudinal sinus injuries, which, as Sargent and Holmes have pointed out in our columns, present unusual surgical risks, and "certain fractures of the base, due to perforating wounds, owing to their inaccessibility." Experience shows, Dr. Cushing says, that even apparently trivial scalp wounds may in the

end require extensive and elaborate operations after a thorough neurological study, including the use of the fluorescent screen and x-ray plates. Dr. Keen supports the views expressed by Bowlby and by Sargent, that removal of bullets, even when the wounds have healed and the risk of septic infection thereby largely diminished, must, even in skilled hands, be attended by an amount of damage which in most cases would have more serious neurological consequences than the presence of a septic bullet. This, Dr. Keen says, corresponds to what he has always stated to his students and always acted on to advantage—namely, "if the surgeon, by seeking to extract a missile retained in the brain, will do more harm than the missile, do not operate."

The chapter on abdominal wounds is founded largely on the papers by Lockwood and others, and Fraser and Drummond, published in our columns last March, and Dr. Keen adds his own testimony to the need of gentleness in handling. "No good surgeon," he says, "will handle bowel or other viscera roughly, or expose more than a foot or two at a time, nor dally with his operation. Speed, but never haste, is the rule. This is especially necessary when scores of cases may be urgently needing surgical relief." In an appendix Dr. Keen gives a number of extracts from personal letters received by him from surgeons working at the Western front in France.

We congratulate Dr. Keen on the production of a report so comprehensive. It will be of great use to surgeons newly undertaking war work not only for what it actually contains, but as a guide to the literature. It may not be out of place to add that medical officers of the United States army are invited to make use of the library of the British Medical Association, where a file of this *JOURNAL* and of most, if not all, the other periodicals quoted by Dr. Keen may be consulted.

THE CHEMISTRY OF LIVING MATTER.

THE cessation of respiration has always been regarded as the best evidence of death. Without some interchange of oxygen and carbonic acid through some of the body tissues life cannot be maintained. In a recent book entitled *A Chemical Sign of Life*,² published by the University of Chicago, an account is given of a series of experiments undertaken by Dr. SHIRO TASHIRO to prove that such interchange is as essential to all forms of living matter, vegetable as well as animal, as it is to man. Directing his attention to the detection of carbon dioxide proceeding from living tissues under varying conditions, he devised an extremely delicate test whereby the presence of one ten-millionth of a gram could be demonstrated with certainty. The test consisted in the formation of a precipitate of barium carbonate, easily visible through a hand lens, when carbon dioxide is brought into contact with a film of half saturated barium hydroxide solution. The ingenious apparatus in which the test is applied is fully described and figured, and appropriately named a "biometer." Waller and others have long since demonstrated the occurrence of electrical changes in the course of all vital processes, and it has thus been proved that chemical changes also are no less constantly present in all living matter.

The concise monograph in which Dr. Shiro Tashiro's work is recorded is written in clear and definite language, the subject is arranged in admirable order, and the whole account is interesting, original, and highly instructive. The experiments ranged over a wide field, but special attention was paid to the chemical changes taking place in living nerves, both medullated and non-medullated. It is clearly shown that the chemical change in a stimulated nerve is greater than in a nerve at rest, and that such changes ceased or were greatly diminished when the nerve was anaesthetized. "Irritability is the universal sign of life, and by it living matter adjusts itself to its environments"; but whether such irritability is the cause or the consequence of the chemical changes remains to be proved.

Fully alive to the possibilities of fallacy, as from the effects of decomposition, etc., the author safeguarded his experiments and checked his results with great perseverance, and the case that he has presented is proportionately

¹ *The Treatment of War Wounds*. By W. W. Keen, M.D., LL.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. Philadelphia and London: W. B. Saunders Co. 1917. (Post 8vo, pp. 169. 1.75 dollars net.)

² *A Chemical Sign of Life*. By Shiro Tashiro, Instructor in Physiological Chemistry in the University of Chicago. Chicago: University of Chicago Press. 1917. (Cr. 8vo, pp. 142. 1 dollar net.)

convincing. The evidence that has thus been accumulated by means of the "biometer" is full of suggestion, and, the author believes, has brought us "as near as we have yet got to Life itself."

PAINLESS CHILDBIRTH.

A NEW presentation of the twilight sleep question from the woman's point of view is given in a volume entitled *Painless Childbirth*.³ It contains personal narratives of which one is that of Marguerite Tracy's sister and another that of Mrs. Boyd. It includes a careful and reasonable history of the whole subject of obstetric anaesthesia, translations of the official reports of the Freiburg school, and a preliminary account of methods which had up to the time of its writing been suggested for simplification and for the extension of the advantages of painless childbirth. Leaving on one side the question of approving an appeal to women on a medical issue, the presentation of the subject from a lay standpoint could not well take a less objectionable form. No effort is made to minimize the limitations of the methods in vogue owing to the special care which they need for their success, and emotional influences are not unduly stressed. It is a useful book for the doctor to read if only that he may appreciate at the full strength of this sober statement the demand that women are likely to make on the obstetric practitioner of the future.

NOTES ON BOOKS.

UNPERTURBED by the war, which has now advanced firmly into the fourth year of its existence, and month by month involves an increasing number of the inhabitants of the world, the Carnegie Endowment for International Peace has published its Year Book for 1917.⁴ Here those interested may read all that has been done—or should one say attempted?—during the past year to secure the millennium for which the Endowment has been struggling since its foundation in the year 1910. Here, too, are recorded its hopes for the active part it is to take in the international organization that must closely follow on the conclusion of the war. For the past work of the Endowment one may, perhaps, turn the page and say, Peace be to its ashes! For the future, one may wish it a resurrection in happier days.

Dr. T. F. G. MAYER'S *Formulary*⁵ of drugs for use in the tropics consists of an alphabetical list of certain drugs and their preparations found useful in the surgical treatment of disease as met with in these parts. The author writes from Sierra Leone, and has succeeded in constructing a catalogue of formulas that should be of service to workers in hot climates who are able to get hold of the synthetic and other drugs, many of them now difficult to obtain, with which he deals.

³ *Painless Childbirth*. By Marguerite Tracy and Mary Boyd. With nineteen illustrations from photographs. London: William Heinemann, 1917. (Pp. xxxiii+316. 7s. 6d.)

⁴ *Year Book for 1917* of the Carnegie Endowment for International Peace. No. 6. Washington, D.C.

⁵ *Formulary of Certain Drugs used in the Surgical Treatment of Tropical Diseases*. Compiled by T. F. G. Mayer, M.R.C.S., L.R.C.P. (Senior Medical Officer, Sierra Leone). Freetown: Government Printing Office, 1917. (Demy 8vo, pp. xiii + 91.)

MEDICAL AND SURGICAL APPLIANCES.

A Hook Pin for Bandages.

RATHER more than two years ago (June 12th, 1915, p. 1008) we described and figured a hook pin for puttees and bandages devised by Dr. C. R. Rutland. It has now been modified by the inventor to adapt it specially for fastening bandages. He claims that it combines simplicity, rapidity, and security, and these claims seem to be justified. The inventor, who has received a special permit from the Ministry of Munitions for sufficient steel to make 150,000 pins, is willing to send trial samples to surgeons and nurses having wounded soldiers under their care on application to him at 1, Weymouth Street, London, W.1. The device seems to us well worthy of such a trial.

THE annual report of the Surgeon-General of Public Health Service of the United States for the fiscal year 1916 contains a summary of the many activities of this department, together with statistical and other tables. It contains a great deal of matter interesting to public health authorities and medical officers of health, and conclusive evidence of the effectiveness of the public health service in America.

NATIONAL SERVICE MINISTRY.

ORGANIZATION OF MEDICAL DEPARTMENT: MEDICAL ADVISORY BOARD.

THE first meeting of the Medical Advisory Board of the Ministry of National Service was held at the office of the Ministry, Hotel Windsor, Victoria Street, S.W., on October 4th.

The general plan for the organization of the medical side of the work of the Ministry of National Service is somewhat as follows: The Ministry has a central medical department, of which Dr. James Galloway, C.B., is Chief Commissioner. The Ministry and Chief Commissioner have the assistance of a Medical Advisory Board, consisting of Sir Donald MacAlister, President of the General Medical Council, Mr. Hodsdon, President Royal College of Surgeons of Edinburgh (Scottish Medical Emergency Committee), Dr. Verrall and Mr. E. B. Turner (Central Medical War Committee), Mr. Charles Ryall (Committee of Reference, Royal College of Physicians and Surgeons, England), Professor Arthur Keith, F.R.S., and Colonel Arnall Jones, A.M.S.(T.)

Great Britain has been divided into ten regions, each of which is controlled by a commissioner, who gives his whole time to the work. The following have already been appointed:—London: C. R. Tyrrell, C.B., M.R.C.S., L.S.A. Yorks, East Midland: T. Wardrop Griffith, M.D., F.R.C.P. West Midland: W. H. Bull, K.H.S., V.D., F.R.C.S. South-Western: Sir James Porter, K.C.B., K.C.M.G., M.A., M.D. South-Eastern: Sir Chas. H. Bedford, M.D., D.Sc. Scotland: Norman Walker, M.D., F.R.C.P.E. These commissioners will organize, supervise, and co-ordinate the work of the National Service Medical Boards and the local collection and classification of the information and statistics obtained by the boards as to the physical condition of the male population of military age.

Each region has been divided into areas, and for each area one or more—as a rule one—National Service Medical Board will be appointed with a President, giving his whole time, and a rota of practitioners, selected in the locality with the advice of the Local Medical War Committee, each member of which will undertake to attend in rotation so many sessions of the Committee at fixed intervals. The frequency of the sessions will, of course, depend upon the amount of work to be done. At first, until arrears are overtaken, several sessions a week, possibly daily sessions, will be necessary.

A man who is dissatisfied with the decision of the National Service Medical Board by which he has been examined has the right of asking the appeal tribunal for a review of his case, and if the tribunal considers that he has advanced grounds *prima facie* for inquiry, it will refer the matter to its medical assessors for a further report. These assessors will be appointed by the Local Government Board in England and Wales, and the Scottish Office in Scotland to the number of two or three score for the whole country. The appeal tribunals will be grouped so that one set of medical assessors may serve more than one tribunal.

The Commissioners of Regions and the Presidents of National Service Medical Boards, being whole-time officers, will be paid annual salaries. The members of the boards and the assessors, being part-time officers, will be paid by fees for each session.

At the preliminary meeting of the Medical Advisory Board, Sir Auckland Geddes, who took the chair, was accompanied by Sir Horace Monro, K.C.B., Permanent Secretary, and other representatives of the Local Government Board.

In an opening address, Sir AUCKLAND GEDDES said that the Ministry was concerned with the problem of the organization of the man-power of the country, and had been engaged in designing the machinery to steer into the proper channels men available either as volunteers in various capacities or compulsorily called up for military service. The machinery already set up included departments of trade and commerce, of labour, of recruiting for the Royal Navy, Army, and Air Service, a medical department, a department of registration of the male population of military age, a statistical department, and finance and secretarial departments. These central departments must work through a

very large peripheral machinery, and in this connexion the Ministry was asking help from trade unions, employers' federations, and from medical organizations. Advisory boards had been formed to keep the central office in touch with the several parts of the civil machinery. They would serve as a series of liaison bodies. The work of the medical department must underlie much of the work of all the others, and several difficult problems had to be solved by it. The first was the organization of the medical examination of recruits; the difficulty of this task was increased by the past history of the subject. From the old peace plan of the examination of voluntary recruits at dépôts there grew up after the outbreak of war a system of medical boards which at first had only to decide whether a man willing to serve was fit to serve. The introduction of compulsory military service made a great change, and the duties of the medical boards became often the converse of what they had been in the earlier stage. The fundamental nature of the change in conditions had not at first been fully recognized. Since the beginning of the year, and especially since the Review of Exceptions Act was put into force, the work to be done presented a totally new aspect. Large numbers of fit and willing men had been withdrawn, leaving behind the less fit and less willing, and every month there was a deterioration in both respects. The Ministry was faced with a widespread determination to avoid military service; the experience of the early part of this year showed that there were a number of persons engaged in fostering this unwillingness who would no doubt continue their activities and take every chance of discrediting any medical organization dealing with the examination of men compulsorily called up. In the past the medical boards had not been free from faults; certain medical practitioners had given certificates of unfitness on the scantiest evidence and without due regard to the national need; there was no doubt that personation on a large scale had taken place. Again, medical men in good standing had in some cases given certificates which necessarily weighed with the tribunals and from their general tone conveyed the impression that the man had been improperly examined by the medical board before which he had appeared. In addition, there had been difficulties due to the fact that in a few instances members of medical boards had permitted themselves to be influenced by unworthy motives to grade a man in a low category. On the charge of personation and on other charges it had been necessary to institute during the past fourteen months about 14,000 prosecutions on one ground and another, so that the Ministry and its Advisory Board had to face the fact that there was a large volume of shady practices to be defeated. What was now aimed at was not merely to ascertain whether an individual man was fit to be employed in the army either as a fighting man or in clerical or other sedentary work, but to gain a definite body of information on the physical composition of the man-power left in the country. This was a very big undertaking, nothing short of a medical survey of the male population of military age. It was, moreover, possible that before long the military age would have to be raised. At present no one knew what the reserves of the country were in man-power of any grade of physical fitness. Another duty falling upon the Medical Advisory Board would be to arrange for the supply of medical men to the medical services of the army and navy and of the air service, and also to look forward to the future of the medical profession, and study the effect of the shortage of students at the medical schools. Finally, the medical survey of the male population would afford an opportunity, which should not be neglected, of obtaining anthropological information. The Ministry intended to work with the help of existing organizations of the profession on the one hand, and with the navy, army, Air Board, Pensions Ministry, and other departments employing medical men on the other. The matters to which he asked the Medical Advisory Board to give immediate attention were, first, to lay down a code of standards of physical fitness for the guidance of the National Service Medical Boards to ensure uniformity, so that the returns might be comparable; secondly, to form the National Service Medical Boards; thirdly, to arrange machinery for appeals by men dissatisfied with the decisions of those boards; and fourthly, to consider the supply of medical students to medical schools, and whether it would be necessary to bring back

men now serving in the combatant ranks who had a certain number of medical examinations to their credit.

SIR AUCKLAND GEDDES then called upon Dr. JAMES GALLOWAY, the Chief Commissioner Medical Department of the Ministry of National Service, who said it was hoped in constituting the National Service Medical Boards to have the assistance of Local Medical War Committees. A board would generally consist of a president and four other medical members. He hoped that panels of medical men would be chosen from men in the various localities who had the confidence of their professional brethren. There might be, for instance, in an area a panel of eight or ten, so that no one member would have to give his whole time. In some areas it would be necessary to form new boards, and in so doing the department hoped to receive local recommendations through the Central Medical War Committee and Committee of Reference or the Scottish Medical Service Emergency Committee, as the case might be. The country would be divided into regions with a whole-time commissioner at the head of each, who would, in organizing the boards and selecting their members, consult with the local representative committees of the medical profession in the areas served by the boards. The presidents of boards would in nearly all cases be whole-time officers, who would be members of the staff of the National Service Ministry; they would be chosen by the central department and, speaking generally, would be men not connected with the particular locality. In the choice of presidents of National Service Medical Boards, the advice of the local commissioner would be obtained, and, as a rule, it would be desirable that the president should have some knowledge and experience of military service and organization.

In answer to questions, Sir AUCKLAND GEDDES said that undoubtedly some medical boards wanted overhauling with the help of the Local Medical War Committees and of the Central Medical War Committee. Nominally the medical boards appointed by the War Office would cease to exist when the work was transferred from the War Office to the National Service Ministry. With regard to the right of appeal to be given to men dissatisfied with the decisions of National Service Boards, it was proposed to set up groups of medical assessors, to be appointed and controlled by the Local Government Board in England and Wales, and by the Scottish office in Scotland.

SIR HORACE MONRO, K.C.B., Permanent Secretary to the Local Government Board, said that a man graded by a medical board could claim to have his case reviewed by the appeal tribunal, and if that tribunal thought that he had a *prima facie* case it would authorize him to go before the medical assessors. In the selection of these medical assessors and in the organization of their work the Local Government Board hoped for the assistance of the National Service Medical Advisory Board. There were about sixty appeal tribunals in England and Wales, but it would probably not be necessary to nominate so many assessors. He hoped that the medical assessors selected would be as a rule men of good standing of the general practitioner type; they would act together in local groups of three or four working together and would receive remuneration at a rate of so much per session, morning and afternoon. At the suggestion of Sir Auckland Geddes this matter was referred to a subcommittee consisting of representatives of the Local Government Board, the Scottish Office, Mr. E. B. Turner, Mr. Hodsdon of Edinburgh, and Mr. Ryall, member of the Council of the Royal College of Surgeons.

The question of drawing up a memorandum of directions as to standards of physical efficiency for the guidance of National Service Medical Boards was referred to another subcommittee, including representatives of the army and navy. With regard to the last matter—the supply of medical students to medical schools—Sir Auckland Geddes said that he believed the Royal Navy required five hundred surgeon probationers (students) within the next twelve months, while the army asked for newly qualified men. It was a fact that a fair number of students who had passed some medical examination were now serving in the army. These matters were referred to another subcommittee.

In conclusion, Sir AUCKLAND GEDDES expressed the hope that the subcommittees would get to work at once, and in particular that the committees charged with the duty of advising on the setting up of the National Service Medical Boards would report at a very early date.

British Medical Journal.

SATURDAY, OCTOBER 13TH, 1917.

MINISTRY OF NATIONAL SERVICE.

THE Minister of National Service has during the last ten days taken the public fully into his confidence, and it will have been gathered that it has been found necessary to establish a very large organization, both central and peripheral, for dealing with the many duties—some of them new—imposed on the Ministry.

Its first and main duty is to review the whole field of British man-power so as to be able at all times to give the War Cabinet information as to the meaning, in terms of man-power and consequential results, of all departmental proposals put forward. It will make the arrangements for the transfer from civil work not declared by the War Cabinet to be of primary importance, or if ordered by the War Cabinet, from the navy, army, or air service to urgent national work, of such numbers of men as may be declared by the War Cabinet to be necessary to reinforce the labour already engaged on that work. Subject to the approval of the War Cabinet, it will determine—in consultation with the departments concerned—the relative importance of the various forms of civil work and prepare lists of reserved occupations, with such age and other limitations as may be necessary to secure the maintenance of essential public services, and the preservation of a nucleus of civil occupations and industries.

In respect of the military forces it will be its duty to obtain for the army, navy, and air service, within numerical limits imposed by the War Cabinet, such men as can be withdrawn from civil life without detriment to the maintenance of essential public services and the due performance of the civil work necessary to maintain the forces at sea, in the field, and in the air, and any nucleus of civil occupations and industries declared by the War Cabinet to be necessary. In connexion with this last duty the Ministry must determine the physical fitness of men available, or possibly becoming available, for withdrawal from civil life. Its functions in this respect are limited by the action of the tribunals acting in conformity with regulations and instructions issued to them. The Ministry will also make arrangements for the provision, where necessary, of labour (male and female) in substitution for that withdrawn from civil life. For the better carrying out of these various duties it has been decided to establish in the Ministry eight departments—labour supply, trade exemptions, recruiting, registration, medical, statistics, finance, and secretariat. The first six will each have an advisory board, and will work largely through local agencies, chiefly those already in existence. For the office of the Chief Commissioner of the Medical Department, the work of which, as Sir Auckland Geddes said in the speech he delivered at the first meeting of the Medical Advisory Board, reported elsewhere in this issue, underlies nearly all the others, he has been fortunate enough to obtain the services of Dr. James Galloway, who has recently added to his long and varied experience of civil practice an acquaintance with military requirements and methods gained during a period of service as consulting physician to one of the armies in France. For the purposes of this medical administration Great

Britain has been divided into ten regions, one each for Scotland and Wales and eight for England. At the head of each will be a regional medical commissioner, who will give his whole time to the work and be paid by salary. He will be responsible for the administration of the new civilian National Service Medical Boards. The regions will be divided into recruiting areas, with a deputy medical commissioner for each, who will be president of the National Service Medical Board of the area. He will be a whole-time officer appointed by the Ministry, and, in fact, one of its staff. The Medical Advisory Board of the Ministry is representative of the chief professional organizations, and one of its first duties will be to prepare a list of medical practitioners of good standing and known competence prepared to act on the National Service Medical Boards in the various areas on a part-time basis. In forming these lists the Medical Advisory Board will consult the Local Medical War Committees and the central committee in England and Scotland; it is intended that in each area the number chosen shall be in excess of that required to attend any particular session of the board; that is to say, it is proposed to form a rota of local practitioners willing to give their services for a certain number of hours on certain days in the week, or perhaps less often after the first pressure of work has been got through. They will be remunerated by way of fee for each session attended.

The primary duty of the National Service Medical Boards will be to classify each man into one of four grades: in the first, men organically sound and in all respects physically fit for military service; in the second, men organically sound but with some defect either of special senses or in limbs, or some other system. To the third will be referred men falling between the second and fourth categories; they will be marked at the time of examination according to the work for which they are deemed to be fit, and will be called upon when needed for such work. To the fourth will be relegated men so unfit as not to be suited for military or national work of a strenuous kind. In the discharge of these duties the boards will be guided by a memorandum as to standards of physical efficiency which will be issued by the Ministry. A draft made by Dr. Hale White as editor-in-chief, with the assistance of experts in each speciality, has been referred to the Medical Advisory Committee for its approval.

A man who, after being examined and graded by a National Service Medical Board, considers that his physical condition has been modified, will be entitled to apply to the deputy medical commissioner for re-examination by the board. If after this re-examination he is still dissatisfied, or if re-examination be refused, or if even after original examination he considers he has a grievance, he will be entitled to appeal to the ordinary appeal tribunal. In such a case the matter will pass out of the hands of the Ministry of National Service. If the tribunal considers that the appellant has made out a *prima facie* case he will go before medical assessors, now being appointed in England and Wales by the Local Government Board, and in Scotland by the Scottish Office, and the decision of the assessors will be accepted by the Ministry of National Service. These assessors will be remunerated by fees.

THE CARE OF THE BLIND.

THE President of the Local Government Board took the occasion at a meeting at the London Mansion House on October 4th, in aid of the funds of the London Society for Teaching and Training the Blind,

to make a pronouncement on the whole position as to the blind in this country, their care, education, and employment. Mr. Hayes Fisher stated that he had been much impressed by the evidence given before the Departmental Committee, of which he is chairman, on the condition of the blind throughout the United Kingdom, of which we gave an account on August 18th. If its recommendations were carried out he believed that the number of blind in the country would be gradually but substantially diminished. He hoped to set up in the Local Government Board a small department with an advisory committee which would take control of the whole of the work for the blind in the country. To carry out such work a substantial capital sum and an annual grant would be asked for. Further, he stated that he was by no means content with the present position regarding the prevention and treatment of ophthalmia neonatorum, which alone was responsible for the causation of fully 10 per cent. of the total blindness. He hoped that shortly local authorities would stiffen their methods of inspection and nursing, and he was taking steps to secure more hospital accommodation for the treatment of the affected infants and their mothers.

This statement by the President of the Local Government Board marks a distinct step in advance in the recognition by the State of its responsibility for the prevention of blindness and for the care of the blind. Up till now the blind have been mainly cared for by voluntary effort, and noble work has been done by voluntary agencies, whose work will always be needed to give that touch of kindness and humanity which State provision can scarcely provide. But the exigencies of modern conditions, and the extension of legislation for the protection of industrial workers, such as the Employer's Liability Acts, have acted as a serious handicap to the blind. The risk of the employment of seriously disabled persons is now so great that the blind are less acceptable as workers than formerly. Such a position needs to be met by the provision of workshops for the blind—places where they can do their best work, protected from the disturbing effect of the keen competition of the sighted, and relieved from the necessity of themselves finding the market for their productions.

The society, for whose benefit the meeting at the Mansion House was held, works in the north and north-western districts of London and oversees the wellbeing of some 1,500 blind persons. It is now seeking to make better provision for the young persons who have left the elementary schools, and to give them a start in life, without which much of the good work done in the schools is lost. There is, indeed, great need of a better organization of the existing provision for the training of the blind. Voluntary effort is essentially local. The pity of the beneficent is drawn to the needs of their own blind, and schools have sprung up here and there for this purpose. The numbers of the blind are small, so that in one school there are blind of many types and grades of intelligence and capability. Under such conditions the best of the blind cannot rise, or rise with difficulty, above the general level of equipment provided for the average. What is wanted is a combination associating all these schools, so that there may be a specialization of work in the several schools. Under such conditions the best of the blind, those whose condition is due to more or less accidental causes and not to hereditary disease or defect, would secure the stimulus of the society of their compeers; whilst the less favoured ones would not be left in the backwater of a school, but be assured of that fostering care which their condition merited.

Mr. Hayes Fisher's comments on the unsatisfactory provision for the prevention and treatment of ophthalmia neonatorum, especially in London, are true in fact; but the deduction that London is to blame for this lack is not true. The defect is much more the result of the handicap presented by central department control. London ophthalmic surgeons have agitated for years, and have found a dead weight of officialdom in their path. Only so lately as June of this year a deputation from the Council of the Metropolitan Counties Branch of the British Medical Association waited upon the Metropolitan Asylums Board, the London County Council, and the President of the Local Government Board, to represent the urgency of a better provision for the treatment of the mothers and infants when this affection was manifest. The plea of the deputation met with sympathy truly, but there was always some lion in the path, or the thought that it was someone else's work.

Let us hope that the days of the blind beggar will soon be passed, and that the blind will take their place in the community with self-respect unimpaired. Not all the blind desire this; some remember the ease of the pitiable beggar's position, and prefer it to work, but this spirit is declining. The blind man with the dog, a placard, and a tin can will soon be a relic of the past. Possibly also the familiar figure of boyhood days—the old blind man sitting under a railway arch reading from a great book with mysterious raised letters—will be lost also. The work of these blind readers was not altogether a loss to the community. Not all the blind are fit for, or succeed at, handicrafts or clerical work; maybe there is a place for those whose chief skill is in reading. There are still villages in the depth of the country where news goes from mouth to mouth; where the source of knowledge is the market town rather than the newspaper, and where the word of the Food Controller does not run. Why should not some of these blind become authorized readers duly accredited to certain districts, and the means of communication between the country folk and the larger world around them? But they would no longer live on the precarious collection of the tin pot slung about their necks; the new readers would be the salaried officers of the Government.

THE PROPHYLAXIS OF SYPHILIS.

LAST January Sir Bryan Donkin, by a letter in the *Times*, to which we then called attention, raised the question whether the propaganda for the prevention of venereal diseases ought not to include a frank statement as to the therapeutic measures of prophylaxis which have been devised, having no doubt chiefly in mind the prophylaxis of syphilis by the method originated and tested by Metchnikoff and Roux. Down to that time the propaganda had been limited to an appeal on moral grounds, an appeal to reason pointing out the dire consequences of infection, and the offer of free and secret treatment of the diseases in their early stage. Sir Bryan Donkin's letter met, as he no doubt expected, with a mixed reception. No one nowadays probably would deny to an infected person the advantage of the best that medical treatment has to offer. At any rate, the official scheme for making such treatment easily and generally accessible has been put into force with general public approval; but there are those who dread what they believe would be the antimoral effect of publicly recommending prophylaxis before infection is declared. We may, perhaps, get a clearer idea of the contention of those who think with Sir Bryan Donkin by asking what would have happened if syphilis were not a disease usually disseminated by sexual irregularities, and had a method of

prophylaxis, including prevention of the development of the disease after exposure, been devised, and proved by crucial experiment to be highly efficacious. There can be no hesitation in affirming that the facts would have been made known first by individual medical practitioners and by public health officials in their reports to local authorities, and would eventually have attracted the attention even of the Local Government Board. The nature and results of the experiments of Metchnikoff and Roux were promptly and fully published by the medical journals in this country, and in due course found a place in textbooks. No one could be deterred from recommending the prophylactic by the fear of doing any physical injury, for the local application of calomel ointment to skin or mucous membrane is free from any risk; yet Sir Bryan Donkin asserts that "outside the medical profession at least there is little or no knowledge concerning the prophylaxis of venereal disease." This statement implies that the medical profession has this knowledge, and it must be qualified by the admission that medical knowledge as to the prevention of gonorrhoea is very incomplete, and that though the efficacy of the Metchnikoff prophylaxis of syphilis is high, it is not absolute. There are cases where a man is morally bound to expose himself to an infection, to diphtheria or typhus fever for instance, but there can never be any moral obligation to run the risk of contracting venereal disease through illicit sexual intercourse. Therefore, if a civilian medical practitioner is asked by a person who proposes to indulge his appetite in this way how he may do so without risk, the nature of the answer is a matter for the exercise of private judgement, but it seems to us that a refusal would be justified not only on social and moral grounds, but also on the scientific ground that the known facts do not justify any such positive assurance. The position is different if he is consulted after the inquirer has exposed himself to the risk of infection. He must give the best advice he can, guarding himself by the statement that it is the best means known but in such circumstances very far from infallible. Very seldom, however, is medical advice sought until the disease has declared itself. The dissemination of information about the prophylaxis of syphilis is a matter for the public health authorities, and, as Mr. Ernest Lane, who is quoted with approval by Sir Bryan Donkin, has said, it is within the competence of the Local Government Board to turn its attention to the prophylaxis of venereal disease, to subject all plans to thorough investigation, and to publish the results for the information of the public. In the navy and army the place of the civil public health administration is filled by the medical services. In the forces on active service the social conditions are so abnormal and the military effects of venereal disease so serious that the problem may have to be dealt with on lines which may not be applicable to civilian life.

ANATOMY AND STATECRAFT.

THREE and a half years ago, speaking at a banquet given in his honour, one who had recently given up the teaching of anatomy for a parliamentary career made a claim which the war has confirmed in a rather striking manner. Addressing the chairman, who is now Prime Minister, he said: "I do not shrink from saying that you will go far, Sir, in the ranks of medicine to find a wider-minded and more capable set of men than British anatomists, taking them altogether." At the present moment two of the most responsible posts in the Government are held by former teachers of anatomy. Sir Auckland Campbell Geddes, lately Director of Recruiting, and now Minister of National Service, began his career as assistant professor and demonstrator of anatomy at the University of Edinburgh. He then became professor of anatomy in the Royal College of Surgeons of Ireland, and at the outbreak of war was professor of anatomy in McGill University,

Montreal. Dr. Christopher Addison, lately Minister of Munitions, and now Minister of Reconstruction, was in succession professor of anatomy at University College, Sheffield, lecturer on anatomy at Charing Cross Hospital, and lecturer on anatomy at St. Bartholomew's Hospital. There is nothing very strange in a mind trained in the science of anatomy turning towards the larger business of statesmanship. A Victorian philosopher once said that "analysis has for its chief function to prepare the way for synthesis"; and history records many instances of the two mental processes being highly developed in the same person. Study of the organization of the human body, and the habit of precise thinking and speaking proper to a man of science, have been no handicap to Sir Auckland Geddes in the organization of man power. His knowledge of the construction of the human frame will likewise stand Dr. Addison in good stead in reconstructing the fabric of civilized life after the upheaval of war—a task more congenial to him, perhaps, than co-ordinating agencies of destruction. Neither statesman will find, in carrying out the work which lies before him, any cause to regret the "curious observations which he had lately made in an anatomy of an human body," to use the words written by another Addison 200 years ago.

THE CAUSE OF TYPHUS FEVER.

THE infecting agent in typhus fever has long been sought for and has long eluded capture. Its discovery has often been reported, however; bacilli, cocci, bacteria, and intracellular bodies have all been described since the year 1910 as the causal organism of the disease. The latest explorer in these regions of the unknown is Professor Kenzo Futaki, of Tokio, who indicates a spirochaete, named by him *S. exanthematophyi*, as the cause of typhus fever. An announcement of his claim was made in the JOURNAL of August 25th last, and the steps that led up to it are related in a new monthly periodical,¹ published in Tokio, in which a very competent editor attempts a running review of thought and achievement in the Eastern and Western worlds for the benefit, primarily, of Japanese readers. Professor Futaki has been engaged in the investigation of typhus fever since 1915, and since April of this year has found a spirochaete, which he believes to be characteristic, in sections taken from the kidneys of seven out of eight patients dying of the disease in Japan. The same organism was discovered in the urine of six out of seven other typhus patients. It was discovered also in the kidneys, urine, and suprarenal glands of a rhesus monkey injected with the blood of a human being suffering from typhus fever, but it was not found in six other monkeys presumed to be normal. The spirochaete is described as resembling the *S. pallida* in form; it is from 6 to 8 μ in length, with from 5 to 7 spirals; it is vigorously motile and ciliated at the ends. It can be stained by silver and by Giemsa's stain. Professor Futaki adds that the virus of typhus fever is filterable and that he has found it in lice. It will be remembered that Nicolle, working in Tunis in 1909 and 1910, showed that the clothes louse serves as carrier of the typhus virus, and that he found the louse able to pass on the disease only after the lapse of three or four days, and only for a period of four days. Nothing is said as to the artificial cultivation of Professor Futaki's *S. exanthematophyi*; he is proceeding with his investigations, and their extension and confirmation will be awaited with interest.

THE ATROPINE TEST FOR THE ENTERIC FEVERS.

AN antityphoid vaccine known as T.A.B. has been used very extensively for the protective inoculation of our troops serving abroad, a fact familiar to all of us. This triple vaccine protects against infection with typhoid, para-

¹ The New East (Shin Toyo), Tokio, August, 1917, vol. i, No. 3.

typhoid A, and paratyphoid B fevers, and in practice it has proved of the greatest value to our soldiers. But from the point of view of the clinician, treating cases of fever among our troops abroad, this prophylactic use of T.A.B. has one grave disadvantage. Under the ordinary conditions of service it prevents the employment of Widal's reaction for purposes of diagnosis in obscure cases of fever. In skilled hands and with adequate laboratory conveniences, as Major Dreyer has abundantly shown, the modified and quantitative Widal test can be made to differentiate between the effects of T.A.B. inoculation and those of a superadded typhoid or paratyphoid infection. But this differentiation hardly as yet comes within the scope of routine work, with the result that the diagnosis of mild typhoid or paratyphoid infections has become a matter of the utmost difficulty. Nearly a year ago Captain H. F. Marris published in the JOURNAL a preliminary report on the use of atropine as an aid to the diagnosis of typhoid and paratyphoid A and B infections (November 25th, 1916), and promised a fuller report, which has now been issued by the Medical Research Committee.¹ The use of the atropine test is simple: the patient lies horizontally, and is instructed to remain completely quiet throughout the test, which is not employed till at least one hour after the last meal. The pulse-rate is counted minute by minute until it is found to be steady—usually a matter of ten minutes. Atropine sulphate is then injected hypodermically, the dose being one thirty-third of a grain, preferably over the triceps region, to ensure rapid absorption. Twenty-five minutes later the pulse is again counted minute by minute, until it is clear that any rise which may have followed the injection has begun to pass off. The difference between the average pulse-rate before the injection and the maximum reached after it gives the "escape," or acceleration of the pulse rate, brought about by the dose of atropine. If the escape is 14 or less the case may be regarded as one of typhoid or paratyphoid fever. If it is 15 or more, the reaction is said to be negative, and the test must be repeated after two or three days, and then again if it is then negative. Captain Marris holds that three negative reactions falling within the first fortnight of a febrile illness exclude the typhoid group with a considerable degree of certainty; there are rare exceptions, but in them a continuation of the tests is usually suggested by the symptoms and remaining clinical signs. Negative reactions after the fourteenth day or after the fever has fallen are often unreliable. In a series of 111 cases proved by bacterial culture to be of the enteric group, 94 per cent. gave a positive reaction to the first atropine test applied to them. Captain Marris has used atropine as a test in over a thousand typhoid suspects; he believes the results of its use to be trustworthy from the fifth day of the disease to the end of the second week. A positive reaction has been found as late as the 110th day. A series of negative reactions immediately after the fourteenth day is on the whole to be taken as evidence that there is no typhoid infection. A positive reaction may be obtained in men aged 50 or more who have not got typhoid, particularly if they are arteriosclerotic. In febrile patients with a pulse-rate of 100 or more a positive reaction (or failure of the heart to quicken fifteen beats or more) is to be judged cautiously and the test should be repeated. Similarly, a negative reaction in toxæmic patients who are very ill may be regarded lightly. Six proved typhoid carriers all gave negative reactions; contrariwise, prophylactic T.A.B. injections are apt to produce positive atropine reactions in a day or two. It must be remembered that Captain Marris's observations apply to patients almost entirely young men seen under the conditions of active service; yet it can hardly be doubted that the test will be found equally trustworthy among patients of both sexes and similar ages in civilian practice. The simplicity of the method puts it

at the disposal of all clinical observers, and it appears to be devoid of danger. Particularly interesting is Captain Marris's account of the *rationale* of his test. He has been led to conclude that the bacterial poisons of microbes of the enteric group, in contradistinction from those of other microbes, exert a depressing effect directly upon the intrinsic rhythm centre of the heart, at the same time blocking the vagal control of the latter. Atropine inhibits the vagal slowing of the heart; but in the typhoid fevers atropine fails to accelerate the pulse-rate much because the heart itself is poisoned. He finds that the normal quickening of the heart-beat by the inhalation of amyl nitrite is much depressed in typhoid, and that the intravenous injection of small doses of adrenalin solution fails to produce the transient rise in systolic blood pressure seen in healthy men—perhaps in consequence of the action of the bacterial toxins upon the myoneural elements of the walls of the arterioles. It would seem that in Captain Marris's atropine test we have a most valuable addition to our diagnostic methods in pyrexias of unknown origin, that vast group of mild fevers brought to light by the war. We congratulate its inventor on the clinical insight that led him to its discovery and on the broad views he takes while indicating its applicability and limitations.

SAILOR BREAD-WINNERS.

No one who thinks for a moment about the matter can doubt that the country in large measure owes its present position as a belligerent to the courage and endurance of the officers and men of the Royal Navy and mercantile marine. There is a world shortage of food, both of cereals and meat, and the need for economy was never greater, but, so far, this country has not suffered any real privation in the matter of food. How it strikes one who has not been in this country for a year or two is illustrated by the remark of a Canadian officer on leave from France who, after a day or two wandering about London, said, "I should like to give any German, who believes the stories he is told about the starvation of England, sixpence to spend on bus rides in London." When the regulations with regard to the dilution of flour for the making of bread were first introduced a fear was expressed that it would have an injurious effect on the public health, and that in particular invalids would suffer. The general impression that these fears were groundless, and that in fact the new bread is, on the whole, more wholesome than our old white bread, is fully confirmed by the discussion which took place last Monday at a meeting of the Medical Society of London. Dr. Robert Hutchison, while looking forward to improvements which the bakers could make as they gained more experience, said that it was certain there was nothing chemically injurious in war bread, and that it was in fact superior from a chemical point of view to white bread; any injurious effect that could be attributed to it must be due to its mechanical properties, but after fairly wide inquiry he was able to say that there was no real evidence of any serious disturbance of digestion by the bread in the majority of individuals; he added that he had himself seen no patient in whose case he was convinced that the bread had affected the digestion unfavourably. As to invalids, Dr. E. I. Spriggs, who is the medical director of Duff House sanatorium (mainly for digestive diseases), said that he had not found it necessary in any case to order white bread. There will be a shortage of meat for the next year, certainly if the war continues so long, and probably even if it ends; but though this will be inconvenient and distasteful to many people there seems no probability of its leading to any actual privation. Therefore we are free from any serious anxiety, from the point of view of the public health, as to the main elements in the national diet. We could not have been in this position but for the courage and self-sacrifice of the seamen. The debt of gratitude we owe to them can never be wholly paid, but

¹ National Health Insurance. Special Report Series, No. 9. London. 1917.

the King George's Fund for Sailors offers every one an opportunity of diminishing the debt, for the *Daily Telegraph* is making a special appeal in aid of this fund, and is ready to receive contributions of all amounts. Already, in response to this appeal, a sum of £30,795 has been received, and the total is growing from day to day. The main object of the fund is "to secure more efficient aid for the marine benevolent institutions throughout the kingdom, which have done so much for the mariner in the past, and whose resources have been greatly strained by the calls made upon them in the stress of war." That is an official statement of the purpose of the Fund.¹ Shortly, it may be said that it is hoped to place on an assured footing an organization which will do for sailors' charities what King Edward VII's Hospital Fund, London, has done for the institutions which tend the sick—attract to them increased sympathy and financial support, encourage them to work with greater efficiency, assist them to cut down management expenses, and generally to foster them so that they may fulfil their various missions with even more success than hitherto. The King, who has held an active commission in the Royal Navy, is patron of the Fund; Prince Albert, who is now on the active list of the Royal Navy, is its president; the Duke of Connaught is chairman; and among its warm supporters are the First Lord of the Admiralty, the First Sea Lord, Sir J. R. Jellicoe, and the Commander-in-Chief of the Grand Fleet, Sir David Beatty. It is certain that any money given to the fund will be well administered. The death roll of the Royal Navy already fills 383 closely printed pages of the *Navy List*, and over 6,000 sailors of the merchant service have given their lives in defence of these islands, and to ensure that the German purpose of starving us out shall not succeed. The merchant seaman, officer or man, is almost always a poor man, unable to make adequate provision for his family if he dies young, or for himself if crippled or prematurely aged. Not enough has yet been said of the courage and endurance of these men, which we all of us are inclined, with full justification indeed, to take for granted. It is only now and again that a light is flashed on their work by an official note or a chance conversation. The other day, talking on a wild moorland with an officer of the mercantile marine who had been thrice torpedoed, he said, "at first the submarine had to approach us on the surface, and then dived to get close enough to launch its torpedo. Now they keep much more under water, with only the periscope showing; that makes it much more difficult to spot them; it's like looking for a broomstick a mile away in that heather." Yet thousands of ships go out and thousands come into our ports every week, bringing us the necessities of life. The anxiety of every man on board them is terrible, the strain on the nervous system enormous, and the risks to life very great. It is our part to relieve them at last of the dread of poverty for their families, or for themselves when past service by reason of age, injury, or privation.

ALLIED CONFERENCE ON PENSIONS.

THE permanent committee of the allied conference on pensions, with delegates from each of the allied countries, assembled in London on October 9th, under the presidency of Dr. Bourillon (France). Before proceeding to business the committee was welcomed at Westminster House by Mr. John Hodge, Minister of Pensions, who recorded his conviction that the allied nations could not be engaged in a work of greater importance than that of repairing the bodily damage caused by the war. He said that in this country we had taken as our motto not so much the giving of pensions to our disabled soldiers as restoring them to useful membership of the community. Anything that

could be done to make disabled men even more productive, in spite of their disablement, than they were before the war was of great importance. A laboratory was about to be started for the improvement of artificial limbs with the aid of the best surgical advice, mechanical ability, and inventive genius. Anything found better than our own in an allied country would willingly be adopted, and our own improvements would be handed over with equal readiness to our allies. In conclusion, Mr. Hodge expressed the debt of the allied nations to the medical profession for the great work accomplished, not only in direct military surgery, but also for its efforts to restore those suffering from shell shock, wounds of the face, and other injuries. When history came to be written, he said, it would be a bright page in the annals of the medical profession. Sir Arthur Boscawen, Parliamentary Secretary to the Ministry of Pensions, announced that it was hoped to hold in London next year an inter-allied conference on the after-care of disabled sailors and soldiers similar to the conference held in Paris last May, and he invited the members of the committee to send representatives. A committee representative of all the allied nations was thereupon formed to consider arrangements for the conference. During the week visits have been paid to the military orthopaedic hospital at Shepherd's Bush, Queen Mary's Convalescent Auxiliary Hospital at Roehampton for soldiers and sailors who have lost their limbs in the war, and other hospitals, training institutions, and hostels, and inspections have been made of the work of War Pension Committees.

PSORIASIS AND TUBERCULOSIS.

PSORIASIS has long been regarded as one of the manifestations of that vague diathesis known principally in France as *arthritisme*. It is commonly held to be not incompatible with the best of health; in fact, it is only when, under treatment or otherwise, it subsides that substitution troubles such as asthma or arthropathy are said to arise. According to Professor Gaucher of Paris, however, its parentage is not as respectable as we have been asked to believe; indeed, it appears to have very disreputable relations. Starting with the remark that psoriasis is of frequent occurrence in tuberculous families, Dr. Gaucher inclines to the view that this skin affection is in reality one of the protean manifestations of tuberculosis. He found on investigation that a large proportion of subjects applying for the treatment of psoriasis had lost one or more parents (brothers and sisters) from pulmonary tuberculosis, while osseous and glandular tuberculosis was common among their collaterals. Then, too, the offspring of persons suffering from psoriasis display a proclivity to tuberculous meningitis, or, later on, to one or other form of local tuberculosis. Lastly, the subjects themselves succumb in an unduly large proportion to the pulmonary form of the disease, and, short of that termination, they are very liable to the manifestations of latent tuberculosis—asthma, enlarged glands, and the so-called tuberculous rheumatism. In short, although the evidence in favour of the tuberculous etiology of psoriasis is at present purely clinical, it is comparable to that formerly brought forward in support of the contention that lupus was a tuberculous manifestation, a hypothesis now admitted by every one. The point is one which practitioners might bear in mind in order to determine the frequency of the association of the two morbid conditions.

ACCORDING to a Home Office Order dated October 4th, among the classes of work which, under the Aliens Restriction Order, it shall be unlawful from October 15th for an alien in this country to perform, unless in possession of an identity book, is included: "Any work in a naval or military hospital, or medical organization, or in any auxiliary or voluntary hospital or medical organization affiliated thereto, or in connexion with the transport of members of His Majesty's Forces, or from the premises of any such hospital or organization."

¹Cheques and postal orders payable to "King George's Fund, *Daily Telegraph*" (Fleet Street, London, E.C.4).

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

A GENERAL meeting of the profession took place at the rooms of the Medical Society of London on October 10th to discuss the best methods of promoting the second appeal of the War Emergency Fund of the Royal Medical Benevolent Fund and to nominate a general committee. This Fund was established last year to afford assistance to members of the profession who, in consequence of having taken a commission, find themselves in temporary financial difficulties. Lieut.-Colonel Sir ALFRED PEARCE GOULD presided over the gathering, and was supported by Dr. Samuel West, Colonel Charters J. Symonds, and Major G. Newton Pitt, respectively the President, Treasurer, and Honorary Secretary of the Fund. It was announced that sympathetic letters had been received from Sir Alfred Keogh, G.C.B., and Surgeon-General W. H. Norman, Medical Director-General, R.N.

Sir A. PEARCE GOULD explained that as a result of the first appeal made last year the sum of £5,000 was raised, and so far about £2,000 had been raised or promised as a result of the second. The object of the Fund was primarily to assist those members of the profession who, owing to taking a commission, had suffered so severely in their financial position that on their return to civil life they would find themselves embarrassed. It should appeal, in the first place, to those who could not say that their acceptance of a commission had materially affected their financial position; it should appeal also to members of the profession who were in rather more favourable circumstances than the majority of their brethren; and, finally, it should appeal to the large body of the public who were constantly dependent upon the services of the medical profession. In this connexion he hoped that medical men who were in a position to put the appeal wisely before the wealthy members of the general public would be encouraged to do so. The executive committee had asked for the sum of £25,000. If any such sum as that were aimed at, it was imperative that it should be raised before the war was over. The money would be invested, presumably in Government securities, which could be easily liquidated, but it would not be invested with the idea that the interest only should be used. The whole of the capital sum would probably be expended within two or three years after the end of the war. In any such benevolence as this the amounts given to individuals must be large; if a man had lost his all by accepting a commission and had to start again, it was of no use giving him a £5 note. This Fund was something which they owed to these men. Just as the wounded wore their gilt stripes as an honourable badge, so the man who sacrificed his position in civil life for the sake of his country was bearing all about his body the golden band of service, which gave him title to the special care and forethought of his fellows.

Major NEWTON PITT said that the appeals which were coming in at present were on a smaller scale and of less urgency than those they expected to get when the war was over. The committee had not yet made grants on the scale which would probably be necessary later when commissions came to be given up. Several funds existed whose function it was to assist officers. The Military Service Civil Liabilities Commission made considerable grants to officers up to the rank of captain; this was a Government fund, and in most cases where officers had applied they had been well treated, and in some the grants had been very large. The Officers' Families Fund was also of great value, particularly in caring for the education of officers' children. Then the new pension scheme would undoubtedly be useful for men who had been disabled, and it was possible for a junior officer to get a pension up to the amount of £175 a year. Each of these funds, however, only dealt with a certain special set of conditions. The first two funds he had named would cease to contribute after a man had given up his commission; so that while it was desirable that application should be made to these sources, their own fund had its quite definite function to fulfil. It was difficult to form any estimate as to the number of cases which were likely to require assistance, but seeing that 12,000 men held

commissions, an application for help from 3 or 4 per cent. of these—and the proportion would certainly be higher than that—would necessitate at least £25,000 if reasonable grants were to be made.

Colonel H. E. B. BRUCE-PORTER urged that the money should be offered as a loan; not, indeed, a loan to be tied round the beneficiary's neck, but a debt which he could feel himself at liberty to discharge—though not bound to do so—should be get on his feet again. He thought it wiser, also, to appeal for a bigger total. He hoped that £25,000 would not be their horizon.

Surgeon-General H. D. ROLLESTON thought that the loan principle would have the great advantage of making it easier for the feelings of the beneficiaries, but he quite saw that there might be practical difficulties in the way. He agreed also with the suggestion that the lay public should be asked to subscribe, but he was not prepared with any suggestion as to how that could be done except by the personal intervention of the practitioner.

Dr. J. F. WALKER (Southend) suggested the decentralization of appeals. The Divisions of the British Medical Association might be used for this purpose, and, if the secretaries were interested, a surprising volume of local subscriptions might be forthcoming.

Dr. CHARLES BUTTAR pointed out that Local Medical War Committees existed all over the country, and through these mediums it ought to be possible to find a man in each area sufficiently in earnest to run the Fund among his brother practitioners and the public.

Dr. SAMUEL WEST said that this Fund would begin to do its work where the other funds left off. In a very few instances the colleagues of an absent practitioner might not have "played the game," but apart from these rare cases men lost their practice through no fault of others. A practice was a personal thing, and if the practitioner was away, not for months, as they thought at first, but for years, the people moved away and various local changes occurred, so that the man returned eventually to find his practice cut down to nothing. The danger of overlapping (to which Dr. Buttar had referred) could be met by the consultation of a common register showing whether people had applied to other charities and with what result. The loan scheme was naturally attractive, but to his mind benevolence and money-lending were not compatible. The Professional Classes War Relief Council had originally a loan fund, but it was found after two years' experience that it was a failure, and that the loans virtually became gifts. He would suggest, however, that a practitioner might get a loan of £1,000 from his banker to enable him to carry on, and then there was no reason why the Fund should not give him the £50 or so required for the annual interest.

Major JOHN FAWCETT pointed out that a certain number of men in civil practice, as a result of the extra work they had had to do in helping their brother practitioners, had broken down and needed help equally with those who had gone on active service. He hoped that that aspect of the question would not be neglected.

Dr. WEST said that the Royal Medical Benevolent Fund had what they called an emergency fund (as distinct from the war emergency), originally designed to take the place of the old *Lancet* fund, which might be made available for such cases. Answering a further question as to the privacy of application, Dr. West said that a case was investigated by one of the officials of the Fund and a number was given to it, after which it appeared only as a number, and no one except the officials knew the name of the beneficiary.

Colonel CHARTERS J. SYMONDS said that no obligation would be placed upon a recipient to pay back what he had received, nor would the benefaction be cumbered with interest, but it would be open to him to return it as he thought right. The number of applications up to the present was 25, the number relieved was 18, and the amount expended, £300. The real stress, however, would come when the men were back and no longer had their army pay.

The meeting, before separating, agreed to the appointment of a general committee, consisting of not more than eighty names and representing every branch of the profession. The executive committee at present is identical with that of the Royal Medical Benevolent Fund.

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Wounded.

Surgeon A. G. WILLIAMS, R.N.

ARMY.

Killed in Action.

CAPTAIN H. D. N. MACKENZIE, R.A.M.C.

Captain Henry Deedes Nutt Mackenzie, R.A.M.C., was killed in action on October 4th, aged 48. He was the third surviving son of the late Rev. C. H. N. Mackenzie, Rector of East Harptree, Somerset, and was educated at Bath College and at Edinburgh University, where he graduated M.B. and C.M. in 1893 and M.D. in 1897. He had since led a very varied life. He served as a civil surgeon in the South African war, receiving the medal; then as a plague medical officer in India and Egypt successively; was for a short time in the service of the Siamese Government, and in 1905 was medical officer in the Zanzibar Protectorate, and British consular officer at Peruba. He then went to New South Wales, and practised for some years at Corowa. At the outbreak of war he offered his services to the Serbian Government, and was the first British doctor to serve in Serbia. After some months there he was attacked by typhus, and invalided to England. In the summer of 1915 he served in France under the French Red Cross, and in October, 1915, took a temporary commission as lieutenant in the R.A.M.C., and was promoted to captain on completion of a year's service. He had since served in the Dardanelles, in Egypt, and in France, and when killed was attached to the Royal Field Artillery.

CAPTAIN J. P. PEGUM, R.A.M.C.

Temporary Captain Joseph Patrick Pegum, R.A.M.C., of Cahara House, Glin, co. Limerick, was killed in action on September 26th, aged 24. He was educated at Clongowes Wood College and the Royal College of Surgeons in Ireland. He took the diplomas of L.R.C.P. and S.I. in 1916, received a temporary commission as lieutenant in the R.A.M.C. at once, and went to France three months later. He was promoted to captain on completion of a year's service.

Died of Wounds.

CAPTAIN H. D. FIELD, R.A.M.C.

Captain Hassell Dyer Field, R.A.M.C., died of wounds on September 28th. He was the younger surviving son of Mr. Lascelles Field, of Thirlfield, Norbury, and was educated at Uppingham and at St. Thomas's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1914. After acting as resident medical officer of the Royal Victoria Hospital, Bournemouth, he took a temporary commission as lieutenant in the R.A.M.C. in April, 1915, and was promoted to captain on completion of a year's service. He went to the front in December, 1916.

Died.

Lieutenant and Quartermaster G. R. Lougher, R.A.M.C. (T.F.).

Wounded.

Colonel J. W. Houghton, R.A.M.C.

Lieut.-Colonel G. H. L. Hammerton, R.A.M.C. (T.F.).

Major G. N. Craig, New Zealand Medical Corps.

Major G. A. Heydon, M.C., Australian A.M.C.

Major W. W. S. Johnston, Australian A.M.C.

Captain G. W. Armstrong, R.A.M.C. (temporary).

Captain F. E. Johnson, R.A.M.C. (temporary).

Captain M. B. Lawrie, M.C., South African Medical Corps.

Captain G. N. Redpath, New Zealand Medical Corps.

Captain E. Scott, D.S.O., R.A.M.C. (temporary).

Captain C. P. Symonds, R.A.M.C. (temporary).

Captain A. C. Taylor, R.A.M.C. (temporary).

Captain W. Turner, R.A.M.C. (T.F.).

Lieutenant H. E. R. Altounyan, R.A.M.C. (temporary).

Lieutenant F. H. Fuller, R.A.M.C. (temporary).

Lieutenant W. P. S. Johnson, R.A.M.C. (temporary).

Lieutenant M. S. Munro, R.A.M.C. (temporary).

Lieutenant J. C. Pearse, R.A.M.C. (temporary).

Lieutenant W. B. Thompson, R.A.M.C. (temporary).

Nurse M. C. Hanning, V.A.D.

Nurse L. Stewart, V.A.D.

DEATHS AMONG SONS OF MEDICAL MEN.

Armstrong, Forster, Major Royal Field Artillery, son of the late Dr. J. F. Armstrong, killed September 25th, aged 41. He was educated at Giggleswick School and Christ's College, Cambridge, where he graduated LL.B. in the Law Tripos in 1899, afterwards qualifying as a solicitor. He got his first commission in 1902 in the 3rd Durham Volunteer Artillery, which later formed part of the 4th Northumbrian Howitzer Brigade, in which he became captain on February 24th, 1906. On November 14th, 1914, he was appointed adjutant of the Northumbrian Divisional Ammunition Column, and was mentioned in dispatches. Early in 1917 he was promoted to major and given command of a battery.

Dawes, Oswald Stephen Bernard, killed in action on May 8th, 1917, in France. He was the second son of Dr. J. W. Dawes of Longton, Staffs.

Graves-Burton, Richard Hastings, Commander R.D., R.N.R., youngest son of Surgeon-Major Graves-Burton, of Ealing, died suddenly at Portsmouth on September 29th, aged 49.

Hewkley, Francis Paget, Sergeant, Signal Company, Australian Imperial Forces, only son of Dr. Frank Hewkley, of Walbrook, E.C., died of wounds on September 26th, aged 23. Whilst holding a position with conspicuous bravery during an attack on Zonnebeke Ridge he was seriously wounded, and within half an hour was again wounded, fatally. He had served in Gallipoli from the first day of the landing until the evacuation. He was awarded the Military Medal for gallantry and conspicuous bravery under fire a year ago.

Hillaby, Eric Crowther, Flight Sub-Lieutenant R.N., second son of Dr. A. Hillaby, of Pontefract, reported missing on July 6th last, now reported killed on that date, aged 19. He was gazetted to the R.F.C. in August, 1916.

Hull, Edward Cecil Gordon, Second Lieutenant Royal Field Artillery, elder son of Dr. Edward Gordon Hull, of Streatham Common, killed August 26th. He was educated at Streatham School, at the City of London School, and at King's College, London, where he studied divinity, and had passed for the B.D. degree. He joined the R.F.A. in 1915, was wounded in August, 1916, and returned to the front in July, 1917.

Richards, Charles Morgan, only son of Dr. Morgan Richards of Fremantle, Western Australia, killed September 21st, aged 20.

Rieu, Charles, Sergeant Middlesex Regiment, attached Intelligence Department, second son of the late Dr. Charles Rieu of London, W., killed September 13th, aged 42.

Rose, George Douglas, M.A., Second Lieutenant Gordon Highlanders, second son of Dr. Rose of Aberdeen, killed September 20th, aged 22.

Wright, Noel Stafford, Sub-Lieutenant R.N., son of Dr. Southey Wright, The Firs, Wook, Dorset, killed September 18th, aged 18. His seniority was from January 21st, 1917.

MEDICAL STUDENT.

Murphy, George, Second Lieutenant 13th Royal Warwickshire Regiment, attached to the 15th Lancashire Fusiliers, killed in action, was the second son of Mr. George Murphy, of Bolton. He was a medical student at Birmingham University, and on the outbreak of war obtained a commission in the Royal Warwicks from his O.T.C. He was sent to Egypt and was there attached to the Lancashire Fusiliers, and became an expert in the use of the Lewis gun. He was sent to France at the beginning of this year, and while leading his platoon in an attack on September 6th was mortally wounded.

Nurse Daisy Kathleen Mary Coles, V.A.D., was killed by enemy aircraft on September 30th. She was the only daughter of Mr. Walter G. Coles of Glasgow, and received her training at Leith Infirmary. She had served in the Royal Victoria Hospital and at Craigleith Military Hospital before she went to France last June.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

AN Army Council instruction has been issued on the medical treatment and training for industrial life of discharged soldiers. So long as inpatient treatment is needed and accommodation is available, soldiers will be retained in appropriate hospitals. On the termination of such treatment, if the man is considered to be unfit for further service, he will be brought before an invaliding board, but will not be discharged from hospital until the actual date of discharge from the service—that is, twenty-one days after the discharge has been approved by the invaliding board. This procedure will be followed in the cases of all soldiers in hospital who are about to be discharged on medical

grounds, except in limbless and mental cases and cases of tuberculosis who accept sanatorium treatment. When a soldier has been approved for discharge, and when subsequently discharged, out-patient treatment may, if required, be suitably offered at a military hospital or in a Voluntary Aid or Red Cross auxiliary hospital. A course of technical training may also be desirable for many of the cases, and the provision of means for such training rests with the Ministry of Pensions.

The American Ambassador, on October 4th, opened St. Katherine's Lodge Hospital for American and British officers, situated in Regent's Park, London. Mr. and Mrs. William Salomon have lent the premises to the American Red Cross and have undertaken to equip and maintain them as a hospital for forty orthopaedic cases. Mr. Page, in declaring the premises open, said that in this hospital American orthopaedic surgeons would develop that method of surgery under the great leadership of Sir Robert Jones. Among those present at the opening ceremony were Surgeons-General Sir Alfred Keogh, Sir George Makins, and Sir Francis Treherne. The nucleus of the medical staff will be Captain F. Kidner and Captain Willard, members of the United States orthopaedic unit now in England. The nursing staff will consist of American Red Cross nurses.

England and Wales.

THE COLLEGE OF AMBULANCE.

THE fourth year of the College of Ambulance was opened on October 8th by the Bishop of London at the College premises in Vere Street, Marylebone. Colonel James Cantlie, F.R.C.S., the principal, described how the idea of a central institute for ambulance instruction in London had developed out of the classes he conducted at the Regent Street Polytechnic in the early part of the war. The College was a teaching body and nothing else, and since its foundation the number of complete first-aid courses given was 106; of courses in nursing, 75; and in camp hygiene and sanitation, 40. In those three subjects alone 1,160 lectures had been given; in addition lectures were given on many special subjects and frequent ambulance demonstrations. The students who had received instruction exceeded 14,000 and were now to be found in every part of the war area. The institution had been the cradle—or the kindergarten—of the Friends Ambulance Unit. At a time when the Second Army took over from the French a district in which typhoid was rife among the civil population, that unit dealt with the infected area, and nursed and fed and segregated the people to such purpose that not one British soldier was infected as a result of the new occupation. It was hoped to establish the college permanently as the head quarters of ambulance teaching in England, and to that end a number of governorships and fellowships were being instituted. The Bishop of London said that he was trying to get the military authorities to raise and take out a "Parsons' Ambulance Corps" for front line service. Sir Malcolm Morris paid a whole-hearted tribute to the work which Colonel Cantlie had done in the Red Cross and ambulance service for the last forty years; and Colonel Professor J. G. Adami, of Montreal, added a further eulogy, and said that ambulance work must continue after the war not merely as a part of the preparation in the event of another, but as a necessary element of the training in British citizenship. The bishop then distributed the college fellowships and demonstratorships, after which there was a display of stretcher drill by both men and women. Visitors also had an opportunity of inspecting the lecture and class rooms and museum on the three floors which the college has at its disposal. In addition to the anatomical models and first-aid appliances, a very large model was on view, which covered the whole of one side of the building, illustrating the medical arrangements on the field of battle.

THE TREATMENT OF INVALIDED SOLDIERS AT VOLUNTARY HOSPITALS.

The position of the honorary medical staffs of voluntary hospitals in undertaking the care of invalided soldiers under arrangements with the Ministry of Pensions was considered at a meeting held at Crewe on September 29th. The meeting was summoned by the County of Cheshire Local Medical and Panel Committee, and was attended by

the officers of that committee and representatives of the honorary medical staffs of voluntary hospitals in Cheshire, with several in Lancashire, and Dr. Marsh, Chairman of the Panel Committee, was voted to the chair. The Honorary Secretary of the Medical Board of the Warrington Infirmary wrote that the board of management had arranged to undertake the care of discharged soldiers in the hospital on the terms proposed by the Ministry of Pensions, and had decided to allocate 10 per cent. of the sum received to the honorary medical staff. Dr. Park, of the District Infirmary, Ashton-under-Lyne, proposed (1) that whatever charges the governors of hospitals see fit to make for the use of their buildings and equipment should be paid to them by the Pensions Committee; (2) that the members of the staff of these institutions be paid for work done by the Commissioners according to their schedule. The Chairman seconded these proposals *pro forma*, but pointed out that the operations referred to in the schedule of the Commissioners were only such as come within the scope of a panel doctor's duties, and the schedule was therefore inapplicable to treatment for which hospital attendance is necessary; and, further, that the Insurance Commissioners had no connexion with this matter of hospital treatment, which was in the hands of the Ministry of Pensions. After some discussion, the proposals were by consent withdrawn, and the following two proposals suggested by the British Medical Association were unanimously adopted:

1. That the services of the medical profession should not be given gratuitously to patients who are maintained by public funds.
2. That from all payments received by the governing body of a voluntary medical institution from the State or local authority a proportion, to be agreed upon between the governing body and the honorary medical staff, should be placed to a special fund which shall belong to the honorary medical staff.

After discussion the following scale of charges was unanimously adopted:

	£	s.	d.
Major operation, including anaesthetists' and assistants' fees	7	7	0
Minor operation with general anaesthesia, and including anaesthetists' fee	2	11	6
Anaesthetists' fee where the assistant is not a salaried resident medical officer	1	1	0
Minor operation with local anaesthetic	1	1	0
Attendance on in-patients, after operation or otherwise, for each week	1	1	0
(For less than a week in proportion.)			
Attendance on out-patients:			
Initial consultation	0	7	6
Each subsequent attendance	0	2	6
Report when required	0	5	0
X-ray examination, according to case—			
10s. 6d., 21s., or	2	2	0
Electrical treatment, x-ray treatment, or ionization (initial consultation)	1	1	0
(Each subsequent sitting)	0	2	6

It was further resolved to submit these resolutions to the various hospitals concerned and to the Ministry of Pensions and the county pensions committees, and to communicate them to the honorary secretary of the Lancashire and Cheshire Branch of the British Medical Association.

Scotland.

On September 29th a memorial to the late Dr. William Grant MacPherson was unveiled at Bothwell, where he had practised for nearly thirty years.

GLASGOW MILITARY HOSPITALS.

On October 2nd Field Marshal the Duke of Connaught visited a number of hospitals in Glasgow and district. After going round the military hospitals of Stobhill he went on to the Scottish National Red Cross Central Hospital at Bellahouston, where he was received by Sir George T. Beatson, K.C.B., chairman of the Scottish Branch of the Red Cross Society, and Sir Hector Cameron and Lieut.-Colonel Chaffer, commanding officer of the hospital, as well as members of the resident and visiting staff, were presented to him. After going through one of the medical wards the Duke went to the orthopaedic department, surgical wards, operating theatres, x-ray room, and electricity and massage departments. In the manual

curative workshops, where about one hundred patients are engaged in carrying out this stage of their treatment, the object of the training in wood carving, art metal work, joinery, boot repairing, tailoring, and other handicrafts was explained. There are at present 844 patients in the hospital, and the total number treated since its opening in October, 1915, is 7,560. Finally he visited the Erskine Hospital for Limbless Sailors and Soldiers, opened last June; there he was received by Mr. John Reid, vice-president, and Sir William Macewen, chairman of the House Committee, by whom he was conducted over the wards, operating theatre, x-ray room, research laboratory, and the temporary pavilions.

EDINBURGH TUBERCULOSIS FARM COLONY.

At a recent meeting of the Public Health Committee of the Edinburgh Town Council Sir Robert W. Philip made a report on the tuberculosis farm colony. He stated that at the end of the quarter there were in residence twenty colonists—twelve men and eight women. The health of the colonists had been generally good and the final results for the most part satisfactory, but the want of preliminary training in graduated work among the colonists received was an obstacle. The colony had been visited by representatives of the Pensions Ministry, the Local Government Board in England, and other authorities, and the National Association for the Prevention of Tuberculosis had, in issuing an appeal for the foundation of a farm colony for tuberculous sailors and soldiers, cited the results of the Edinburgh farm colony in support of the plan.

EDINBURGH CHILD WELFARE SCHEME.

The Public Health Committee of the Edinburgh Town Council has agreed to purchase Gogar Burn House and grounds to provide a centre for the Edinburgh child welfare scheme. The purchase comprises a large mansion house and fifty-seven acres of ground, at present largely under grass. The house will be adapted to accommodate about 150 children, the primary object being to make it a place for recuperation and preventive treatment. The necessary alterations are to be put in hand at once.

Ireland.

A COMMITTEE has been formed in Dublin, with Sir Robert Wood, F.R.C.S.I., as honorary treasurer, and Mr. Trevor N. Smith, F.R.C.S.I., 8, Upper Fitzwilliam Street, Dublin, as honorary secretary, to assist Dr. J. F. C. Meyler, of Dublin, who is unable to earn a livelihood and in very embarrassed circumstances. He has completely lost his hearing owing to specific disease contracted during an operation.

SALARIES OF DISPENSARY MEDICAL OFFICERS.

The Swinford Board of Guardians (co. Mayo) has received an application from its medical officers demanding an immediate increase in their salaries and the fixing of a graded scale of increments. In connexion with this application the medical officers submitted the following considerations: First, the present salaries were fixed more than a generation ago, when the value of money was much higher than in recent years; the actual worth of the remuneration has consequently declined considerably. Secondly, the demand for a graded scale is justified by the obvious fact that the experience and skill acquired in years of practice enhance the worth of a medical man's service to the community. For these two reasons many unions, prior to the war, readily granted their medical officers an increase of salary in proportion to their length of service. At present the overwhelming majority of all the unions of the country have adopted this course. A demand which was just and reasonable a few years ago has now become an urgent necessity. The cost of drugs, surgical appliances, and the means of locomotion, has increased enormously. This has, of course, to be met out of fees, most of which are now eaten up by such extra expenses. Hitherto the medical officers have borne the loss out of their own pockets. This drain upon their resources is quite apart from the increased cost of living, which they have also to face, like the rest of the community. In

the circumstances they have postponed action until the last possible moment, but the time has now come when they are compelled to press their demands by every means in their power. Were their claim granted, only a portion of the burden would be lifted from their shoulders. While willing to share it they are not willing to bear it all. The medical officers go on to state that in the event of the Board being unable to agree to the suggestions of the County Medical Committee a new scale of fees will be brought into operation on November 1st in the respective districts, as follows: For treatment and medicine at the surgeries, 5s.; for visit and medicine, £1; for maternity cases, £2. They hope, however, that they may not be driven to this course. The recommendations submitted involve only a small addition to the rates, but would prevent the cost of treatment in sickness from falling too heavily upon the ratepayers individually. A committee of the board of guardians was appointed to meet on a fixed date to consider the question.

Correspondence.

THE WOUNDED TERRITORIAL MEDICAL OFFICER.

SIR,—Now that the pay of the rank and file of the army has been improved, could not the attention of the authorities be drawn to the hard case of the misguided Territorial and Special Reserve officers who gave their services to their country before the outbreak of war?

In my own case, after several years of combatant service, I joined the R.A.M.C.(S.R.) immediately Lord Haldane asked medical men to support his Special Reserve scheme. On the outbreak of war I spent many weary months training newly joined men and officers, the latter receiving higher pay than myself. On active service the difference in pay was so small that one did not worry much, but early in this year I received a severe wound, which has kept me many weeks in hospital, and will keep me many more. While in hospital my expenses are very little less than when on active service, but my pay falls to 15s. 6d. a day, while a brother officer of the same rank, who is in the same ward with me, who is several years junior to me both professionally and in the service, is receiving 24s. a day.

I am aware that a biblical precedent has been quoted for this injustice, but in that rather notorious case the late comers received no more than those who had borne "the burden and heat of the day."—I am, etc.,

October 3rd.

A MARRIED MAN.

SIR,—With reference to the letter in the JOURNAL of September 22nd from "Captain R.A.M.C.(S.R.) Three Years' Service" regarding the pay of Special Reserve and Territorial Officers, the difference between them and the temporary commissioned medical officers is strikingly exemplified in my own case. I have recently been invalidated home from France, the result of an injury sustained whilst under shell fire, and have close upon eleven years' service in the Territorial Force, including two years in France with the B.E.F.

On coming home my pay is now about £50 a year less than the temporary officer who possibly only took up a commission a few months ago. I might also add that I have been nineteen years in practice, and on mobilization in August, 1914, I had in common with so many of my Territorial brethren to submit to the loss of the greater part of it. In my opinion the payment of our war bonus yearly instead of having to wait until the end of the war is a much needed remedy.—I am, etc.,

September 26th.

CAPTAIN R.A.M.C.(T.F.).

PANEL COMMITTEES AND THE ASSOCIATION.

SIR,—Dr. H. B. Brackenbury, in one of the forensic efforts that seem to give him so much pleasure, has the following: "The Association hopes to do better . . . it hopes to prove its case, and, if supported by Panel Committees, to ask for ten shillings for all insured persons."

"Its case," not the case of the Panel Committees. But it is claimed in a recent pronouncement that the Insurance

Acts Committee is directly representative of Panel Committees. Let us examine this statement. There are fifteen members of the committee nominated by Panel Committees, and the other twelve elected members are selected by the Representative Meeting on a geographical basis. It is claimed that as the majority of these electors are panel men, therefore the majority of the twelve are panel men.

The Committee has power to deal with all matters arising out of the Insurance Act, but it has got to report to the Council and through it to the Representative Meeting.

Now, the natural and direct method of representation of insurance practitioners is through the Panel Committees. This is recognized by every one, and therefore we find Dr. Brackenbury and those who agree with him claiming that the Insurance Acts Committee, as at present constituted, directly represents Panel Committees. This opinion is neither held by every member of the Association nor by all Panel Committees, and the number who are in opposition are sufficient to weaken the unity of action of the profession.

We have already three bodies in the field claiming to represent insurance practitioners—the British Medical Association, the Panel Medico-Political Union, and, lastly, the proposed Panel Association. The existence of the last two is a criticism of the first. It surely behoves every one to study the situation, for unless we secure unanimity under a strong control body we are bound to be weak and ineffective in the coming fight—a fight that will tax all our medical statesmen to their utmost in securing good terms for the profession while at the same time safeguarding the welfare of the community.

I would lay it down as axiomatic that there is only one possible Central Body—namely, the British Medical Association. It is not perfect in constitution, but it holds the field, and is determined to hold the field. It has shouldered a Federation of Panel Committees, and it will do the same with the proposed association, for its claim to represent Panel Committees is incompatible with the existence of any other body. But can this claim be justified on democratic grounds? I submit it cannot. Only half the members of the Insurance Acts Committee are directly representative of Panel Committees, and these are nominated. The other twelve are appointed on a geographical basis by—the Representative Meeting. It is alleged that because the majority of representatives are panel men, therefore the majority of those elected are the same. Are our leaders really satisfied with this? I doubt it. They are too shrewd not to recognize the risks of such a situation.

We are asked to close our ranks behind the British Medical Association, and we panel men are reminded that we are primarily members of the profession. Yes, but there are other associations within the British Medical Association—for example, Public Health Officers, Poor Law Medical Officers, and Medical Women, and these act in direct co-operation with the parent Association.

One approaches a region of surmise as to why it should be impossible to have an association of panel men inside the Association. Let that pass. It is, at any rate, a fact that the present method of representation is undemocratic and partly indirect. Now, it cannot be too often reiterated—we must have unity to have efficiency. I submit it is the undemocratic and inadequate representation of Panel Committees on the Central Body that is the main cause of the canker in our midst. I would therefore appeal to our leaders to remove this cause of discord, which is the cause also of rejoicing amongst those who have no love for the profession. The outside critics of the profession are already saying the British Medical Association does not represent panel practitioners, and any one can imagine what a weapon such an argument would be in the hands of opponents in Parliament and the press.

Can democratic and direct representation of Panel Committees be secured within the constitution of the Association? I hold it can. The principle has already been conceded that Panel Committees represent panel men. It logically follows that the central representative body, that is, the Insurance Acts Committee, should be composed mainly of representatives of Panel Committees. I suggest, therefore, that the members of the Insurance Acts Com-

mittee should consist of, say, twenty-five directly representative of Panel Committees, with four or five *ex officio* members, and the same co-opted members as at present. If this were secured, it would cut the ground from under the feet of those who are antagonistic to the Association as such. It could then be claimed—and truly claimed—that the Panel Committees are directly and democratically represented.

If this is not done, a very considerable and active minority will be left with a grievance, and continued sectional action will weaken our unity of action. After all, the British Medical Association stands for democratic representation, and is not a bureaucratic body. The principle here urged has been conceded; it remains to apply it in its entirety.—I am, etc.,

October 7th.

CHAS. FORBES, Captain R.A.M.C.T.

PANEL PRACTICE AND REMUNERATION FOR DRUGS AND MILEAGE.

SIR,—The time is rapidly approaching when practitioners' panel agreements will have to be signed for 1918, and it is therefore an opportune moment to consider the question of adequate and fair rates of payment for drugs and mileage under the present war conditions, as the existing rates are not only inadequate but unjust to the practitioner in these times of inflated prices.

With reference to the rate of pay for dispensing, the scale is on a pre-war basis. The cost of drugs and accessories has, like everything else, increased enormously. The chemists, on the other hand, who dispense panel prescriptions, are paid per item at a scale revised and brought up to date monthly, yet doctors are having to supply the same things to the patients for whom they dispense at the flat rate based on the pre-war prices.

With regard to mileage, each Insurance Committee was credited with an ear-marked grant to meet the mileage claim in its particular area. This grant is a pre-war one. Since then the price of petrol has gradually risen, and is now costing between 4s. and 5s. per gallon, which is more than double the price before the war; other expenses in connexion with the running and upkeep of a car have also increased proportionately. Obviously these rates of pay in the present exceptional circumstances are pressing unfairly and unjustly on the panel doctors, who have to bear the burden of these additional expenses.

Surely the time has now come when this obsolete scale of pay should be revised and adjusted to meet these increased costs, or a bonus be made to panel practitioners on a *pro rata* basis.

If the practitioners themselves do not put forward a demand for an increased remuneration, I can well understand that the Insurance Act Commissioners will not voluntarily suggest it.—I am, etc.,

October 9th.

OLD OCTOBER.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—Evidently the discussion of this subject is approached very differently by your various correspondents. One man's diagnosis is clouded with an ingrained suspicion of danger, and his prognosis is grave; another comes with an open mind and a leaning for moderation in all things; and yet another thinketh no evil, and his hope never faileth.

The finance of the scheme seems to be the special bone of contention, and that ominous word "inflation" has been made such a useful scapegoat that one may be forgiven for viewing it with continual mistrust as having still further capacity for service on behalf of the soldiers' fund. From Memo. 233, I.C. it would seem that this fund will be primarily fed with sums of 9s. a head per annum (29). In uninsured cases payment will be made to the fund from the Navy and Army Insurance Fund at the rate of 8s. 6d. (30). In insured cases the 8s. 6d. will come out of the General Medical Benevolent Fund, to which all sums available for their medical benefit will have already been carried (31). The fund will also be credited with a domiciliary sixpence, either out of the General Medical Benevolent Fund or the Navy and Army Insurance Fund (34). Now, if 9s. is paid in accordance with the above statements, then it must be obvious that there is 9s. to come out, and so much of this to us, let it be stated lest

we forget, as the dividend rate will amount to. This does not seem to support one of your correspondents in his statement that the deduction of 9s. from the General Medical Benevolent Fund entails a further depletion of 1s. 10d., nor does it support his contention that treatment by non-panel men entails the loss of 1s. 10d. per head to panel men. It is difficult to see how inflation can come in here. Still, it is a powerful word. The pessimist has no doubt of its capacity for evil and advises a radical cure; the moderate man will await events with faith in passive treatment and placebos; the optimist whose hope springs eternal has no qualms about the issue. The ability the Commissioners exhibit in the production of involved and redundant statements and regulations is really astounding, and one may well sympathize with the pathetic wonder of one of your correspondents, whether it would be of any avail if the Association begged for a reissue of the regulations in simple, plain, and unmistakable language. It is a vain hope: these things are sent to try us. That there are abundant reasons for misgivings in accepting at their face value these latest regulations, is only too well borne out by our experiences of the past. I am on the panel list of three counties, and it is interesting to note the varying deflating value of "inflation." I can give accurate figures for two counties for 1915. The medical credits for Montgomeryshire were: Treatment 6s. 2½d., drugs 1s. 2¾d., plus 5¼d. (transferred owing to this county having the lowest cost per head of prescriptions in Wales); total 7s. 10¼d. For Shropshire the credits were: Treatment 6s. 8d., drugs 1s. 7¾d.; total 8s. 3¾d. Although the Montgomeryshire County Committee sent into the Welsh Commissioners a strong resolution on the question of the medical credit for the county, with an explanatory letter from the clerk, who emphasized the fact that the register had been consistently kept free from inflation, we have derived no more satisfaction than a hungry man wandering in a valley of dry bones.

May I further draw attention to the manner in which the Commissioners' appreciation of inflation operates in the war-time scheme for the adjustment of the final credits in rural as compared with industrial areas. Obviously the proportion of the insured population available for enlistment in the former cannot be as great as it is in the latter, and to make an equal percentage reduction for inflation, based merely on the register, is unfair to the former. The following figures for Montgomeryshire bear this out:

July, 1914 ...	8,551 men	4,018 women	= 12,569
October, 1916 ...	7,913 "	4,619 "	= 12,532
	- 638	+ 601	- 37

—I am, etc.,

Llansantffraid, Mont., Oct. 9th.

W. H. LEWIS.

SIR,—In spite of various illuminating letters in your columns, few men have yet thoroughly grasped the inequity (and iniquity) of the arrangements made for defraying the cost of attendance on these disabled men, and the "explanatory statement" in the SUPPLEMENT of September 22nd avoids the question entirely. Every member of the profession, whether working the Insurance Act or not, should be made aware that the principle pervading the Notification of Births Act crops up again here and will soon be firmly entrenched in our legislation—namely, that medical men must willy-nilly give a certain amount of gratuitous work to the State in order to save the pockets of the rest of the community. It is quite obvious from the new regulations that a certain portion of the fees paid for attendance on these disabled men will come out of the pockets of the panel practitioners, whether they be paid to themselves or non-panel practitioners. What proportion of these disabled men will be able to work and send in stamped cards for the first half of the year we do not know, but half would probably be a liberal estimate for the first few years, the proportion dwindling as time goes on until eventually none will do so. Let us take 1,000 men and assume that 500 send in stamped cards, then the General Medical Benefit Fund, which belongs to the panel practitioners (and chemists), will receive 500 contributions of 9s. = £225 and 500 contributions of 2s. 6d. = £62 10s., a total of £287 10s., whilst it will pay out to the invalided soldiers fund 1,000 × 9s. = £450, or £162 10s. more than it receives, and this £162 10s. is the

contribution of the panel practitioners (either in work or in fees paid to non-panel practitioners) towards the cost of attendance on each 1,000 disabled men, in addition to what they pay in taxation in common with the rest of the nation. The exact amount, however, is immaterial to the principle, for if only ten of the thousand failed to send in cards the panel doctor would still be bearing a special tax.

It is difficult to imagine a commercial proposal quite analogous to the "regulations" of the Commissioners, but I think the following is fairly so: I (representing the Government) ask certain provision dealers to supply me with a million pounds of cheese (of 1s. per lb. quality) at 1s. per lb., and explain to them in the contract that 1s. does not mean one shilling, but merely a "dividend rate," which may be 11d., 10d., or less according to the price of butter at the time. I also explain that most probably I shall not be able to pay even the dividend rate from my receipts, as none of my customers will be able to pay more than 9d. per lb., and a great many will be able to pay only 3d., but as I am inclined to be generous I will make up the difference between 9d. per lb. all round and the dividend rate. They say, "Well, suppose we accept your dividend rate; what about the 6d. in the case of all those who pay only 3d. instead of 9d.?" I reply, "That's all right; you pay that out of what I pay you for eggs; and, by the way, I intend to get some of this cheese from other dealers, and you will, of course, pay them for it at the dividend rate." I am afraid there would be "nothing doing," except, perhaps, language. Ridiculous as such a proposal would be to commercial men, the Commissioners have ordained that an almost precisely similar one shall be not only made to, but practically forced upon, the medical profession, brains and work taking the place of cheese in the contract, and the disabled men that of the customers. Such proposals are not made to commercial men, to lawyers, or to trade unions, but are reserved for men who are credited with lack of the gumption to understand them, the spirit to resent them, and the *esprit de corps* and ability to combine which would enable them to reject them and insist on something reasonable. Such a body of men is, apparently, the medical profession, and the complacent explanatory statement of the Chairman of the Insurance Acts Committee may well be quoted as a proof thereof, unless the rest of the profession dissociates itself from him.—I am, etc.,

Swinton, Sept. 23rd.

J. PRICE WILLIAMS.

SIR,—Since writing on the subject of the new regulations (p. 438) I have been assured on the best authority that the temporary resident insurance dividend rate of approximately 95 per cent., upon which the payment of accounts under the new scheme is based, is absolutely and definitely fixed for at least one year, and probably two, until record cards are again in use.

My opposition to the new regulations was based mainly on the ground that the temporary resident dividend rate was likely to fluctuate within wide limits from year to year, and that our payments under the new regulations would suffer accordingly. As this is not the case (a vital point in the scheme, but one which has not, I believe, so far been made clear), I do not propose to offer any further objection to the scheme as a war-time expedient. Other disadvantages—for example, the departure from the principle of payment by capitation and the extra clerical work entailed—are of a minor character and not in themselves such as to invalidate the scheme.

I still hold to the opinion that a capitation rate would be preferable, and we must endeavour to secure this when the experimental period is over.

The method of procedure by which these new regulations have been enforced without Panel Committees having been afforded opportunity for the adequate preliminary consideration of them raises questions of a wider nature, of which more will shortly be heard.—I am, etc.,

London, N., Oct. 2nd.

A. S. DOWNTON.

SIR,—I should like to answer the specific questions which your correspondents ask me.

Dr. Bell, referring to the Conference resolutions authorizing the Insurance Acts Committee to voice the opinions of Panel Committees in central negotiations, asks whether I think these resolutions conferred plenary powers to agree to anything the Insurance Acts Committee

liked. My answer is. Certainly not. We have always been careful in meeting the Commissioners to disclaim any plenary powers. We do our best to let Panel Committees know what is going on, and to consult them if possible. In the present instance we should like to have had more opportunity for doing this, but in our actions we relied not merely upon the general resolutions to which Dr. Bell refers, but particularly upon the more detailed resolutions laying down the directions of the Conference upon this particular subject. To these directions we have adhered very strictly throughout.

Dr. Gardner asks me whether he is to understand that there is to be no system of checking excessive attendance on these men. My answer is, Yes; that is exactly what Dr. Gardner and others are to understand. The profession is to be relied upon to give the men adequate and proper attendance, and every item of attendance is to be paid for at the insurance rate.—I am, etc.,

London, N., Oct. 7th.

H. B. BRACKENBURY.

LONDON LOCK HOSPITALS.

SIR,—A great deal of misapprehension seems to exist in both medical and lay minds regarding the position of the London lock hospitals, so, at the request of the board, I have been desired to write asking you to be so kind as to insert this explanatory letter in the hope that it will clear away any misconception that may exist.

The male and female lock hospitals, which were founded in 1746, have been the principal centres for the treatment of venereal diseases in England since that date, and on the coming into force of the Venereal Diseases Regulations, 1916, the Lock Hospital immediately applied for approval under the new scheme. This was granted by the Local Government Board at the close of last year and a grant in aid is now received at both institutions towards the work being done, but the lock hospitals have always dealt with large numbers of cases in addition to those treated within the London County Council area, and experience has proved during the last nine months that more than ever is the hospital called upon to deal with cases of venereal disease that do not come within the scope of the new scheme, which it must be remembered only applies to venereal diseases in their early and communicable stages.

After allowing for the grant in aid referred to above the hospital has to raise in voluntary contributions a sum estimated at over £9,000 per annum, and the board earnestly desire that the medical and the lay public should realize the true position of the lock hospitals at the present time, when an idea appears to exist that the hospitals are entirely supported by grants from the Local Government Board, an impression which may seriously damage any efforts to obtain the necessary funds to carry on the important work at both institutions.—I am, etc.,

J. ERNEST LANE, Major R.A.M.C.(T.),
Member of the Board of Management and Chairman
of the Medical Committee.

London, W., Oct. 4th.

THE AIR WAR.

SIR,—I think it right to take exception to a paragraph in the latter part of your recent leader under the above heading. You quote the conviction of those on the spot that the damage done to a hospital base on the French coast in a recent raid, during which an American surgeon was killed, cannot be considered to have been accidental.

I was near that spot when the lamentable event took place, and I went the round of these hospitals on several successive days. A hospital base it certainly is, but cheek by jowl with the hospitals lie ammunition dumps, cement works, reinforcement camps, and training grounds, and I cannot believe that it is right to conclude, because one hospital was hit, that it was definitely aimed at. Surely, with so rich a harvest spread beneath him, it is incredible that an enemy aviator would deliberately waste bombs on so poor a target. I cannot refrain from expressing this view because, at the time it happened, one of our own journalists actually stated his belief that this raid was evidently carried out in order to intimidate, or wreak particular vengeance on, our American allies.

Surely the tale of German barbarity is enormous enough

without our having to make this particular charge, which, on the grounds I have stated, appears to me to be unjust.—I am, etc.,

ALEX. MACPHAIL,
Captain R.A.M.C.(T.).

London, E.C., Oct. 10th.

Obituary.

DR. JOHN WILLIAM DAVIES of Ebbw Vale, who died on July 19th, in his 68th year, took an active part in the local affairs of that district. He was the eldest son of Dr. John Davies of Brecon, Abersychan, and Ebbw Vale. He was educated at Christ's College, Brecon, and received his medical training at Edinburgh University and Guy's Hospital. After practising for three years at Clun, Shropshire, he removed in 1880 to succeed his father as surgeon to the Ebbw Vale Steel, Iron, and Coal Co.'s workmen. He held the appointment of Medical Officer of Health to the Ebbw Vale Urban District Council for thirty-seven years, and was also district medical officer and public vaccinator to the Bedwelly Union, certifying factory surgeon, and school medical officer. The lately formed Maternity and Infant Welfare Centre, of which he was medical officer, had his warm sympathy and support, and he entered heartily into the arrangements being made for baby week in the town, but, unfortunately, did not live to see the accomplishment of his schemes in that direction. He took an active interest in military work, and was instrumental in the formation of the 1st Welsh Field Ambulance, of which at the outbreak of the war he was lieutenant-colonel. It was a keen disappointment to him that, in consequence of failing health, he was unable to undertake active service and was placed on the retired list. Dr. Davies leaves a widow and large family, one of the sons at present serving as captain in the R.A.M.C.

DR. JAMES MILNE of Wincobank, Sheffield, passed away in the early morning of September 25th with tragic suddenness. Dr. Milne was born at Keith, Banff, in 1866, and received his early education there. Later he entered Aberdeen University, graduating M.B., C.M. in 1888. For a time he practised in Wales, but eventually he settled in Sheffield in 1893. He conducted a large practice and was universally respected by his patients and medical brethren. He was a member of the Sheffield Medico-Chirurgical Society and an old and loyal member of the British Medical Association. He was an original member of the Attercliffe Medical Guild which was founded in 1906. His energies were devoted solely to his profession. He was of a shy disposition and took no part in public affairs. He was buried at Kimberworth on September 29th amid signs of general mourning. A large number of his patients and friends showed their respect by their presence at the graveside. He leaves a widow, two sons (one in the army), and a daughter.

Universities and Colleges.

UNIVERSITY OF LONDON.

MATRICULATION EXAMINATION.

At the matriculation examination last month 266 candidates were successful, of whom 32 were placed in the first division; 15 supplementary certificates were granted, of which 10 were in Latin.

UNIVERSITY COLLEGE.

Three public lectures will be given in the Chadwick Departments of Municipal Engineering and Hygiene and Town Planning, as follows: On Thursday, October 18th, on "The effect of the war on municipal engineering and public health," by Mr. H. Percy Boulnois, M.Inst.C.E.; on Thursday, November 1st, on "Sanitary work in the army," by Major Arthur J. Martin; and on Thursday, November 15th, on "Some general aspects of town planning after the war," by Professor S. D. Adshead, F.R.I.B.A. The lectures will begin at 5.30 each day.

UNIVERSITY OF GLASGOW.

At a graduation ceremony, held on October 8th and presided over by Principal Sir Donald MacAlister, the following degrees were conferred:

M.B., Ch.B.—"Maud C. Cairney, B. W. H. Fergus, J. B. D. Galbraith, K. J. A. Gillanders, W. M. Kerr, Elizabeth C. McHaffie, J.

Macleod, Alice J. Marshall, Margaret M. Morton, F. L. Richard, A. Riddell, S. M. Riddick, I. M. Robertson, Jessie N. Robertson, J. A. Stewart, J. T. Taylor, W. H. Wallace, J. P. White.

* With commendation.

Mr. J. S. Martin, who graduated on July 21st, gains the Brunton Memorial Prize of £10, awarded to the most distinguished graduate in medicine of the year.

CALENDARS.

THE *Glasgow University Calendar*¹ for the year 1917-18 appears in a modified form owing to the exigencies of the war. Notification, too, is made of the fact that the list of classes to be held this year can only be regarded as provisional, for the same reason. For the rest, the volume contains the mass of detailed information and the lists of names customary in these indispensable works of reference.

The *Calendar of the National University of Ireland*² for the year 1917 contains an account of the work of its three constituent colleges in Dublin, Cork, and Galway, and its recognized college at Maynooth, together with the lists of teachers, examinations, examination results, and so forth that constitute the bulk of useful publications such as this.

¹ *The Glasgow University Calendar for the Year 1917-18*. Glasgow: J. Maclebose and Sons. 1917. (Cr. 8vo, pp. 442.)

² *Calendar for the National University of Ireland for the Year 1917*. Dublin: Alex. Thom and Co., Ltd. 1917. (Post 8vo, pp. viii + 579.)

The Services.

INDIAN MEDICAL SERVICE.

THE Secretary of State for India again announces that a limited number of appointments to meet the indispensable needs of the Indian Medical Service will be made on the recommendation of a special selection committee; full particulars can be obtained from the Secretary, Military Department, India Office, Whitehall, S.W.1. Applicants must be between the age of 21 and 32.

Medical News.

THE vacancy to the chair of natural history in the University of St. Andrews, caused by the retirement of Dr. McIntosh, has been filled by the appointment of Mr. D'Arcy Wentworth Thompson, C.B., professor of natural history in the University of Dundee.

THE Joint Committee on Ophthalmology and Otolaryngology of the United States Medical Board has under consideration a scheme for the organization of a section on brain surgery. If necessary, schools under the direction of brain specialists will be established in Chicago, Baltimore, New York, and Philadelphia.

THE sixth edition of Sir Patrick Manson's *Tropical Diseases* is ready for publication. It has been revised and enlarged, and the sections on mosquitos, tsetse flies, and ticks have been brought up to date by Lieut.-Colonel Alcock, C.I.E., F.R.S., of the London School of Tropical Medicine.

DR. CHARLES JOSEPH MACCORMACK, one of the medical inspectors of the Local Government Board in Ireland, has been appointed inspector of reformatory and industrial schools, and medical member of the Prison Board, Ireland, in succession to Surgeon-General D. E. Flinn, who has retired after a long period of service.

AT a conference arranged by the British Hospitals Association, when the chair will be taken by Mr. H. Wade Deacon, Chairman of the Royal Infirmary, Liverpool, the Rev. G. B. Cronshaw, Chairman of the Radcliffe Infirmary, Oxford, will open a discussion on the increase of grants for the treatment of soldiers and the proposed payment for discharged soldiers. The meeting will take place on Thursday next, at 3.30 p.m., at the Westminster Hospital.

AT a meeting of medical practitioners in the York area, held on October 6th, a resolution was unanimously adopted protesting against the new regulations as to invalid seamen and soldiers issued by the National Insurance Commissioners and expressing the opinion that the regulations are unfair to both patients and doctors, and should be replaced by a system securing adequate attention for the disabled men and adequate remuneration for the practitioners attending them.

MR. SAMUEL CRADDOCK, who became a member of the profession by taking the diploma of M.R.C.S.Eng. in 1856, is just about to complete fifty years' occupancy of the office of coroner for North Somerset; for five years previously he was deputy coroner both for the northern and the eastern divisions of the county. Altogether he has

conducted some 3,000 inquests, and although he is now 84 years of age still continues to attend all inquests himself, notwithstanding the great area he has to cover and the remoteness of some of its districts.

THE general annual meeting of the Auxiliary Royal Army Medical Corps Funds will be held at the Royal Army Medical College, Grosvenor Road, London, S.W., on Friday, October 26th, when the Director-General A.M.S. will take the chair at 3 p.m. Officers of the R.A.M.C. Auxiliary Forces whose subscriptions shall have been received on or before Saturday, October 13th, are invited to attend. The Secretary of the Funds is Lieut.-Colonel E. M. Wilson, R.A.M.C., 124, Victoria Street, Westminster, S.W.1.

AT the opening meeting of the thirty-sixth session of the West London Medico-Chirurgical Society, held at the West London Hospital on October 5th, Dr. A. J. Rice-Oxley, having been inducted to the presidency by the retiring president (Dr. E. A. Saunders), presented the latter with the Keetley Memorial Medal, and expressed the appreciation of the society for his work during the past session. Dr. Rice-Oxley then delivered an address on "The medical man as portrayed in English literature," for which, on the proposal of Dr. Clippingle, seconded by Major McAdam Eccles, he received a hearty vote of thanks.

AT a special meeting of the London Panel Committee on October 9th to consider the provisional regulations relating to medical benefits of invalided seamen, marines, and soldiers, it was resolved to approach the Commissioners in order to obtain the immediate withdrawal of the regulations. A resolution was adopted advising practitioners on the panel for the County of London to notify the Insurance Committee that they are not prepared to accept discharged and invalided sailors and soldiers on their lists under the terms of the new regulations, but that they are prepared to agree to the reinstatement of discharged and invalided sailors and soldiers on their lists in accordance with the arrangement which has hitherto prevailed, and that they are prepared to render such men all necessary attention and treatment at the present capitation rate pending negotiations with the Commissioners for a more equitable scheme. A further resolution was also carried to the effect that a communication be addressed to the staffs of the principal London hospitals expressing the hope that they would urge upon the governors the necessity of restricting the services rendered to these patients to those of a specialist or consultative character and of dealing only with such cases as were at the same time under the general control of a general practitioner.

ON the occasion of the entry into office of the new Master, Dr. Charles Sangster, a service was attended by the Society of Apothecaries of London, on October 9th, at the church of St. Andrew-by-the-Wardrobe, Blackfriars. Among those present were the Wardens, Colonel Connolly, A.M.S., and Mr. Samuel Osborn, F.R.C.S., Surgeon-General W. B. Slaughter, Deputy Surgeon-General J. H. Jeffcoat, and Surgeon-Major E. Colson (members of the Court), Surgeon-General Sir George Makins, Dr. de Havilland Hall, Dr. Vincent Dickinson, Dr. F. S. Palmer, and Dr. H. S. French. The service was conducted by the Rector, the Rev. P. Clementi-Smith, and an address was delivered by the Rev. C. H. Sangster, son of the Master.

THE second number of *Recalled to Life*, the journal specially devoted to the care, re-education, and return to civil life of disabled sailors and soldiers, contains among other interesting matter a note by Mr. G. J. Wardle, M.P., on the attitude of the Labour Party to the question of the treatment of disablement caused in the war. The party, he says, desires that the best treatment should be afforded, and that every appliance ingenuity can devise or skill suggest should be devoted to the restoration and aid of those who have become disabled. It desires that by training and re-education they should be aided to become self-supporting members of the community, whether they were men having a special trade before they joined up but whose wage-earning capacity is capable of improvement by further instruction, or whether they had no special trade. Subject to there being no diminution in the standard of living, or possibility of the disabled man being used to defeat the objects of the trade unions, those bodies desire to assist the disabled man in every possible way to secure employment on remunerative work. If a disabled man is able to do the same work as others, the fact that he is in receipt of a pension must not be allowed to interfere with his receiving the same rate of wage; if he is not able to do this, arrangements must be made by joint agreement between trade unions and employers to protect both the man himself and those who are working alongside of him.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are:

1. **EDITOR** of the *BRITISH MEDICAL JOURNAL*, *Aitiology*, *Westrand, London*; telephone, 2631, Gerrard.
2. **FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. **MEDICAL SECRETARY**, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.
The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the *BRITISH MEDICAL JOURNAL* are devoted will be found under their respective headings.

QUERIES.

D. M. wishes to know of a useful and practical short work on chirepody and the minor diseases of the foot.

THE EFFECT OF QUININE ON THE EAR.

T. L. writes: A patient who some years ago suffered from ear trouble caused by guntire was advised by an aural surgeon never to take quinine even in small doses. Duty now calls him to West Africa, where the taking of quinine as a prophylactic is imperative. Is there any reason to believe that quinine has a permanent effect on the ear mechanism?

CEREBRO-SPINAL FEVER AND ITS TREATMENT.

CAPTAIN A. M. WATTS, M.D., R.A.M.C.(T.C.) writes: With regard to the letter from Dr. Alwyn Stewart (October 6th, p. 469), I should like to ask him what kind of serum he has been in the habit of using. He says that it has been his practice to give 100 c.cm. of serum intravenously, and in addition 300 c.cm. as the initial dose subcutaneously. Now the dose of the Lister Institute serum is 30 c.cm., and that of the Rockefeller Institute 20 c.cm., which is very much less.

I am anxious to know why he excludes from his corrected column of statistics "hopeless cases and those of 35 years of age and over." How does he define a hopeless case? Then, again, he uses lumbar puncture only in mild cases. What does he consider a mild case?

Serum he gives intrathecally, subcutaneously, and intravenously in certain cases which he says were all severe. May I ask what constitutes a severe case?

LETTERS, NOTES, ETC.

TREATMENT OF VINCENT'S ANGINA.

DR. PERCY NEWELL (Margate) writes: It is to be hoped that such a remedy as salvarsan, which Dr. Trotter describes (p. 469) as unsatisfactory and expensive for general use (he might have added also dangerous, will not come into general use for the treatment of Vincent's angina. The local application of tincture of iodine or liq. sodae, with potassium chlorate given internally, will cure all cases of the disease, without "burning down the house to roast the pig."

COMFORTS ON A LONG JOURNEY.

A CAPTAIN R.A.M.C. who has recently made a somewhat lengthy journey by train and boat, encountering hot weather on the way, sends the following notes for the benefit of inexperienced travellers:

1. Take a water bottle and lose no opportunity of filling it with drinking water; it must not be supposed that any

particular train, camp, or boat will have a sufficient supply to make this unnecessary.

2. Similarly with food. Always carry reserve food. It is better to eat badly in your tent than to wait perhaps hours for the official dinner.

3. You must have a canvas bucket if you want to wash; a bath packed in the luggage van or the hold is of no immediate value.

4. You will certainly need chlorodyne or cascara, and also toilet paper.

5. Some camps are several hot, dusty miles from the station or quay.

6. Every one but yourself is a born thief. Borrow all you can, lend nothing, and leave nothing lying about.

7. The following, most of which can be packed and kept in a large haversack, are necessary: A few thin books of the sort that can be read more than once, a tin mug, knife, spoon, and fork, a knife with corkscrew and tin opener, a pair of shoes (soft), washing and cleaning materials, writing material, a small clothes brush (also used for brushing seats of carriages, etc.), a trench candle.

8. According to taste, take also a pack of cards, a pound of tobacco or cigarettes, and not less than £10 in notes.

9. Always remember that you must depend on your own initiative to obtain such decencies and comforts as are available.

PYORRHOEA ALVEOLARIS.

DR. VAUGHAN PENDRED (East Sheen) writes: It is high time that a strong protest was raised against the very modern craze of pyorrhoea alveolaris. As a general practitioner I have seen many cases that have consulted physicians, with the result that if nought else could be found, the symptoms were referred to a pyorrhoea—in several cases, I regret to say, in my experience non-existent. I have seen several people rendered edentulous because of pyorrhoea, but in not more than 10 per cent. have I seen the slightest advantage gained. A lady was recently taken to a consultant for neurasthenia—all her teeth were removed, with the result that she has become a hopeless nervous wreck. Our profession is for ever flying off on some new scare that lasts perhaps three years and then dies, as, indeed, it as a rule deserves. Fortunately, the greater part of these crazes are harmless, but this is causing an infinite amount of sorrow and injury. The claim that pyorrhoea is the universal cause of everything that avoids diagnosis is too scandalously unscientific to need comment. Sometimes the removal of the teeth does good, but to sentence everybody on the discovery of some baneful microbe to have teeth removed—or all their teeth—is monstrous. It is gravely trying the general practitioner, who has a steadier, more equipoised, mind than the consultant. Twice recently I have injected autogenous microbic preparations for consultants without the smallest improvement of the symptoms.

BOMBING THE RED CROSS.

We mentioned last week that the French authorities are convinced that the Germans have deliberately employed aeroplanes to bomb advanced hospitals. *Le Journal* of Paris, which since the beginning of the war has published many excellent caricatures, printed at the end of last month a sketch by Raoul Vion, which we have ventured to reproduce. The legend is: "Kamarad; Kamarad; not the Red Cross!"

CORRECTION.

In the leading article on the treatment of cerebro-spinal fever in the *JOURNAL* of September 22nd there was an obvious misprint in line 39, page 394, where the word "fever" should have been "fluid."

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0 5 0
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An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postea* restant letters addressed either in initials or numbers.



Remarks

ON

THE TREATMENT OF INFECTED, ESPECIALLY
WAR. WOUNDS.

By RUTHERFORD MORISON,

PROFESSOR OF SURGERY, DURHAM UNIVERSITY; SENIOR SURGEON,
NORTHUMBERLAND WAR HOSPITAL.

If any one had told me two years ago that it would be possible to treat large infected wounds in such a manner that they required no special drainage, that they could be safely closed by sutures at any period of their progress, and that the dressings used for them could be left unchanged for from one to six weeks, with a knowledge that healing was making steady progress, I could not have believed it. There cannot now, however, be any doubt of all of these statements, because each one has been proved in hundreds of instances, not only by my cases but by those of others.

These results have been achieved, firstly, by thorough cleaning of the wound and its surroundings, and then the use of antiseptics.

The antiseptics are 1 in 20 carbolic lotion for the skin, cleaning with alcohol and the use of an antiseptic paste for the wound.

The following directions are those given by Sergeant Hunter, dispenser to the Northumberland War Hospital, for the preparation of the paste:

Preparation of the Paste (Bipp).

Iodoform 16 oz., bismuth subnitrate 8 oz., liquid paraffin 8 fl. oz., or a sufficient quantity. The powders are mixed together in a mortar, and the liquid paraffin incorporated. The quantity of liquid paraffin required varies according to the bulk of the powders, the bismuth in particular being liable to a considerable variation in bulk. A sufficient quantity should be added to form a paste. It is then advisable to rub down the paste, in small quantities at a time, on a slab with a spatula, to ensure freedom from grit and dry particles of powder.

I have called this paste "Bipp" because the name indicates its constituents and their proportions, and because a short title is convenient.

One drawback of this method, to which others as well as myself, in both of my published papers, have drawn attention, is the risk of iodoform and bismuth poisoning. (See also Case I.) In our earlier work we used the paste too generously, with the result that some patients suffered from absorption. Since smearing the surface of the wounds and rubbing in the Bipp, removing any excess, we have had no trouble of this sort.

Another drawback is that as iodoform and bismuth are both opaque to x rays, there may be difficulty in the discovery of foreign bodies and unsatisfactory pictures of fractures taken after the paste has been applied.

The method is not ideal—I have never claimed that for it—but the advantage to patients in saving of lives and limbs and suffering, and to those in charge of them in work anxiety and expense is so important at the present time that I feel no hesitation in repeating, to a large extent, what I have previously stated elsewhere.¹ The clinical, bacteriological, and chemical effects of this treatment have been dealt with in two papers² by Drs. Louisa Garrett Anderson, Helen Chambers, and J. N. Goldsmith, with such efficiency that it would be difficult to add anything to them.

My present object is to draw further attention to the technique, which though very simple is seldom carried out quite as I have suggested. It is certain that better methods will be, and may already have been, found; but some of the failures I have seen have clearly been due to faulty surgery and not to the method of treatment. About half of the patients in the latest convoys sent to the Northumberland War Hospital have been so treated. In spite of some incomplete successes all of my colleagues there are agreed that the best wounds by far result from it.

In my previous papers I have tried to emphasize the value of my method in fractures by records of cases and a statement of some results. Compound fractures of all the bones can now be treated with as great ease both to the patient and surgeon as simple fractures are.

Though it is desirable to see the bottom of all wounds, it may be occasionally unwise. A through-and-through

wound, with small entrance and exit openings, may be generally cleansed satisfactorily by passing a long strip of gauze through it and pulling this to and fro as a first step, next by doing the same with a strip of spirit gauze, and finally depositing a layer of Bipp on the inner surface of the wound by spreading a long strip of gauze with the paste, passing it through the track and rubbing in the medicament by pulling the gauze backwards and forwards again and again.

Dissecting out the wound is unnecessary, and in the hands of surgeons who are insufficient anatomists may be dangerous. The most that should be done in this respect is to remove only such portions of tissue as are obviously dead. The drier a wound can be made the better, but some haemorrhagic oozing does not bar success.

Several wounds bipped at the front have arrived here with drainage tubes or tissue drains or gauze packs in them, and most of them unsutured. Presumably this is from fear of gas infection, and this is too serious a question for any one not dealing with many fresh wounds to attempt to answer, and even with much opportunity it should take considerable time and careful handling. My own experience has been that the fresher wounds are the better they react to Bipp treatment, and I have now closed several without tube or other drainage than is allowed for between interrupted sutures, not too close together. From these the bacteriologist has cultivated *Bacillus perfringens*, tetanus, and a variety of other anaerobic organisms, but the results have always been good.

Silkworm-gut sutures appear to be favoured at the front, and for ordinary septic wounds I recognize that they are best. Thick sterile silk, soaked in tincture of iodine, or dry and rubbed all over with Bipp (for this hint we are indebted to Major Home of the New Zealand Army), is, I think, better for bipped wounds. Silkworm gut is more likely to cut through, and as sutures should be left for a longer time than ordinary, and take a larger, deeper bite of the tissues, silk seems more satisfactory. Especially when granulating surfaces are brought together union is slower than when fresh surfaces are joined, and if sutures be removed too soon, wounds which appear to be healed may open up again; therefore our rule is to leave the sutures for three weeks. For the skin alone, and as accessories, silkworm gut is efficient.

With very few exceptions I close the wounds with interrupted sutures, and even in those most acutely infected have seen no bad results. Indeed, it is especially in such cases that our greatest triumphs have been evident. (See Cases II and IV.)

After the first dressing has been removed, if the wound is clean, granulating, and superficial, we generally now discard Bipp and use ordinary daily dressing, which allows of more rapid healing.

We treat all our wounds with Bipp unless they are small, or superficial, or obviously doing so well as to be best left alone. In some instances, however, especially in cases of compound fracture of the femur which appeared to be so well as to require no heroic measures, we have had to regret this conservative attitude. A flare up later has necessitated free opening and the treatment which should have been undertaken earlier, before active, widespread infection made it both more serious and more difficult.

CASE I.—Case of Bipp Poisoning sent from the Front, with Multiple Wounds.

A private was wounded on June 22nd, 1917, by a shell. A note from France says:

"June 22nd, 1917. C. C. S., penetrating wound from radial to ulnar side, right forearm. Splinter punctures left hip, thigh, and foot. Abrasions right thigh and lower leg. Incised wound right scapular region. Forearm wounds excised. Foreign body removed. Elbow-joint opened; internal condyle chipped. Bipp.

"June 23rd. Two superficial wounds back closed over Bipp, three wounds, buttock explored; one small piece of metal found; track led to coccyx, which was fractured; third track led into glutei, but did not suggest penetration. All tracks were small; Bipp in each. Right elbow opened on inner side; wound excised with long fragment track, and joint filled with Bipp and closed."

On admission to the Northumberland War Hospital on July 16th, the note made was as follows: A fair, pallid, delicate-looking man of poor physique and with old pyrrhoea. No pain in any of his wounds. Over radial border of right forearm, 2 in. below the elbow, an incised wound, 2 in. long, covered with a scab, healed stitch marks on either side. Over flexor surface of right elbow-joint near ulnar border, a round wound size of a

* This is the type of patient most likely to suffer.

shilling, with Bipp in its depths and very little discharge. This lay in the centre of an inner wound, about 5 in. long, and healed in the rest of its extent and with stitch marks on either side. The remaining wounds were all in satisfactory condition. There was a blue line on the gums at the roots of all the teeth. Though the patient showed no general or local symptoms of poisoning, it seemed as if serious absorption of bismuth was probable.

CASE II.—Case of Compound Fracture of the Ankle-joint: Acute Infection.

A stout alcoholic woman of 60 was admitted to a private hospital on Monday, January 15th, 1917.

History.

On the Saturday night previous to her admission she was getting off a tram car and "went over" on her left ankle. She had great pain but managed to walk home, about five minutes' distance. The doctor who saw her found a compound fracture of the left fibula near the ankle joint. Her foot was lying on its outer side, and was placed backwards. X rays showed fracture of the left fibula $1\frac{1}{2}$ inches above the ankle-joint, fracture of the inner malleolus of the tibia, and displacement of the foot outwards and backwards.

The patient came under my care sixteen days after the accident. I am indebted to Dr. Eleanor Walkinshaw for these notes:

She never did well from the time of the accident (see Chart 1)—always complaining of pain in her leg and sleeping badly. I think it probable she would have developed delirium tremens but for a plentiful supply of egg and milk and rum.

Operation (by Professor Morison).

On January 31st the foot and lower part of the leg were swollen to double their normal size, the skin covering the lower third of the leg and foot was bright red and oedematous, and deep fluctuation could be felt.

A long incision—about 6 inches—was made upwards on to the leg and downwards on to the dorsum of the foot from the suppurating wound over the lower end of the fibula. From 4 to 6 oz. of pus escaped. The pus had burrowed upwards between the extensor muscles under the deep fascia and downwards into the ankle-joint. A portion of loose bone was removed from the lower end of the fibula, and the fracture was found to communicate with the ankle-joint. A finger in the ankle joint found the head of the astragalus bare. The edges of the wound

I thought it unlikely that she had any chance of recovery except by amputation, and I do not doubt that any surgeon would have agreed with such an opinion. I know of no other means which could have been used to save this life and leg.

CASE III.—A Fresh Gunshot Wound Treated with Bipp.

Notes by Dr. ELEANOR WALKINSHAW.

History.

The patient was brought in within six hours after having his foot badly lacerated by a shot from a sporting gun. He and his brother were walking together—the latter carrying a loaded gun muzzle downwards, which somehow went off and wounded the patient.

On Admission.

The foot was found to be badly lacerated, and the fourth and

fifth toes and a considerable portion of the outer part of the foot were missing. The jagged ends of the metatarsal bones were projecting into the wound. The second and third toes were damaged beyond repair, the soft parts being pulped and the phalanges fractured.

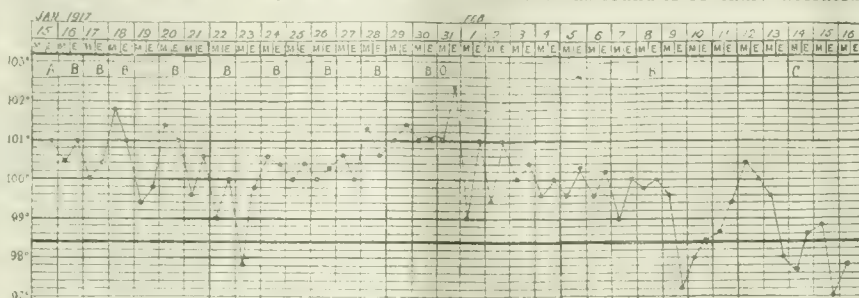


CHART 1.—Case II. A, Admitted. B, Aperiect. O, Operation. C, Wound dressed.

Operation (by Professor Morison).

Soon after admission amputation of the second and third toes was completed. The foot was trimmed up, and the projecting bits of the metatarsal bones were removed. The whole wound was dried, swabbed with spirit and bipped. The skin, some of it badly damaged, was sutured over under tension, with thick silk sterilized and steeped in tincture of iodine. The skin that was damaged and tense was scored all over.

After-Progress.

A fortnight after the operation (see Chart 2) the wound was dressed for the first time. The dressing was almost dry. The large inner part of the wound was healed, but at the outer portion where tension had been greatest and the skin most damaged, there was an area of 1 in. to $1\frac{1}{2}$ in. still unhealed. Bipp was applied again.

January 27th, 1917. Wound quite healed. Patient went home.

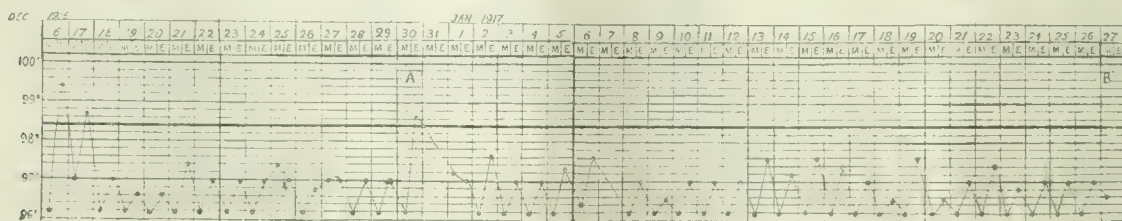


CHART 2.—Case III. A, Wound dressed; almost healed. B, Wound dressed; all healed.

were separated by retractors, and the whole of the infected cavity was exposed. It was carefully cleansed, first with dry gauze, then with spirit gauze, in every part of it. The whole interior was then scrubbed with Bipp, including the ankle-joint. The incision wound was closed with five thick silk interrupted sutures soaked in tincture of iodine, but the edges of the original wound could not be brought together. The wound was dressed with Bipp spread on sterile gauze, and over abundant cotton-wool two lateral Gooch splints were applied.

After-Progress.

The night after the operation was the best the patient had had since her accident, and she rapidly recovered her appetite, sleep, and health. (See Chart 1.)

First dressing, February 15th (fifteen days after operation).—There was very little discharge on the dressing, not more than $\frac{1}{2}$ oz. of dark, slimy, thick matter. The incision wound had entirely healed and the sutures were now removed. The original wound was dressed with Bipp, the leg was bandaged in plaster-of-Paris, and the patient went home.

Second dressing, March 15th (one month after the first).—The plaster was removed, the wound was found to be entirely healed, and the patient was sent home "cured" after her accident. In three months' time she was walking about well.

When I found the condition of this leg and heard the history of the patient's habits and general condition,

CASE IV.—Wound of Hand, Infection of Palmar Bursa probably through Tendon Sheath of Little Finger.

Notes by Dr. NORAH MURPHY.

A private, aged 19, admitted to the Northumberland War Hospital on July 16th, 1917.

History.

Wounded at Ypres on July 6th by shrapnel. Sent to casualty clearing station same day. Note states: "Fourth and fifth fingers removed, wound excised and fracture of carpus—bipped." First inoculation July 6th; second July 9th, because patient showed slight tetanic symptoms.

On Admission.

Hand.—There was an extensive granulating wound extending from the base of the thumb along the radial side of the second metacarpal to the base of the first two fingers down on to the palm and up as far as the wrist. The whole hand, excepting the thumb and index finger, which were fairly movable, was one large wound (see Fig. 1). The fourth and fifth fingers with the corresponding metacarpals had been removed—the third finger was dislocated at the metacarpo-phalangeal joint, and the metacarpal bone was fractured. The extensor tendon to this finger stretched across the dorsal aspect of the wound as a slough. The edge and granulations looked well, there was very little discharge, but on pressing the lower third of the forearm

some pus escaped from the upper part of the wound. The wrist-joint was slightly swollen and a little red. There was no oedema.

Head.—There was a small penetrating wound over the left malar bone; looked clean; had been bipped. Patient had a "black eye" on left side.



FIG. 1.—Condition of hand on admission (Case 1).

Thigh.—Along inner side of left thigh immediately above the internal condyle of femur there was a clean, granulating wound, about 5 in. by 2 in. in size; it had been bipped.

General condition of patient good, but temperature and pulse raised.

First Operation.

On July 20th the forearm was incised on the palmar surface just above the radial side of the wrist-joint; free communication with dorsum made. Bipping. No sutures. Small piece of loose bone removed from left malar.

July 26th. Temperature and pulse still high (see Chart 3). Hand fomented; free discharge of sero-pus.

Second Operation.

On July 27th the upper edge of the dorsal part of the wound was reflected, and about $\frac{1}{2}$ oz. of thick yellow pus let out.

The carpal bones were found to be embedded in pus; all removed excepting the pisiform, trapezium, and trapezoid. There was a tiny erosion of the cartilage over the lower end of the radius. Bipping. No sutures.

July 30th. Temperature and pulse still high. Face wound healed. Hand fomented. To be operated upon to-morrow.

Third Operation (first by Professor Morison).

On July 31st the wound on the flexor surface of the forearm was enlarged sufficiently to expose the whole of the palmar bursa. Good through-and-through communication made with dorsum of hand. Wound cleaned, first with dry gauze, then spirit gauze, and finally bipped gauze pulled through and Bipp rubbed in by to-and-fro movements of gauze. Wounds closed with thick silk sutures.

August 1st. Temperature normal, pulse 100. Patient very well.

August 7th. Temperature and pulse normal.

Fourth Operation (second by Professor Morison).

On August 10th an incision made along the ulnar side of the middle finger; phalangeal bones removed. The skin of the finger was turned down over the wound and practically the whole granulating surface covered (see Fig. 2), leaving only two

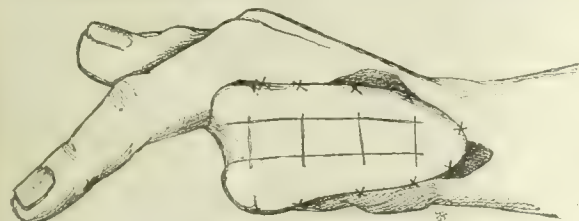


FIG. 2.—To show condition after operation. The crosses indicate stitches. The transverse marks on the transplanted flap represent scores into the skin to diminish oedema as an aid in the prevention of gangrene.

small areas about $\frac{1}{2}$ in. on uppermost edge uncovered by skin. The flap was sutured loosely with thick silk, and cross incisions made over the skin surface (see Fig. 2). Bipp gauze laid over the stump. There was very little bleeding on removing the tourniquet.

August 11th. Patient very well. No rise of temperature.

August 24th. First dressing after second operation (fourteen days). Dressing blood-stained, almost dry. No sign of infection of wound, and finger appeared to have healed over raw

area. Sutures undisturbed. (The dressing was done to show surgical visitors the case, otherwise it would have been left unchanged for another week.)

August 31st. Healed except for small granulating area size of a 3d. piece on dorsum at root of thumb. All stitches removed.

Gunshot wounds of the knee-joint are reported among the most serious injuries. My personal experience of them has been limited to wounds of some duration, so that I can only suggest a method for trial with Bipp.

Clean bullet wounds so often heal well that they are exceptions, and should be dealt with on ordinary lines. If the joint goes wrong, or the injury is complicated by a fracture, or the wound is due to large shell fragments, my treatment would be:

1. Apply extension strapping or glue dressing below the knee.
2. Disinfect the skin surrounding the wound and the joint (1 in 20 carbolic).
3. Apply a tourniquet.
4. Cover up everything except the knee with sterile and moist antiseptic towels.
5. Open the joint through a horseshoe-shaped incision, dividing the patellar ligament and the musculo-aponeurotic structures on each side of the joint, but avoiding damage to the lateral ligaments on either.

6. Reflect the patella, exposing the joint and subcutaneous pouch. Mop—gently, very gently, not scrub or wipe—with dry sterile gauze, any discharge from both.
7. Flex the joint fully, and clean the posterior portion of the cavity by gentle dry mopping.

8. Gradually

extend the joint; fill it with spirit and gently mop dry.

9. Remove the tourniquet with the limb elevated to a right angle, and keep it there with the joint compressed under gauze pads for four minutes. Then clamp any bleeding points with Lane's haemostatic forceps.

10. Rub a thin layer of Bipp over the whole joint surfaces with a finger. Rubber gloves are understood.

11. As soon as bleeding has ceased suture the patellar ligament with strong mattress sutures and close the remainder of the deep incision with interrupted catgut sutures, holding the joint capsule with interrupted sutures of fine catgut. Close the skin with interrupted sutures of thick dry sterile silk smeared with Bipp.

12. Dress the wound with gauze wrung out of spirit, and over this abundant cotton-wool but no bandage.

13. Fix the limb with two—inner and outer—Gooch splints, the inner reaching from perineum to sole of foot, the outer from tip of trochanter to sole. On top of the ordinary bandage apply an oblique one at the top, another above and below the knee, and one above the ankle, of plaster-of-Paris.

14. As soon as the patient is in bed apply a 15 lb. weight for continuous extension.

Unless there is need the dressing should not be changed for three weeks. As soon after as the wound is healed movements and massage should commence.

Preparation, Sterilization, and Keeping of Bipp.

Mr. Sidney Dunstan, chemist and dispenser to the Royal Victoria Infirmary, has supplied a note as to his preparation and sterilization of Bipp and for keeping it in very convenient tubes.

The method adopted by myself in making Bipp is as follows:

Iodoform	...	...	...	440 grams
Bismuth subnitrate	...	...	...	220 "
Paraffin	...	...	...	220 "
M.S.A.				

The bismuth and paraffin are sterilized by dry heat at a temperature of 120 C. for half an hour, the bismuth after

cooling is mixed with the iodoform in a mortar which has been sterilized by means of boiling water and formalin. The paraffin is added to the mixture at a temperature of 90° C. and thoroughly mixed, then put into specially made collapsible tubes with nozzle ends, holding 40 to 80 grams. The paraffin used should be semi-solid, odourless, and tasteless, melting point 45° C., free from acidity and carbonizable organic impurities. The iodoform should be free from moisture, acids, and fixed impurities. It is also necessary that the bismuth be chemically pure, free from arsenic, and care taken in sterilizing that the temperature does not rise too high, otherwise nitrous fumes will be evolved.

A paste made by this method is found to be fairly solid in consistency, shows no signs of separation or decomposition, and is perfectly sterile, as certified by Dr. Slade, bacteriologist to this infirmary.

Should a paste be required of a softer consistency the formula may be modified as follows:

Iodoform	...	...	...	440	grams
Bismuth subnitrate	...	...	...	220	"
Paraffin base	...	...	...	220	"
		M.S.A.			

Paraffin base:

Paraffin melting point 45° C.	...	...	19	parts
Paraffin liq., sp. gr. 880	...	...	40	"

Special tubes with keys, suitable for the above preparation, can be obtained from Whitelaw and Co., Saville Row, Newcastle-on-Tyne, and tubes ready charged with Bipp sterilized according to my method are obtainable from the Numol Company, 3, College Street, Newcastle-on-Tyne.

Though this method has been used chiefly for war wounds it is applicable, as Case II shows, in civilian cases. My colleague, Dr. Samuel Whyllis, tells me that the method has revolutionized mastoid surgery, and I have a report from a London throat and ear surgeon telling me how much benefit had followed its use in his work—in mastoid cases.

Summary of Technique.

1. Under an anaesthetic, usually open ether, cover the wound with gauze wrung out of 1 to 20 carbolic acid, and clean the skin and the surrounding area with the same lotion.

2. Open the wound freely and, if possible, sufficiently to permit of inspection of its cavity. A guide—a finger is the best if the size of the wound permits of it, and if not a thick probe—should be introduced to the bottom of the wound and held there and fully exposed. In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest, and of muscles themselves does little harm as compared with that of the disability following nerve damage. Cleanse the cavity with dry sterile gauze mops, Volkmann's spoon, etc., and remove all foreign bodies.

3. Mop the surrounding skin and the wound cavity with methylated spirit and dry it.

4. Fill up the whole wound with Bipp, rub it well in with dry gauze. Then remove all excess, leaving only a thin covering over the wounded surface. Dress the wound with sterile gauze and cover all with an absorbent pad, which is held in position by sticking plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain and constitutional disturbance. Should, however, discharge come through, the stained part must be soaked in spirit and a gauze dressing wrung out of the same applied as a further covering.

Redressing is very simply done. After removal of the old dressings the wound is covered with a dossil of wool soaked in spirit, and the sticky dirty-looking discharge is wiped off the surrounding skin until it is clean.

I am indebted to Colonel Adams for leave to publish the military cases.

REFERENCES.

- ¹ *Lancet*, August 12th, 1916; *British Journal of Surgery*, April, 1917.
² *Lancet*, March 3rd, 1917.

DR. WARDELL STILES of the United States Public Health Service urges careful examination of all recruits of the National Guard and National Army, especially from the south, for hookworm. The parasite was found in forty-seven among seventy-five recruits. Dr. Stiles calls attention to the great danger of carrying the infection from America to Europe.

REPORT ON WOUND TREATMENT BY BRILLIANT GREEN PASTE.

BY

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AND

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It has been abundantly proved by experience that to secure efficient sterilization of an infected wound it is necessary to apply antiseptic remedies, not occasionally, but continuously. There are two means of obtaining this end. The one is the use of the Carrel method of frequent introduction of fluids through rubber tubes, and the other is the thorough application of a paste to every hole and corner of the wound, as exemplified by the popular bipp of Rutherford Morison. Both these methods have drawbacks. The Carrel technique needs much attention, and when the patient is travelling this may not always be secured. The soaked dressings need daily changing. The tubes are liable to come out and it may need an anaesthetic to replace them. In "strafe" times it may be frankly impossible to devote sufficient time to carry it out.

Bipp is much less trouble, but presents drawbacks of another sort. It is occasionally poisonous, either from the bismuth or the iodoform, or both. It may delay healing; when the stitches are taken out after secondary suture the wound may fly open. It leaves a residue in the tissues, opaque to the x rays, which may give rise to trouble later. One of us has seen an unnecessary operation in England to remove iodoform from a hole in a tibia, suggesting in the skiagram a metallic fragment; and on another occasion, in civil practice, iodoform put into a tuberculous os calcis two years before was mistaken for a sequestrum.

We have therefore been employing for some months the paste introduced by Captain Hey, after long research into many methods, consisting of brilliant green, boric acid, French chalk, and liquid paraffin. It presents the following advantages:

1. It is non-poisonous. The symptoms of boric acid poisoning—persistent vomiting and a peculiar rash—should be watched for, but although in many cases we have used very large quantities of the paste we have seen no ill effect result from its use.

2. It is painless.

3. In the great majority of cases it almost completely sterilizes the wound in three days, so that secondary suture can be performed even in large wounds complicated by bony injury. Small, completely excised wounds can be primarily sutured.

4. The wound need only be dressed about once in four days.

5. No permanent residue is left to interfere with immediate healing.

Before applying the paste the wound must be thoroughly opened up and excised, and any foreign bodies removed. If this is not possible—for example, in a shocked patient with multiple wounds or with a long deep track exposing important structures—we prefer to use Carrel's method. The paste is only to be applied if it can be applied completely. The wound ought to be dry and not bleeding, but a certain amount of oozing can be checked by a gauze plug (preferably paraffin gauze, which is easier to remove). The paste should be rubbed in thoroughly. It soon washes off the skin or gloves.

By this method we have been able with fair consistency to obtain healing within a fortnight of cases of compound fracture even when complicated by joint injury, big buttock wounds and deep muscle wounds. We have excised an elbow-joint full of pus, and obtained primary healing in a fortnight.

The usual procedure is to stain the track of the missile, excise and paste it, and either leave it open or insert a few central sutures. On the third or fourth day a smear of the deepest part of the wound is taken. If *B. perforans* is absent, as is almost invariably the case, and the organisms are not more than six to the field, we completely close the wound by secondary suture. Often the

wound shows no organisms at all. It is easier to count the organisms with this method than when bipp has been used. A little redness and swelling on the fourth day can usually be remedied completely by hot fomentations.

We find that Hey's method of staining the wound by injecting through a Carrel's tube with a 1 in 200 watery solution of brilliant green is a very valuable aid to complete excision.

In ten cases it will be observed that the method has failed of complete success. Of these, four (Cases 10, 17, 23, and 33) were hopeless from the beginning. One of them (Case 23) was an attempt to save a leg in which it was afterwards found that both tibial arteries were divided in addition to the presence of a big muscular wound and a smashed tibia and fibula. The excision was inadequate owing to shock and consequent hurry, and it became necessary to amputate for gas gangrene. In another (Case 10), in which death followed within forty-eight hours from gas gangrene, the bad condition of the patient did not permit of a prolonged search for the foreign body. The appearance of the wound at the time of operation suggested early gas gangrene, which had already spread too far for complete excision. The other two (Cases 17 and 33) are sufficiently described in the notes. In Case 43 the use of the paste resulted in clean healing wounds, death being due to other causes. In two other cases (8 and 9) proper excision of the wound was impossible and both suppurated. The other three cases of this group (28, 29, 30) were large deep wounds, which did well for four or five days and then suppurated. Probably the original pasting is not effective after three days. These cases could have been kept clean by repasting under an anaesthetic.

Just now we are trying a flavine paste. Sufficient material is not yet available for a report. The results are so far very similar to those obtained with brilliant green.

The undermentioned series of cases is classified under three headings:

Class I: Remarkably successful, in that the wounds were very extensive and in general were complicated by bone or joint injury.

Class II: Less serious cases giving perfectly satisfactory results.

Class III: Relatively unsuccessful.

The report includes every case up to August 16th in which the paste was used. In all cases the wounds were stained, excised, and the foreign body removed on the day of admission. Any deviation from this procedure is recorded in the notes of cases.

SUMMARY OF CASES.

CLASS I.—Remarkably Successful.

Case 1.—Pte. F. D.; admitted July 8th, 1917, with the following shell wounds: (1) Penetrating wound of left knee; (2) gutter wound of right leg, grazing patella; (3) multiple wounds of left thigh; (4) multiple wounds of arm, one penetrating elbow. Usual treatment, except thigh and arm, where wounds could only be partially excised.

July 13th. Secondary suture of wound of right leg.

July 20th. Elbow septic, other wounds clean. On July 25th the elbow was drained, and on August 2nd the elbow-joint formally excised for suppurative arthritis; paste was applied and the wound closed by primary suture with drainage. The drain was removed on August 6th, and on the 12th the elbow wound was healed by first intention, there was no febrile reaction, the other wounds were firmly healed, and the patient was evacuated to the base.

Case 7.—Pte. H. T.; admitted July 11th, 1917, with shell wounds of leg (with compound comminuted fracture of tibia), thigh, and back.

July 18th. Leg wound repasted and sutured.

July 25th. Healing; slight serous discharge from tibia; no pus; other wounds satisfactory. Evacuated to base.

Case 15.—Pte. C.; admitted July 13th, 1917, with shell wound of knee. Operation twenty-four hours after injury; thigh swollen and inflamed; foreign body removed from popliteal surface of femur.

July 19th. Repasted and sutured, except small space in centre of wound.

July 25th. Healing; wound clean. Evacuated to base.

Case 16.—Pte. R. G.; admitted July 14th, 1917, with shell wound of buttock with divided gluteal artery. Repasted at intervals without anaesthetic.

July 25th. Skin edges freshened and sutured; glove drain. Drain removed two days later; wound clean.

July 30th. Healing. Evacuated to base. Report from base: One stitch removed on arrival; rest of wound healed.

Case 31.—Pte. A. D.; admitted July 24th, 1917. Shell wound of forearm with compound fracture of radius. Primary suture. On the 30th the wound was healing, and the patient was evacuated to the base.

Case 32.—Pte. R. C.; admitted July 24th, 1917. Shell wound of leg with compound fracture of tibia. Repasted and sutured on the 27th. Three days later the wound was healing, and the patient was evacuated to the base.

August 3rd. Report from base: Wound healed.

Case 34.—Pte. B. C.; admitted July 27th, 1917. Trench mortar wounds of neck, exposing vertebrae, and ankle, with compound fracture of tibia and division of posterior tibial vessels and nerve.

July 31st. Secondary suture of neck; ankle wound repasted. Loss of skin too extensive for suture. Patient evacuated to the base a few days later with both wounds clean.

Case 35.—Pte. J. M.; admitted July 28th, 1917. Shell wound of arm with compound fracture of humerus and divided brachial artery. Secondary suture was performed on August 2nd; the stitches were removed on the 10th, when the wound was healed. Two days later he was evacuated to the base.

Case 39.—Pte. W. C.; admitted July 29th, 1917. Bomb wound of knee (penetrating) with compound fracture of patella, and superficial wound of chest wall. Patella sewn with catgut; partial primary suture.

August 11th. Both wounds healed; no rise of temperature; joint never swollen. Evacuated to base.

Case 40.—Pte. A. B.; admitted July 30th, 1917. Shell wound of arm with compound comminuted fracture of radius and ulna. On August 3rd the outer wound was completely sutured; the inner wound as far as skin available.

August 12th. Outer wound healed and dry; inner wound clean, no pus. Evacuated to base.

Case 47.—Pte. R. W.; admitted July 31st, 1917, with bomb wounds of buttock and thigh; buttock wound deep, 7 in. track. Secondary suture was performed on August 3rd. On the 12th the wounds were healed, there was no suppuration, and the patient was evacuated to the base.

Case 48.—Lce.-Cpl. A. C.; admitted July 31st, 1917, with bomb wound of thigh; track 17 in. long through muscles; patient very collapsed on admission.

August 4th. Lower half of wound sutured, remainder repasted. Two days later there was slight purulent discharge from the upper end of the wound; second foreign body localized by x rays and removed; wound repasted.

August 10th. Remainder of wound sutured.

August 14th. Wound healed.

Case 49.—Pte. G. G.; admitted August 2nd, 1917. Bullet wound of forearm with compound fracture of radius. Primary suture. On August 7th the wound was doing well; there was no suppuration. On the 12th it was healed, and the patient was evacuated to the base.

Case 57.—Cpl. W. L.; admitted August 7th, 1917. Shell wound of forearm with compound fracture of radius; much loss of blood prior to admission. On August 10th the wound was repasted and sutured; on the 16th it was clean and healing, and the patient was evacuated to the base.

Case 61.—Pte. A. S.; admitted August 9th, 1917. Shell wounds of both forearms, with compound fractures of right ulna and left radius. On August 12th both wounds were sutured. On the 16th they were clean and healing, and the patient was evacuated to the base.

Case 62.—Pte. J. R.; admitted August 9th, 1917. Accidental injury: compound fracture of tibia and fibula. On August 15th the wound was perfectly clean.

CLASS II.—Successful.

Case 2.—Pte. E. H.; admitted July 8th, 1917. Shrapnel wounds (penetrating) of knee, with fracture, and of thigh (missile embedded in femur). Patient too collapsed for operation on admission. On recovery, amputation of left thigh (lower third); the right thigh treated by other method as control. On July 17th the wounds were repasted and amputation flaps sutured.

July 25th. Healing; no discharge. Evacuated to base. Report from base: Sutures removed; wound healed; slight suppuration from right thigh (control).

Case 3.—Pte. T. G.; admitted July 10th, 1917. Bullet wound of leg with division of peroneal vessels. On July 13th secondary suture was performed; on the 18th the sutures were removed, when there was partial gaping of a clean wound. On the 25th he was evacuated to the base with the wound clean.

Case 4.—Pte. H. L.; admitted July 10th, 1917. Shell wound of leg, with compound comminuted fracture of tibia and fibula and division of popliteal artery. Very collapsed on admission. Supracondylar amputation; flaps loosely sutured.

July 12th. Slight reactionary haemorrhage; clot turned out and wound repasted. This was followed by slight purulent discharge for a few days.

July 20th. Edges of flap freshened and sutured with drainage. Drain removed two days later.

July 30th. Evacuated to base; wound healing.

Case 5.—Pte. H. G.; admitted July 11th, 1917, with extensive gutter wound of thigh through muscles. On July 18th the

skin was approximated by sutures, but the wound could not be completely closed owing to loss of tissue.

July 22nd. Evacuated to base. Wound clean.

Case 6.—Cpl. W. O.; admitted July 11th, 1917, with shell wound of shoulder, superficial. On the 13th secondary suture was performed. He returned to duty on July 31st with a sound scar.

Case 11.—Pte. W. L.; admitted July 12th, 1917, with shell wound of back. Primary suture. Evacuated to base on July 22nd with the wound healed.

Case 12.—Pte. D. S.; admitted July 12th, 1917, with bullet wound of shoulder. On July 14th secondary suture was performed; on the 20th the wound was clean and healing, and the patient was evacuated to the base.

Case 13.—Pte. W. J.; admitted July 12th, 1917, with the following shell wounds: (1) Chest, opening pleura; (2) scapular region; (3) arm; (4) penetrating head (pasted and cleaned only). July 20th. All wounds clean; no suppuration; no head symptoms. Evacuated to base.

Case 14.—Spr. C. B.; admitted July 13th, 1917. Shell wound of back of thigh twenty-four hours before admission. Femur exposed but not fractured. Wound repasted and sutured on July 18th. Patient evacuated to base on July 25th, wound healing.

Case 18.—Pte. A. W.; admitted July 15th, 1917, with shell wounds of both legs. On July 21st secondary suture was performed, and on the 27th the wounds were healing, and the patient was evacuated to the base.

Case 19.—Pte. H. R.; admitted July 15th, 1917, with shell wound of back. Secondary suture was performed on July 19th, and three days later the patient was evacuated to the base with the wound healing.

Case 20.—Lce.-Cpl. M. W.; admitted July 15th, 1917, with shell wound of leg. Primary suture. On July 22nd the wound was healing, and patient was evacuated to the base.

Case 21.—Pte. O. M.; admitted July 15th, 1917, with shell wound of buttock. Secondary suture on July 21st. On the 25th wound healing, and patient evacuated to the base.

Case 22.—Pte. W. L.; admitted July 18th, 1917, with shell wounds of arm and both legs and thigh. On July 22nd the wounds were clean and closed with strapping. Patient evacuated to base on August 1st with the wounds healing.

Case 24.—Pte. C. G.; admitted July 18th, 1917, with shell wound of buttock. Two days later the wound was clean and patient was evacuated to the base.

Case 25.—Pte. J. H.; admitted July 19th, 1917. Shell wound of thigh and hand with compound fracture of metacarpals. Patient evacuated to base on August 1st with the wounds clean.

Case 26.—Pte. J. C.; admitted July 20th, 1917, with shell wound of leg. On the 25th the wounds were clean, and patient was evacuated to the base.

Case 27.—Pte. P. S.; admitted July 21st, 1917, with shell wound of buttock. Foreign body not removed. Patient evacuated to base on August 30th with the wound clean.

Case 36.—Lieut. E. G. E.; admitted July 28th, 1917. Bomb wounds of both legs, with gas gangrene of right. Very collapsed on admission. Direct blood transfusion. Flush amputation through right knee-joint.

August 1st. Amputation redressed under gas; wounds clean. Evacuated to base three days later with the wounds still clean.

Case 37.—Pte. J. V.; admitted July 28th, 1917, with shell wound of left arm. On the following day blood clot turned out and wound repasted. Secondary suture performed on August 3rd. Patient evacuated to base on August 12th with the wound healing.

Case 38.—Pte. H. B.; admitted July 29th, 1917. Shell wound of face with compound fracture of maxilla. Evacuated to base on August 1st; wounds clean.

Case 41.—Pte. C. B.; admitted July 30th, 1917, with shell wound of leg, exposing bone. Secondary suture on August 1st. Wound healed on August 12th, and patient evacuated to base.

Case 42.—Pte. G. D.; admitted July 30th, 1917, with shell wound of back. Primary suture. Stitches removed on August 7th; wound healed. Evacuated to base on August 12th; satisfactory.

Case 44.—Pte. G. P.; admitted July 31st, 1917. Old shell wound of thigh, with persistent sinus. Foreign body removed from side of femur by counter-incision; sinus excised. Secondary suture on August 2nd. On August 12th the patient was evacuated to the base with the wound healed.

Case 45.—Pte. F. D.; admitted July 31st, 1917, with shell wounds of arm and thigh. Primary suture of thigh. Secondary suture of arm on August 2nd. Stitches removed from thigh on August 7th; wound dry and healed. Evacuated to base on August 12th with both wounds healed.

Case 46.—Pte. J. F.; admitted July 31st, 1917. Shell wound in occipital region, with damage to bones. Primary suture. Stitches removed on August 12th; wound healed; patient evacuated to base.

Case 50.—Pte. P. J.; admitted August 2nd, 1917. Shell wound of hand, with compound fracture of metacarpal. Available tissue sutured two days later. Patient evacuated to base on August 12th with the wound clean.

Case 51.—Pte. P. C.; admitted August 3rd, 1917, with shell wound of buttock. Primary suture. The wound was healed on August 15th, and patient was evacuated to the base.

Case 52.—Lce.-Cpl. R. O.; admitted August 5th, 1917, with trench mortar wounds of forehead and arm. Primary suture of both wounds.

August 11th. Sutures removed from head; wound healed. Arm healing. Evacuated to base.

Case 53.—Pte. J. H.; admitted August 5th, 1917, with shell wound of head penetrating brain. Primary suture.

August 16th. Stitches removed; wound healed. Still in hospital, awaiting train.

Case 54.—Lce.-Cpl. S. A.; admitted August 6th, 1917, with shell wounds of back and leg. Secondary suture four days later. On August 16th wounds clean; awaiting train.

Case 55.—Lce.-Cpl. E. D.; admitted August 6th, 1917, with shell wound of scalp. Primary suture. Patient evacuated to base on August 12th with the wound healed.

Case 56.—Dvr. H. T.; admitted August 7th, 1917, with shell wound of shoulder. Long track only partially excised owing to exposure of brachial plexus. Patient evacuated to base on August 12th with the wound clean.

Case 58.—Pte. J. G.; admitted August 8th, 1917, with shell wounds of shoulder and leg. Primary suture of leg. Secondary suture of shoulder three days later. On August 16th both wounds were clean and healing; patient awaiting train.

Case 59.—Dvr. M. M.; admitted August 8th, 1917, with shell wound of head. Primary suture. Patient evacuated to base on August 12th with the wound healing.

Case 60.—Pte. W. T.; admitted August 9th, 1917, with shell wound of chest wall. Primary suture.

August 16th. Healing. Awaiting train.

Case 63.—Pte. H. S.; admitted August 10th, 1917, with shell wound of thigh. Sutures inserted but not tied. Sutures tied on August 11th. On the 16th the wound was healing and patient awaiting train.

Case 64.—Lce.-Cpl. L. F.; admitted August 10th, 1917, with shell wound of thigh. Primary suture. On August 16th the wound was dry and healing, and patient awaiting train.

CLASS III.—Relatively Unsuccessful.

Case 8.—Sgt. B.; admitted July 11th, 1917. Shell wound of back, with compound comminuted fracture of both scapulae. Very extensive wounds, excised as far as possible. Patient extremely ill for several days. Both wounds suppurated, but settled down under fomentations without any further operative interference.

July 30th. Evacuated to base. Wounds granulating.

Case 9.—Pte. J. K.; admitted July 12th, 1917, with the following shell wounds: (1) Heel—one foreign body removed from os calcis and one left embedded in bone; (2) leg—foreign body not found in calf muscles; (3) forearm—two compound fractures of ulna; wounds partially excised; (4) hand—one finger blown away; stump trimmed. The patient's condition was so serious that complete operation was impossible. Wounds suppurated with spreading sepsis in forearm.

July 17th. Further incisions in arm; leg required no interference.

July 30th. Condition settled; still some mild suppuration. Evacuated to base.

Case 10.—Pte. J. D.; admitted July 12th, 1917, with shell wounds of both buttocks, one involving the thigh. Foreign body retained in thigh. Wounds already stinking. Death took place two days later. The autopsy showed extensive gas gangrene.

Case 17.—Pte. J. W.; admitted July 14th, 1917, with extensive shell wound of thigh involving femur. Patient exsanguined. Death took place the same day, within twelve hours of operation. Patient never rallied and died from shock and haemorrhage. The autopsy showed no sepsis.

Case 23.—Lieut. H. L.; admitted July 17th, 1917. Shell wound of leg, with compound fracture of tibia and fibula; both sets of tibial vessels subsequently found to be divided. Patient shocked and exsanguined. Hurried operation.

July 18th. Gas gangrene in leg. Guillotine amputation at knee-joint; stump pasted.

July 25th. No further sepsis. Evacuated to base.

Case 28.—Pte. C. A.; admitted July 22nd, 1917, with bullet wound of the chest wall and arm, dividing ulnar nerve.

July 26th. Arm remained quite clean; chest suppurated. Temperature unaffected. Cleaned up in five days with Carrel-Dakin treatment.

August 1st. Wounds clean. Evacuated to base.

Case 29.—Pte. H. S., admitted July 23rd, 1917. Shell wound of chest, with compound fracture of scapula. Primary suture. Clean for four days, then slight purulent discharge. Stitches removed; Carrel-Dakin treatment.

August 2nd. Wound clean.

August 12th. Approximated with strapping. Evacuated to base.

Case 30.—Pte. F. M.; admitted July 24th, 1917. Large shell wound of leg, with compound fracture of tibia and division of posterior tibial vessels and nerve; extensive laceration of muscles. Amputation. Wound clean for four days, then profuse purulent discharge. Carrel-Dakin treatment.

August 7th. Clean but huge open wound. Patient evacuated to base on August 12th.

Case 33.—Pte. S. W.; admitted July 25th, 1917. Shell wound of thigh, with compound fracture of femur and whole of back of thigh blown away. Extreme shock, contraindicating general anaesthetic other than nitrous oxide. No excision of wound; only pasting. The following day the wound was stinking, and the patient's condition prevented operative treatment.

July 29th. Death from shock and sepsis.

Case 43.—Pte. W. G.; admitted July 30th, 1917, with the following shell wounds: (1) Back, with fractured spine and paralysis of bladder; (2) head, penetrating brain. Primary suture of head.

August 7th. Wounds clean.

August 12th. Head wound healed; back wound clean. Pyuria.

August 16th. Death. Autopsy showed sepsis of whole urinary track. Wounds clean.

THE USE OF LIQUID PARAFFIN IN THE TREATMENT OF WAR WOUNDS.

BY

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DURING the past year much clinical observation has been carried out in several Casualty Clearing Stations in this Army on the effect of liquid paraffin upon wounds at different stages.

The results of these observations enable one to state:

1. That liquid paraffin has, almost without exception, a very beneficial action on the walls of a wound and on the tissues adjacent to the wound. It prevents development of the symptoms of inflammation in these parts and will cause such symptoms to disappear rapidly if they are already present. The skin remains or becomes normal in appearance; redness and swelling do not develop or, if present, disappear. Pain is assuaged. Performance of function becomes easier, although, of course, this is frequently restrained by therapeutic agencies and is therefore not evident. Changes of dressings are comparatively painless.

One does not care at this stage to discuss possible explanations of these effects of the paraffin, but it may be pointed out that the "electrical" conditions of wounds have usually hitherto been entirely disregarded, only chemical and mechanical conditions having been considered. Electrical conditions of wounds, as revealed by the galvanometer, are found to vary, in a very consistent way, with the age of the wound and the amount of inflammation present.

2. Liquid paraffin is not antiseptic in the ordinary sense of the term. If a wound be "packed" with gauze wrung loosely out of the paraffin, it is found that in two to four days the discharge in the wound swarms with organisms, although the surrounding parts are free from inflammation. The "wound" with the fluid part of its contents may be likened to a test tube containing nutritive medium in which organisms are thriving. In either case the addition of antiseptic will lessen or entirely inhibit the growth. If an antiseptic is dissolved or suspended in the liquid paraffin with which the gauze pack is saturated, it is found that the wound remains or becomes sterile. Various antiseptics or mixtures of antiseptics have been used, with good effects in all cases, although these effects vary, possibly owing to selective effect of the particular antiseptic against the particular organism or to tolerance acquired by the organisms for the antiseptic employed against them. Those chiefly used up to the present are flavine, brilliant green, boric acid, and iodoform. It is rather difficult to justify preference for any one. A combination seems desirable. Non-poisonous antiseptics with more or less prolonged action when in contact with body fluids are likely to be most successful. It seems that, although the effects of micro-organisms on the tissues adjacent to a wound are inhibited, absorption of chemical antiseptics from the wound may occur and cause symptoms of poisoning.

One would desire to draw attention to papers sent for publication by Captain W. H. Hey and others (p. 506),

which deal with clinical results obtained from the use of pastes made with liquid paraffin as a base. Captain Hey found that pastes made with other substances—for example, gums—are inferior in curative action to those made with paraffin. During his investigations Captain Hey did not regard the bases with which his various pastes were made up as being anything else than "neutral."

It has been stated that the paraffin in bipp paste delays healing. Delay in healing of recent wounds, as has been observed in "bipped" cases, has not occurred in paraffin pastes made up with antiseptics soluble in serum. It seems more likely that the excess of bismuth subnitrate and iodoform in bipp is responsible by preventing adhesion of apposed surfaces.

The only type of inflammation, in cases which are not already too far advanced to recover, which in my experience has not yielded to the free application of liquid paraffin is that exemplified in a wounded limb which becomes much swollen, brawny, grossly nodular, and brownish-red, the wound being covered with granulations which look like dirty pale pink frog's spawn.

In all cases it is essential for success to have thorough preliminary opening up and mechanical cleansing of the wound. A piece of half-dead muscle left behind, infected with gas bacilli, is not likely to become disinfected by antiseptics, especially when the patient's resisting powers are at a low ebb; the paraffin is likewise at a disadvantage because the affected tissues cannot react in the ordinary way. Gauze used for packing a wound smeared with a paraffin paste should be wrung out of liquid paraffin or iodoform-paraffin (1 per cent.), and the skin around the wound covered with similarly impregnated gauze. Captain Hey, Captain Short, Captain J. Anderson, and others have shown that wounds may be sutured with success at a very early stage after treatment by such methods.

REINFECTION IN SYPHILIS;

WITH OBSERVATIONS ON 23 CASES.

BY

CHARLES F. WHITE, MAJOR R.A.M.C.

PROBABLY, though it would be a question difficult to settle, there is no such thing as a natural immunity from syphilis. However this may be, it was held until recently that immunity from syphilis might be acquired. The older theory, now abandoned, was that one infection of syphilis produced immunity from further infection; in other words, that syphilis could be acquired once only in a lifetime. Careful investigation appears to establish—

1. That reinfection can take place.
2. That such reinfection cannot take place until the original infection has been completely cured.

With the older treatment of syphilis a complete cure was difficult, or very rare, and consequently cases of reinfection were so exceptional that a doubt of their existence was not unreasonable.

The collection and examination of instances of reinfection are therefore of great importance. First, as showing beyond doubt that reinfection is a fact, and, secondly, as amounting to almost complete proof of the cure of the first attack.

Since the introduction of the combined salvarsan and mercury treatment for syphilis the number of cases of genuine reinfections reported has increased—a sure sign of the curative efficacy of this treatment and a proof that one attack of syphilis does not produce immunity. Perhaps we should not be far wrong in saying that the only persons immune from syphilis are the syphilitics.

Formerly proof of reinfection was based on clinical evidence alone and was open to certain fallacies, namely:

(a) *In the Case of the First Attack.*—Absence of positive proof of syphilis in those cases in which treatment was started in the primary stage and in which secondary symptoms did not develop. As no microscopic examination was made, or in the failure to find spirochaetes in serum from the sore, it was always possible that the diagnosis was mistaken. In other words, there was no positive proof that the chancre was syphilitic and not a soft sore.

(b) *In the Case of the Second Attack.*—(1) A soft chancre, (2) a recurrent chancre, (3) a chancriform gumma, or

(4) a pseudo-chancere (that is, a mucous genital syphilide which may have undergone induration), being mistaken for primary syphilitic chancres, or (5) the recurrent rashes being perhaps put down as fresh secondary syphilides and regarded as proof of a second attack.

Since the discovery by Schaudinn and Hoffmann of the *Spirochaeta pallida* as the cause of syphilis and the introduction of the Wassermann serum test as an aid to its diagnosis and cure, positive proof of reinfection can in certain cases be given apart from the clinical evidence.

We may lay down the following conditions:

1. In the first attack, *Spirochaeta pallida* being found from the chancere or syphilitic lesions (condyloma, mucous patch, or rash) or the blood giving a positive Wassermann reaction (here we must exclude the positive Wassermann of cases of hereditary syphilis); and

2. In the second attack, *Spirochaeta pallida* being found from the new chancere which appeared at a different site from the first chancere, and the blood at the same time giving a negative Wassermann reaction, which of course implies that the patient must have been seen shortly after the appearance of the second chancere, or at least before the blood had had time to become positive.

If we can produce cases to fulfil the above conditions, we have very strong confirmatory evidence apart from our clinical observation and opinion that reinfection has actually taken place.

The following list of cases of reinfection (Series I), which were all seen and treated by me during both attacks, fulfil the above conditions. The notes given are in each case those taken down at the time of the patient's first and second admission to hospital.

SERIES I.

CASE I.

First Admission (December 1st, 1915).—The patient was admitted to hospital with (1) a primary papular erosive syphilitic sore at the fraenum, (2) adenitis in both groins. There was no other visible sign of syphilis. The period of incubation was three weeks. *Spirochaeta pallida* was present on dark-ground examination. He was treated with eight injections of 0.3 gram of salvarsan and seven weekly injections of 1 grain mercury cream. Treatment was completed on February 22nd, 1916.

Second Admission (August 12th, 1916).—The patient was admitted to hospital a second time with (1) a primary granulating syphilitic sore on the anterior aspect of skin of foreskin, (2) glands in groins enlarged and shot-like. The incubation period was four weeks. *Spirochaeta pallida* was present on dark-ground examination. The Wassermann reaction was negative both before and after treatment. Treatment was the same as on his first admission, and was completed on October 3rd, 1916.

CASE II.

First Admission (August 24th, 1915).—Signs of infection: (1) Primary papular syphilitic sore on inner surface of prepuce; (2) shotty glands in both groins. No other visible sign. Incubation period uncertain. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream. Treatment was completed on October 26th, 1915.

Second Admission (June 14th, 1916).—Signs of infection: (1) Typical papular erosive primary syphilitic sore on dorsal surface of prepuce; (2) shotty glands in both groins. No other visible sign. The incubation period was again uncertain. *S. pallida* present on dark-ground examination. Wassermann test negative. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and five weekly injections of 1 grain mercury cream. Treatment completed August 26th, 1916.

CASE III.

First Admission (July 16th, 1915).—Signs of infection: (1) Typical meatal syphilitic chancere; (2) glands in both groins painlessly enlarged and swollen. No other visible sign. Incubation period four weeks. On dark-ground examination *S. pallida* was seen to be present. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream. Treatment completed August 22nd, 1915.

Second Admission (June 21st, 1916).—Signs of infection: (1) Typical Hunterian chancere in left side of coronal sulcus; (2) glands in both groins slightly enlarged and hard. No other visible sign. Incubation period uncertain; sore noticed five days. *S. pallida* present on dark-ground examination. Wassermann test negative. Treatment: Three injections of 0.3 gram salvarsan and two weekly injections of mercury cream. The patient was transferred to another hospital for completion of treatment.

CASE IV.

First Admission (April 21st, 1915).—Signs of infection: (1) Large scar of primary, probably granulating, syphilitic sore on dorsum of body of penis; (2) condylomata on scrotum; (3) general adenitis. No other visible sign. Incubation period uncertain. Wassermann test positive. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream. Treatment completed May 24th, 1915.

Second Admission (October 22nd, 1915).—Signs of infection: (1) Partly healed papular erosive primary syphilitic sore on outside of prepuce; (2) scar of former sore on body of penis; (3) adenitis in both groins. Incubation period uncertain. On October 26th Wassermann test negative, Stern incomplete; November 4th, Wassermann negative, Stern positive; December 15th, Wassermann positive, Stern positive. Treatment: Eight injections of 0.3 gram salvarsan and seven weekly injections of 1 grain mercury cream. Treatment completed February 5th, 1916.

CASE V.

First Admission (October 1st, 1915).—Signs of infection: (1) Typical Hunterian chancere on inner surface of prepuce; (2) enlarged and shot-like glands in both groins. No other visible sign. Incubation period uncertain; patient first noticed sore five days before. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream. Treatment completed November 2nd, 1915.

Second Admission (March 28th, 1916).—Signs of infection: (1) Typical primary granulating syphilitic sore on outside of foreskin; (2) glands in groins hard and enlarged. No other visible sign. Incubation period four weeks. *S. pallida* present on dark-ground examination. Wassermann and Stern tests negative. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and six weekly injections of 1 grain mercury cream. Treatment completed May 11th, 1916.

CASE VI.

First Admission (September 6th, 1915).—Signs of infection: (1) Sloughing primary papular syphilitic sore on end of prepuce; (2) glands in both groins hard and enlarged. No other visible sign. Incubation period five weeks; noticed sore seventeen days after exposure. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream. Treatment completed October 12th, 1915.

Second Admission (March 24th, 1916).—Signs of infection: (1) Hard sore beneath prepuce—unable to completely retract foreskin; (2) glands in groin slightly enlarged. No other visible sign. Last exposure to infection two months before; noticed sore two weeks before admission. *S. pallida* present on dark-ground examination. Wassermann reaction negative. Treatment same as on first admission; completed May 9th, 1916.

CASE VII.

First Admission (October 10th, 1915).—Signs of infection: (1) Balanitis with indurated sore beneath prepuce; (2) shotty glands in groin and neck. No other visible sign. Incubation period uncertain; noticed sore two weeks before admission. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed November 11th, 1915.

Second Admission (September 5th, 1916).—Signs of infection: (1) Two typical primary papular erosive syphilitic sores on right side of coronal sulcus; (2) adenitis in groins. No other visible sign. Last exposure to infection six weeks before. *S. pallida* present on dark-ground examination. Wassermann reaction negative. Treatment: Three injections of 0.3 gram salvarsan and two weekly injections of 1 grain mercury cream. Transferred to another hospital for completion of treatment October 12th, 1916.

CASE VIII.

First Admission (August 6th, 1915).—Signs of infection: (1) Indurated papular erosive sore on inner surface of prepuce; (2) commencing roseolar rash on chest and abdomen; (3) general adenitis. No other visible sign. Incubation period four weeks. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and seven weekly injections of 1 grain mercury cream. Treatment completed September 21st, 1915, when the Wassermann reaction was negative.

Second Admission (September 26th, 1916).—Signs of infection: (1) Typical primary papular erosive syphilitic sore on inner surface of prepuce close to left of fraenum; (2) small abrasions on inner surface of prepuce on left side close to corona; (3) general adenitis. No other visible sign. Incubation period about four weeks. *S. pallida* present on dark-ground examination. Wassermann reaction negative. Treatment: Four injections of 0.3 gram salvarsan and two weekly injections of 1 grain mercury cream. Transferred to another hospital for completion of treatment October 21st, 1916.

CASE IX.

First Admission (June 29th, 1915).—Signs of infection: (1) Primary papular ulcerative syphilitic sore at fraenum, non-inflammatory syphilitic oedema of prepuce; (2) glands in both groins hard and enlarged. No other visible sign. Incubation period uncertain. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream. Treatment completed July 31st, 1915.

Second Admission (May 16th, 1916).—Signs of infection: (1) Two fairly typical small primary syphilitic sores on inner surface of prepuce; (2) glands in groins hard and enlarged. No other visible sign. Last exposure to infection took place six weeks before. *S. pallida* present on dark-ground examination. Wassermann test negative. Treatment: Five injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream. Transferred to another hospital for completion of treatment June 26th, 1916.

CASE X.

First Admission (December 1st, 1915).—Signs of infection: (1) Primary indurated papular erosive syphilitic sore at fraenum; (2) bubo in left groin and shotty adenitis in right groin. No other visible sign. Incubation period unreliable. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream; completed January 25th, 1916.

Second Admission (July 21st, 1916).—Signs of infection: (1) Typical Hunterian chancre on inner surface of prepuce extending into coronal sulcus; (2) shot-like glands in both groins. No other visible sign. Incubation period not reliable. *S. pallida* present on dark-ground examination. Wassermann test negative. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and four weekly injections of 1 grain mercury cream; completed September 7th, 1916.

On the other hand there are cases of probably genuine reinfection that cannot fulfil the above conditions; for example, the conditions mentioned might be fulfilled with the exception that the patient was not seen in his second attack until the Wassermann reaction had become positive, or until secondary symptoms had appeared; such a case would then be open to the objection that it was really an instance of relapse, and not of reinfection.

In such a case the correctness of the diagnosis depends on the accuracy of the observation and the extent of the special experience of the practitioner, but anyone who has had considerable experience of syphilis must be fairly confident that he has seen genuine cases of reinfection, though the stringent conditions of "Series I" were not fulfilled.

In Series II will be found a record of such cases.

SERIES II.

CASE I.

First Admission (April 23rd, 1915).—Signs of infection: Small papular erosive syphilitic sore at fraenum. No other visible sign. Incubation period two weeks. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream. Treatment completed May 22nd, 1915.

Second Admission (August 29th, 1915).—Signs of infection: (1) Typical Hunterian chancre on inner surface of prepuce; (2) glands in groins a little enlarged. No other visible sign. Incubation period uncertain; sore noticed six days before admission. Wassermann test negative. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream. Treatment completed October 12th, 1915.

CASE II.

First Admission (May 28th, 1915).—Signs of infection: Indurated papular ulcerative syphilitic sore in coronal sulcus. No other visible sign. Sore noticed six days before admission. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and seven weekly injections of 1 grain mercury cream. Treatment completed June 29th, 1915.

Second Admission (September 10th, 1915).—Signs of infection: Non-inflammatory syphilitic oedema of prepuce with indurated lump to be felt beneath phimosed prepuce. Sore noticed for six weeks. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream. Treatment completed October 13th, 1915.

CASE III.

First Admission (June 9th, 1915).—Signs of infection: (1) Typical primary papular erosive syphilitic sore on inner surface of prepuce; (2) shotty glands in groins. No other visible sign. Incubation period two weeks. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream. Treatment completed July 20th, 1915.

Second Admission (July 22nd, 1916).—Signs of infection: (1) Primary granulating syphilitic sore on dorsum of body of penis; (2) glands in groin enlarged and shot-like. No other visible sign. Incubation period uncertain; sore noticed for five weeks. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and seven weekly injections of 1 grain mercury cream. Treatment completed September 7th, 1916.

CASE IV.

First Admission (September 9th, 1915).—Signs of infection: (1) Typical Hunterian chancre on inner surface of prepuce; (2) shotty glands in groins and neck. No other visible sign. Noticed sore eight days before admission. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed October 12th, 1915.

Second Admission (February 7th, 1916).—Signs of infection: (1) Typical papular erosive syphilitic sore near fraenum; (2) adenitis in groins. No other visible sign. The sore is distinct from scar of original sore. Incubation period two weeks. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and seven weekly injections of 1 grain mercury cream; completed March 20th, 1916.

CASE V.

First Admission (April 26th, 1916).—Signs of infection: (1) Typical primary papular erosive syphilitic sore in middle line of upper lip; (2) marked swelling of submaxillary glands and general adenitis; (3) macular papular rash covering body and limbs; (4) condylomata on scrotum. Denies all exposure to infection. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and seven weekly injections of 1 grain mercury cream; completed June 13th, 1916.

Second Admission (July 24th, 1916).—Signs of infection: (1) Balanitis with a typical Hunterian chancre in coronal sulcus of penis; (2) glands in both groins enlarged and hard. No other visible sign. Incubation period uncertain. Wassermann test negative. Treatment: Five injections of 0.3 gram salvarsan and four weekly injections of 1 grain mercury cream. Transferred to another hospital for completion of treatment August 27th, 1916.

CASE VI.

First Admission (October 30th, 1915).—Signs of infection: (1) Primary papular erosive syphilitic sore on under surface of prepuce; (2) glands in groins hard and enlarged; (3) papular roseolar syphilide on body and limbs and also on face; (4) mucous patches on tonsils; (5) headaches. Incubation period uncertain; sore seen four weeks and rash ten days before admission. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed December 7th, 1915.

Second Admission (June 3rd, 1916).—Signs of infection: (1) Typical primary papular erosive chancre on lower lip just to left of middle line; (2) enlargement and hardness of submaxillary glands on left side. No other visible sign. Old scar of previous sore present under surface of prepuce. Most recent venereal exposure six weeks before admission. On dark-ground examination, *S. pallida* present from chancre on lip. Wassermann and Stern tests positive. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed July 24th, 1916.

CASE VII.

First Admission (August 4th, 1915).—Signs of infection: (1) Three typical primary papular erosive syphilitic sores in coronal sulcus of penis; (2) shotty glands in groins. No other visible sign. Incubation period sixteen days. On dark-ground examination, *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan and seven weekly injections of 1 grain mercury cream; completed September 14th, 1915.

Second Admission (May 3rd, 1916).—Signs of infection: (1) Typical Hunterian chancre on inner surface of prepuce near fraenum; (2) glands in groins hard and enlarged; (3) faint macular rash on chest. Incubation period about four weeks. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and five weekly injections of mercury cream; completed June 19th, 1916.

CASE VIII.

First Admission (September 3rd, 1915).—Signs of infection: (1) Typical papular erosive syphilitic sore on under surface of prepuce; (2) shotty glands in groins and neck. No other visible sign. Incubation period one month. Dark-ground examination, *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed October 5th, 1915.

Second Admission (March 9th, 1916).—Signs of infection: (1) Typical indurated sore at coronal margin; (2) bubo in right groin, glands in left groin. Scar of old sore on under surface of prepuce. Incubation period uncertain. Dark ground examination, *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and six weekly injections of mercury cream; completed May 4th, 1916.

CASE IX.

First Admission (February 5th, 1915).—Signs of infection: (1) Typical primary papular erosive syphilitic chancre at fraenum; (2) glands in both groins enlarged and hard. No other visible sign. Incubation period uncertain. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream; completed April 10th, 1915.

Second Admission (May 25th, 1916).—Signs of infection: (1) Typical Hunterian chancre on inner surface of prepuce; (2) general adenitis. No other visible sign. Incubation period about four weeks. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and four weekly injections of mercury cream; completed July 30th, 1916.

CASE X.

First Admission (August 18th, 1915).—Signs of infection: Large papular erosive syphilitic sore on outer surface of foreskin. There was no enlargement of glands and no other visible sign. Incubation period two weeks. Dark ground examination, *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream; completed September 19th, 1915.

Second Admission (June 2nd, 1916).—Signs of infection: (1) Typical primary granulating syphilitic sore on under surface of prepuce; (2) glands in groins painlessly enlarged and hard. No other visible sign. Incubation period three weeks. Dark-ground examination, *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and three weekly injections of mercury cream; completed July 21st, 1916.

CASE XI.

First Admission (December 27th, 1914).—Signs of infection: (1) Scar of sore on glans penis; (2) slight general adenitis; (3) mucous patches on tongue and on right tonsil. No other visible sign. Incubation period uncertain. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream: completed February 23rd, 1915.

Second Admission (January 26th, 1916).—Signs of infection: (1) Two primary papular erosive syphilitic sores beneath prepuce; (2) shotty glands in groins. No other visible sign. Last exposure to infection five weeks before admission. Dark-ground examination. *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and seven weekly injections of mercury; completed March 21st, 1916.

CASE XII.

First Admission (July 4th, 1915).—Signs of infection: Non-inflammatory syphilitic oedema of skin of penis, hard nodule felt beneath phimosed prepuce. No other visible sign. Incubation period ten days. Dark-ground examination. *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream; completed August 17th, 1915.

Second Admission (June 15th, 1916).—Signs of infection: (1) Primary papular erosive syphilitic sore on inner surface of prepuce; (2) marked adenitis in both groins. Scar of old sore present. Incubation period three weeks. Wassermann test incomplete, Stern positive. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and five weekly injections of 1 grain mercury cream; completed August 7th, 1916.

CASE XIII.

First Admission (November 5th, 1915).—Signs of infection: (1) Typical Hunterian chancre at fraenum; (2) adenitis in groins and neck. No other visible sign. Incubation period one month. Treatment: Eight injections 0.3 gram salvarsan with intervals, and seven weekly injections of 1 grain mercury cream; completed February 8th, 1916.

Second Admission (July 8th, 1916).—Signs of infection: (1) Typical Hunterian chancre on right inner surface of prepuce; (2) adenitis in groins. No other visible sign; scar of previous sore at fraenum. Last exposure to infection about five weeks before admission. Wassermann and Stern tests negative. Treatment: Same as on first admission; completed August 24th, 1916.

CASE XIV.

First Admission (September 22nd, 1915).—Signs of infection: Two primary papular erosive syphilitic sores, one on inner surface of prepuce, one close to fraenum. No other visible sign. Incubation period not reliable. Dark-ground examination. *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed December 6th, 1915.

Second Admission (July 16th, 1916).—Signs of infection: (1) Typical Hunterian chancre in coronal sulcus just to right of dorsal middle line; (2) general adenitis and a right bubo; (3) papular squamous rash over body and limbs; (4) mucous patch on inner side of upper lip. Scar of old sores present. Incubation period not reliable. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and six weekly injections of 1 grain mercury cream; completed August 30th, 1916.

CASE XV.

First Admission (November 6th, 1915).—Signs of infection: (1) Primary papular erosive syphilitic sore at fraenum; (2) indurated glands in groins. No other visible sign. Last exposure to infection five weeks before admission. Dark-ground examination. *S. pallida* present. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream; completed December 7th, 1915.

Second Admission (December 19th, 1916).—Signs of infection: (1) Primary Hunterian chancre in coronal sulcus; second primary granulating syphilitic sore on under surface of prepuce; (2) glands in both groins enlarged and hard. No other visible sign. Last exposure to infection about six weeks before admission. Wassermann test positive. Treatment: Three injections of 0.3 gram salvarsan, one of 0.4 gram, three of 0.5 gram with intervals, and five weekly injections of 1 grain mercury cream. Treatment completed February 15th, 1917, when the Wassermann reaction was negative.

CASE XVI.

First Admission (January 9th, 1915).—Signs of infection: (1) Typical Hunterian chancre on inner surface of prepuce; (2) roseolar syphilide on chest. No other visible sign. Incubation period one month. Treatment: Four injections of 0.3 gram salvarsan and eight weekly injections of 1 grain mercury cream; completed March 2nd, 1915. On March 7th, 1916, the patient was readmitted with ulceration of both tonsils; no other visible signs. He was given a full course of eight injections of 0.3 gram salvarsan with intervals, and five weekly injections of 1 grain mercury cream. He was discharged to duty on May 3rd, 1916.

Second Admission (October 2nd, 1916).—Signs of infection: (1) Early primary papular erosive syphilitic sore in left of coronal sulcus; (2) glands in groins painlessly enlarged and hard and shot-like. No other visible sign. Incubation period two weeks. Treatment: Three injections of 0.3 gram, one of 0.4 gram, and three of 0.5 gram salvarsan with intervals, and

six weekly injections of 1 grain mercury cream; completed December 9th, 1916. The Wassermann reaction was incomplete both before and after treatment.

CASE XVII.

First Admission (December 4th, 1915). Signs of infection: (1) Balanitis, a hard nodule to be felt under foreskin about level of fraenum; (2) glands in groin shot-like and enlarged. No other visible sign. Last exposure to infection about six weeks before admission. Treatment: Eight injections of 0.3 gram salvarsan with intervals, and seven weekly injections of 1 grain mercury cream; completed January 25th, 1916.

Second Admission (April 12th, 1917).—Signs of infection: (1) A typical primary papular erosive syphilitic sore occupied fraenal site; (2) painless shotty adenitis in left groin. No other visible sign. Incubation period one month. Dark-ground examination. *S. pallida* present. Treatment: Seven weekly deep subcutaneous injections of 0.6 gram salvarsan and five weekly injections of 1 grain mercury cream; completed May 28th, 1917. The Wassermann reaction was negative both before and after treatment.

CASE XVIII.

First Admission (May 22nd, 1915).—Signs of infection: (1) Small papular erosive syphilitic sore on under surface of foreskin; (2) glands in both groins enlarged; (3) macular rash on body. No other visible sign. Incubation period one month. Treatment: Eight injections of 0.3 gram salvarsan and six weekly injections of 1 grain mercury cream; completed July 13th, 1915.

Second Admission (March 2nd, 1917).—Signs of infection: (1) Phimosis, unable to retract foreskin; a clean indurated granulating syphilitic sore on anterior surface of skin of penis; (2) glands in groins painlessly enlarged and shot-like. No other visible sign. Incubation period eighteen days. Treatment: Six weekly injections of 0.6 gram salvarsan, deep subcutaneous; five weekly injections of 1 grain mercury cream. Treatment completed May 1st, 1917. The Wassermann reaction was negative both before and after treatment.

The cases in this series are not supported by the bacteriological findings and serum tests, and so do not comply with the conditions laid down for Series J, still the likelihood of the correctness of the diagnosis is enhanced by the fact that again, as in the cases given in Series I, the two distinct attacks of syphilis have been seen in all the cases here recorded by the same observer. The cases were seen, the notes checked, and the treatment of each patient carried out by me at the time of his first and second attack.

The above 28 cases of reinfection occurred in a series of 10,500 cases of syphilis treated in No. — General Hospital during the past two years.

For the Wassermann tests and dark-ground examinations I am indebted to Captains A. Dawson and A. T. MacWhirter, R.A.M.C., and I wish to thank Sergeant G. T. Platford, R.A.M.C., for the trouble he has taken in summarizing the notes on the cases given in Series I and II.

THE MEDICINAL TREATMENT OF GONORRHOEA.

BY

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AND

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A QUESTION which was frequently asked by many medical officers who visited a certain venereal hospital for the purpose of inquiring into the routine methods of treatment was, "Is irrigation into the bladder any better than flushing of the urethra from within by the use of medicines?" With a view to deciding this question permission was granted to treat cases with medicine alone.

Routine treatment as carried out generally in the above mentioned hospital in ordinary cases meant three irrigations a day into the bladder, prostatic massage, and instrumental treatment where indicated.

Method of Treatment.

The intention at first was to have a control series of one hundred patients on routine irrigation treatment and another series of one hundred patients on medicinal treatment. When, however, volunteers were called for every patient volunteered for the medicinal treatment, and it was then decided, in order to have the full confidence of the patients, to give every patient medicinal treatment. Accordingly the whole division, consisting of about two

hundred patients, commenced the treatment, which consisted of diuretics in the early stages, chiefly Fournier's formulae and the usual potassium citrate, hyoscyamus, and buchu mixture, and in the later stages mixtures containing the oleo-resins (oil of copaiba, sandalwood oil, and oil of cinnamon). Fournier's formulae were as follows:

1. Nitrate de potasse	0.50 gram
Douce-amère (woody nightshade, <i>Solanum dulcamara</i>)	10.00 grams
Chien dent (<i>Agropyrum repens</i>)	10.00 "
Infused in a litre of water.	
2. Réglisse pulvérisée	20 grams
Racine de Guimauve pulvérisée	10 "
Gomme arabique	60 "
Sucre de lait	60 "
Nitrate de potasse	10 "

Make in doses of 10 grams per litre of water, to be taken in twenty-four hours.

The medicine was taken six times a day at the following hours: 6 a.m., 8 a.m., 11 a.m., 2 p.m., 5 p.m., and 8 p.m.

The patients paraded under their respective sergeants, marquee by marquee, at the above hours, and as they filed into the treatment hut they received their medicine in their basins, and, after passing behind the irrigation trough, they placed their basins on the shelf. The drinking of the medicine was carried out under the strict supervision of the wardmaster, so that no one missed taking his dose. After taking the medicine, the patients washed the glans penis and prepuce by means of swabs soaked in a solution of potassium permanganate contained in the irrigation buckets, and afterwards they washed their hands.

They received no other treatment except when urethral infiltrations were present, in which cases dilatation was carried out. No vaccine or prostatic massage was given.

The patients were weighed every six days in order to ascertain if the imbibing of large quantities of fluid affected their fitness for duty. It, however, made no appreciable difference.

Clinical Observations.

Compared with irrigation treatment, it was found that:

Discharge.—The urethra remained purulent for a much longer period and never became "bone dry."

Condition.—Oedema persisted for a longer time.

Pain.—Complaints of pain persisted for weeks. Severe pain was complained of in many more cases than if the patients had been on irrigation treatment. This was very striking.

Frequency.—Owing to the large amount of fluid imbibed frequency of micturition was naturally greater (ten to twenty times a day on the average).

Bowels.—These were naturally looser than usual.

Progress and Complications.

More cases became subacute and chronic, and seemed to have a chronic oedema, which does not occur under irrigation treatment. There were more palpable periurethral infiltrations in the form of follicles and periurethritis. There was less tendency for the discharge to cease and the urethra to become dry than under irrigation treatment. The routine urine test did not show the same progress. In spite of the large amount of fluid taken, shreds were easily observed in the urine, which would suggest that there was more posterior urethritis. The treatment did not prevent the development of the same percentage of epididymitis (acute and subacute) as occurs under irrigation treatment. The same was true of arthritis.

After carrying out this treatment for two months we were obliged to resort to the old methods of treatment, and it was noticeable that many resistant cases cleared up rapidly. With dilatation the subacute inflammation of the urethra quickly subsided. Pus could still be massaged out of the prostate after weeks of medicinal treatment.

Statistics.

At the time of returning to irrigation treatment it was found that there were more chronic cases in the division than ever before. Only 78 men had been discharged to duty on medicine alone in the period of two months, as against four times as many discharged in a similar period

under irrigation treatment. Of these 78 men, 65 per cent. were cases of relapse either after treatment in this hospital or other hospitals. Only 24 per cent. were primary infections.

As far as can be at present ascertained, the relapse rate for this series of men discharged after medicinal treatment only is already higher than that of any other series.

The effect of medicine in prolonging the stay in hospital is clearly shown by a comparison between two series of similar composition—one series treated on the routine irrigation system, and the other by both irrigation and medicine (but not both together).

It was found that in the latter series the number of days in hospital for all the cases was increased by 14; the treatment of primary infections was lengthened by 18 days; the treatment of subsequent infections by 20 days; and the treatment of relapses from this hospital or other hospitals by 7 days.

CONCLUSION.

To sum up, medicinal treatment from a clinical and statistical point of view undoubtedly does not help but retards the cure of gonorrhoea, and tends to produce chronicity.

OPERATIONS ON THE NASAL SINUSES CARRIED OUT THROUGH A TEMPORARY OPENING IN THE SEPTUM (TRANS-SEPTAL).

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THERE are two routes by which the ethmoidal cells may be approached. By far the most usual is through the nose; only in rare instances is the disease attacked from the outside through a skin incision. The external operation may be adopted in cases where there is an ethmoidal mucocele, suppurating or otherwise, causing a swelling in the neighbourhood of the inner canthus; in dealing with a diseased ethmoidal labyrinth and frontal sinus at one and the same time; in removal of tumours, innocent or malignant (for example, exostosis, sarcoma); and, in rare instances, where a very thorough exposure of the ethmoidal cells is called for. The external operation has the advantage that anatomical landmarks can be more clearly defined, and the diseased cells can be dealt with under direct vision. Its main disadvantage is that a scar is left on the face, and that normal non-infected tissues are of necessity opened up. The advantage of the nasal route of approach is that there is no resulting scar, and that the infected area is not reached through healthy tissues. Its main disadvantage is that it is impossible to get a really good view of the field of operation. Much depends on guess work and the "feel" of the tissues under the instrument.

I have endeavoured to improve on the route of approach to the ethmoidal cells, and, incidentally, to the sphenoidal sinus, by adopting the plan here described.

In viewing the region of the middle turbinate and ethmoidal labyrinth from the corresponding nostril, one is met with the difficulty that it is impossible to obtain a direct view of the field of operation.

The anterior end and a portion of the lower border of the middle turbinate is brought well into the field, but, even after this structure has been removed, only a very unsatisfactory view of the ethmoidal region is obtained. It occurred to me that the structures in this neighbourhood might be brought, so to speak, "under the eye of the surgeon" by approaching them through the opposite nostril. (No one can have failed to remark on the excellent display of the opposite side of the nose revealed through a large septal perforation.) The view becomes much more direct, and, in the case of the anterior ethmoidal region at any rate, a more or less surface view becomes possible (see Fig. 1). To obtain this view it is necessary, of course, to make an incision through the septum, and it is of importance that the septal aperture be only a temporary one.

I shall now describe the various methods I have tried in making this temporary passage through the septum.

The simplest plan of all is to carry an oblique incision through the whole thickness of the septum. This should be commenced about half an inch from the nasal orifice, and carried from above downwards and backwards to the length of about three-quarters of an inch (see Fig. 2). If one ethmoid only is involved the incision through the septum should slant from before backwards, so that the mucous membrane on the side corresponding to the diseased ethmoid is divided at a point slightly posterior to that on which the knife is entered. This obliquity makes coaptation easier when the septum is united at the completion of the operation. If both ethmoids are to be dealt with, then the incision through the septum should be strictly at right angles to the cartilage. Through this incision the blades of the speculum are introduced and a view of the outer wall of the opposite nasal cavity obtained. The objections to this procedure are: (1) There is a considerable amount of resistance encountered in introducing the speculum through the septal incision, and some difficulty is experienced in keeping an ordinary instrument of the Thudichum type fully open. (2) The portion of the septum behind the incision is displaced by the speculum against the inferior turbinate, preventing the full opening of the instrument. This, to some extent, may be overcome by removing the anterior portion of the inferior turbinate. (3) However pliable the cartilage may be, the bony septum posterior to it can be displaced only to a slight degree. These objections may be overcome by making two incisions through the whole thickness of the cartilaginous septum, extending backwards from either end of the primary oblique incision, and thus creating a sort of temporary swing door (see Fig. 2, dotted lines). It is preferable, however, to carry out, as a preliminary procedure, a submucous resection of the septum. If this plan is followed, there are two or three alternatives any one of which may be adopted. It is possible, especially if the ethmoidal disease is one-sided, to approach it in the following way: First of all, carry out a submucous resection, making the preliminary incision on the side opposite the disease. It is important to carry the bone removal high up, and, if the sphenoidal sinus is to be examined or treated, to remove the vomer in the neighbourhood of that sinus. After the submucous resection has been carried to completion an incision is made parallel to the preliminary incision, and from a quarter to half an inch behind it, through the opposite flap.

When the ethmoidal operation has been completed the edges of both incisions can be brought together by a few fine sutures. The fact that the incisions are not opposite each other should prevent a permanent fenestra in the septum, and suturing may not be necessary. A plug of oiled silk should, however, be inserted into the anterior part of the nose on both sides, so as to keep the layers in apposition. It is well, before inserting the plugs, to make a small opening in the posterior portion of the pocket formed by the two flaps, so as to avoid the accumulation of blood and the formation of a haematoma. As the case is one of suppurative nasal disease it is well to avoid packing the cavity of the nose proper; an anterior plug kept in for twenty-four hours will do no harm.



FIG. 2.

In cases where both ethmoids are diseased, by making the incisions through the septal flaps nearly opposite but

not quite opposite each other, the speculum may be worked from either side of the nose through the opening so formed, and both ethmoids can in this way be dealt with. An objection that must be raised to this method of carrying out a submucous resection and operation on the ethmoids at one and the same time is, that it opens up the area between the flaps to infection from the diseased sinuses, but so far this complication has not occurred in any cases operated upon.

The best method of all, if the consent of the patient can be obtained, is to perform a submucous resection, and after a period of ten days or longer, follow it up by an operation on the ethmoid. The main objection to this is that the patient has to submit to two operations. The septum, however, may already have been resected, or it may be so badly deflected as to require a preliminary resection, in which case all gross polypoid disease should be dealt with at the same time, and the middle turbinates, if still present, should be partially or completely removed. This will leave the ethmoidal galleries alone to be treated at the second operation.

When the septum is thoroughly healed, and all reaction as the result of the first operation has passed off, the surgeon then proceeds as follows: An oblique incision is carried through the two united layers of muco-perichondrium. A speculum with long blades of the Thudichum type, such as is used in submucous resection, or Killian's long-bladed speculum, is then passed through the opening. It may be found desirable to have one of the blades shorter than the other (see Fig. 2). After the suppurating cells have been dealt with the incision through the septum is brought together with several fine sutures, a special needle being used for this purpose. If this is carefully done there will be no resulting perforation.

I have found that the main trouble in carrying out this operation on the ethmoids is haemorrhage. This is of course greater if a general anaesthetic is employed. It may, however, be limited by adopting the following suggestions:

1. It is most essential before operating on the ethmoid proper by this method to remove all visible polypi, and generally the middle turbinates if they are still present. (In some cases it may be desirable to conserve more or less of the middle turbinates.) This is accomplished in the ordinary way by means of snare and forceps. These procedures should be carried out some days before the main operation, and, as above stated, the septum resected at the same time.

2. Thorough preliminary packing with cocaine and adrenalin, a half to three quarters of an hour before the operation, coupled with a hypodermic injection of morphine and atropine, or atropine alone. In cases where a local anaesthetic only is employed, a preliminary injection of morphine is very useful. Chloroform is the best anaesthetic.

3. Where both ethmoids are involved the operator should frequently change over from one side of the nose to the other, and the side where for the time being the operation is not actually taking place should be firmly packed with strips of gauze saturated with cocaine but squeezed out nearly dry.

4. The head should be elevated as much as possible to reduce congestion. Probably the sitting posture, as advocated by Waggett, de Prenderville, and others, would be found useful.

5. Calcium lactate may be administered beforehand.

I have found it possible in this way to clear out under vision the entire ethmoidal region. It is surprising how good a view of the ethmoidal bulla is obtained, and also of the cell cavities as they are opened up. It is quite possible to examine individual cells and curette out their mucous linings or polypoid contents with a small spoon or ring knife. Luc's forceps, Grunwald's forceps, and occasionally a bent probe, will all prove useful in breaking down the partitions between diseased cells. The limits of the disease can be defined with considerable accuracy. After removal of the cellular portion of the ethmoid the orbital plate or os planum is brought into view, and care must be taken to avoid injuring it. Of course the further forward the field of operation the better the view. The agger cells are in an excellent position for examination and treatment.

This method will also be found of use in exploration of, and operation on, the sphenoidal sinus. By employing it

a view can be obtained of the posterior end of the middle turbinate, and the posterior third or half of this body can be removed without interfering with the anterior portion. In this way the opening of the sinus may more readily be brought into view. Suppuration in the posterior ethmoidal cells will perhaps be discovered, and if found can be dealt with.

Operation on the frontal sinus for the improvement of drainage, on the lacrimal sac (intranasal dacryocystostomy), and inspection of and operation upon the antrum, may be carried out by this route. In the case of the antrum the middle portion only of the inferior turbinate need be removed; moreover, it will be found comparatively easy to remove the lowest part of the antromaxillary wall with a chisel. A good view of the interior of the cavity will be obtained; polypi or a foreign body can be dealt with.

Structures seen from an unfamiliar point of view may at first be recognized with some difficulty, but a little practice will accustom the surgeon to the altered orientation. He should correct his impressions by occasional examinations through the nostril on the same side as the disease. When working in the posterior region of the nose this is most essential, as structures situated near the septum will be better seen when viewed from the same side. It is always well to remember that in these ethmoidal cases disease works great changes, and that anatomical landmarks present in health are often conspicuous by their absence. One advantage of working obliquely across the nose is that the point of the forceps or end of the ring knife is directed towards the orbit instead of towards the roof of the ethmoidal galleries and cribriform plate. My results in dealing with cases by this method have been very encouraging, and I hope at a later date to publish some of them.

DOSAGE IN THE THERAPEUTIC ADMINISTRATION OF THYROID GLAND SUBSTANCE.

BY

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IN current medical literature reference is made by various writers to treatment by means of thyroid gland substance, termed "thyroid extract." This term, however, has no exact meaning, for it does not appear either in the *Pharmacopoeia* or in other works of like nature, and it is susceptible of different interpretations in different circumstances.

Thus it is probable that, if thyroid extract or *ext. thyroidei sicc.* be prescribed in powder, the *thyroideum siccum* (*B.P.*) will be dispensed, of which one part is equivalent to about five parts of the fresh gland; but that, if the same prescription be ordered in tablet, it will be supplied in the form of a preparation by one of the big drug houses, whose tablets are usually made up in strength approximately equivalent to the fresh gland, that is, about one-fifth the strength of the official preparation.

In this way the treatment of patients suffering from thyroid insufficiency is liable to be ineffective, as is well illustrated by a case which came under my care four years ago.

A woman, aged 38, consulted me on account of inability to discharge her duties as a nurse; she was suffering from well marked myxoedema. She complained of a variety of disturbances, especially at night, and the classic features of the disease were present. Her weight was 11 st. 7 lb. I ordered *extract. thyroidei sicc.* in tablets in doses increasing up to 18 grains daily, which she took for three months without any improvement. Upon inquiry I ascertained that the tablets supplied were those put up commercially, and that the patient had therefore been receiving the equivalent of only about 3½ grains of the official preparation daily. Treatment was then discontinued for a week or two, after which I altered the prescription to *thyroideum siccum* (*B.P.*), increasing up to gr. v—in cachet—of which three were taken daily. The result was immediate and immense improvement. The supraclavicular masses began to disappear, her weight decreased until she was only 9 st. 9 lb., the nocturnal distress ceased, and the facial and general aspect changed; but any omission in taking the thyroid has been followed by increase in weight and recurrence of symptoms. The daily dose of *thyroid. sicc.* (*B.P.*) taken by this patient is the equivalent of about 75 tablets of 5 grains each as commercially prepared.

Hence it is seen that there are two sources of possible error in the administration of thyroid gland substance:

1. Through the fact that in the official preparation the substance is presented in concentrated form, whilst in the products of some of the large commercial houses it is presented in approximately the strength of the fresh gland.

2. Through the use of the term "*ext. thyroidei*," which indicates neither of the above preparations specifically, but leaves to the chemist the decision as to which of them shall be supplied.

It may be argued that in the case quoted the chemist was at fault in dispensing the commercial tablets to my prescription; but, in view of the vagueness of the term "*thyroid extract*," this is not sound reasoning, and I have since ascertained from other chemists that they would have dispensed the prescription in like manner.

It is to be noted that in the *B.P.* 1914 the official dose of *thyroideum siccum* is given as ½ to 4 grains, instead of 3 to 10 grains, as in the *B.P.* 1898. In neither case is there any suggestion as to how frequently the dose may be repeated, and the change introduces another factor that may contribute towards ineffective treatment.

A CASE OF CONTRACTED PELVIS: CAESAREAN SECTION THIRCE.

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THE following case is of sufficient interest to be placed on record, I think. For economy of space I have omitted many interesting details, bearing on the questions of the effect of scarlet fever desquamation on the healing of operation wounds, the lochia after Caesarean section operations, and the comparative values of silk and catgut suture for the uterine wound.

First Operation.

The patient when first seen, October 27th, 1914, was a primipara aged 25. She had been in labour over thirty hours in the hands of a midwife, who had sent for a doctor; he, under an anaesthetic, had succeeded in drawing down a foot outside the vulva, and then requested me to see the case. I found, as well as the foot, the umbilical cord (not pulsating) protruding. The pelvis contracted, with a true conjugate of about 2½ inches; pulse and temperature were normal.

Considering that the uterus was most probably infected, and that embryotomy would be most difficult and dangerous, I considered abdominal hysterectomy would give her the best chance of recovery, and she was removed to the Norfolk and Norwich Hospital for that purpose. There it was decided by Mr. Everett, under whose care she came, to allow a chance for future pregnancies by performing conservative Caesarean section. This was done, and though the patient had, on the second day after this operation, a pulse of 140, and for a week elevation of temperature due to sepsis contracted in labour, she made a good recovery.

Second Operation.

On November 25th, 1915, she came to me, then eight months pregnant, and on December 16th she was admitted into the Norwich Maternity Institution under my care. The following pelvic measurements were noted:

Between the A.S.S., 10 in.
Between crests, 10½ in.
External conjugate, 6½ in.
Diagonal conjugate, 3½ in.
Transverse of outlet, 2½ in.

On December 19th I performed Caesarean section, delivering her of a living female child weighing 7½ lb. A few adhesions were found on the surface of the uterus, but no signs of a scar from the first operation. The patient progressed normally for the first three days, but on the evening of the fourth developed a definite attack of scarlet fever, which was followed by total desquamation a fortnight after. Notwithstanding this she made a good recovery, and was discharged with her child on January 12th, 1916.

Third Operation.

On June 8th, 1917, she was again admitted to the Norwich Maternity Institution pregnant, with labour due on or about June 16th. She requested me on this occasion to sterilize her.

On June 10th I performed Caesarean section, delivering her of a living female child of 6½ lb. Slight adhesions were seen, and a distinct scar was noted in the uterine wall. The Fallopian tubes were ligatured and divided, and the peritoneum stitched over each end with catgut.

The patient, who nursed her child from the third day, was discharged on the twentieth day after operation quite well.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SALICYLIC IONIZATION AS A PALLIATIVE IN MULTIPLE NEUROFIBROMATA OF THE SPINAL CORD.

SOME eighteen months ago a nurse, aged 49, the victim of multiple neurofibromata of the spinal cord (von Recklinghausen's disease), came to me in despair. She had recently been operated upon and a number of small fibromata had been dissected from the spinal nerve roots. As, however, it was found impossible to remove more than a certain proportion of the very numerous little tumours, she experienced little benefit from the operation. The pain and stiffness in the back continually increased; she walked lamely and became liable to sudden loss of power in the lower extremities, causing her to fall down in the street as if struck. She had to cease work and life became a burden to her. The surgeon told her he could do no more.

I searched the literature in the nearest medical library for information as to the treatment of this obscure disease. No suggestions were forthcoming. "If operation fails the case is hopeless" was the general verdict. In desperation, her condition being so miserable it could scarcely be made worse, I suggested she should try electrical treatment. After a six weeks' course of salicylic ionization she was wonderfully improved; the pain and stiffness had vanished, the limbs had regained their strength, and the nodules, though still tender on pressure, caused little or no inconvenience.

Shortly afterwards she was once more able to take up her work as a masseuse, and from that time up to the present she has kept reasonably fit. At the moment, in addition to a large amount of private work, she attends two military hospitals, treating from twenty to thirty cases daily. She still finds it necessary to keep up the ionization treatment—without it pain and stiffness return—but a couple of applications a week are sufficient to keep the trouble at bay.

I have now advised her to try potassium iodide in place of the sodium salicylate to attempt to bring about actual disappearance of the nodules. The patient attributes her present well-being entirely to the electrical treatment, and since instead of being a hopeless invalid she is now a useful member of the community, it seemed well to place the case on record for the benefit of others similarly afflicted.

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Marple Bridge, Derbyshire.

A CASE OF HAEMATEMESIS AND MELÆNA NEONATORUM WITH RECOVERY.

ON May 19th, 1917, Mrs. —, a primipara, who had suffered during the earlier part of the puerperium from continual vomiting, and during the latter part from albuminuria, was delivered of a male child at 10.30 p.m. Apart from a delayed second stage, when forceps were applied under an anaesthetic, the labour was normal. The child when born had extreme moulding of the head, cried feebly, and its respirations were shallow, but stimulation by slapping made it cry lustily and respiration became normal.

ON May 21st, at 2.30 a.m., twenty-eight hours after birth, attention was drawn to the child by a gurgling sound, and it was found that it had vomited blood. This continued on and off until 3.30 a.m., by which time 8 to 10 ounces had been vomited. At 3.45 a.m. there was recurrent hæmatemesis of another ounce, and the child was given 1 minim of tincture of opium in half an ounce of water by the mouth. At 5 a.m. there was a further hæmatemesis of another ounce, and again the child was given 1 minim of tincture of opium. After this it went to sleep, and there was no further hæmatemesis.

At 9 a.m. Dr. Charles R. Box saw the infant, and advised subcutaneous injections of human serum; meantime a large tarry stool streaked with bright blood was passed. At noon the first subcutaneous injection of 10 c.cm. human serum was given in the abdominal wall, and a gelatin mixture (gr. x in 3ss) given by the mouth every two hours throughout the day.

ON May 22nd the stools were still tarry but not streaked with bright blood. Another subcutaneous injection of 15 c.cm. human serum was administered, and half an ounce of a 10 per cent. solution of glucose given every two hours alternately with the gelatin mixture, by mouth. ON May 23rd the stools were tarry; the glucose solution and gelatin mixture were continued, and 10 c.cm. serum injected. Next day the stools were still tarry; no serum given, but glucose solution and gelatin mixture were continued. ON May 25th the stools were normal. Another 10 c.cm. serum injected. The glucose solution and gelatin mixture were discontinued, and two ounces of No. 1 humanized milk substituted every two hours.

Jaundice was evident from May 22nd to May 26th, when it gradually disappeared. After May 24th the child was perfectly well, and took his feeds well. No. 2 humanized milk was substituted for No. 1 on June 4th, and he gained on the average over one ounce in weight daily.

Abbey House, Kenilworth.

WM. MARRIOTT.

HYPERPYREXIA IN ENTERIC FEVER.

L. B., aged 28, male, an Italian ice-cream vendor, was seen by me for the first time on June 25th. He had been feeling "out of sorts" for some days, suffering from headache and diarrhoea. His temperature at my visit was 103.6° F., the belly was tumid, the tongue furred, and some suspicious spots were seen on the abdomen. A diagnosis of typhoid fever was made, and subsequently confirmed by the Widal test. The stage of the illness seemed to be about the beginning of the second week. For the next six days the evening temperature remained at about 103° F., there was considerable bronchitis, and diarrhoea was at times troublesome. On the evening of July 2nd the temperature fell to 101° F., but by midday of July 3rd it had risen to 104.2° F. A sponging with cold water had no effect, as two hours later it had reached 105.6° F. The patient was then rubbed over with ice, which brought the temperature down to 103° F. It immediately began to rise again, attaining 106° F. in two hours. An ice-pack reduced it to 103.2° F., only for it to shoot up again to 107.2° F., when the patient succumbed.

Death from or accompanied by such pyrexia is comparatively rare in enteric fever, and I have ventured to think that the circumstance is worth recording.

F. M. FONSECA, F.R.C.S.I., D.P.H., L.A.H. Dubl.,
Assistant Surgeon and Anaesthetist, Ebbw Vale
Hospital.

EXCISION OF CAECUM: FATAL GASTRIC DILATATION.

E. S., aged 28, an Indian, was admitted on April 28th, 1917, for abdominal pain, especially in the right iliac fossa, of eight months' duration. He had no acute attacks, but the pain was gradually getting worse; there had been no attacks of obstruction.

Examination showed a hard nodular mass in the right iliac fossa, diagnosed as caecal tumour, malignant or tuberculous. ON May 2nd, 1917, a large pararectal incision was made, and the tumour was found to be an extensive carcinoma which had become adherent on the outer side to the parietal peritoneum as well as the omentum. The caecum, ascending colon, and hepatic flexures were excised with the last few inches of the ileum, and lateral anastomosis performed. In mobilizing the caecum and colon the peritoneum on the outer side was of necessity cut rather further than usual from the bowel, so that some but not a great deal of tension was necessary to bring the parietal peritoneum and mesocolon into apposition to peritonealize the raw area.

The patient stood the operation well. The next day, however, his pulse began to fail, there was no sign of peritoneal infection nor bleeding. There was no vomiting at any time. The pulse gradually failed and he died. He was kept sitting up and in this position did not show signs of dilatation of the stomach.

At the *post-mortem* examination all was found well with the anastomosis and there was no hæmorrhage, the stomach and that part of the duodenum proximal to the superior mesenteric artery was greatly dilated and contained all the fluid the patient had taken. Whatever may be the usual cause of acute post-operative dilatation of the

stomach, there can be no doubt that in this case the tension on the mesocolon had caused the superior mesenteric artery to obstruct the duodenum and produce acute dilatation and death without vomiting.

C. H. BRODRIBB, Major I.M.S.,
Medical Officer in Charge of the Civil Hospital,
Secunderabad.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

VICTORIA WAR HOSPITAL, BOMBAY.

GUNSHOT WOUND OF LIVER: SECONDARY HAEMORRHAGE:
LIGATURE OF BRANCH OF HEPATIC ARTERY:
RECOVERY.

(By T. S. Novis, F.R.C.S., Major I.M.S., Surgical
Specialist to the Hospital.)

Lieutenant M. N., Turkish prisoner, was struck by a rifle bullet, which entered his chest in the seventh right costal interspace, 1 in. outside the nipple line, and passed out below the costal margin in the posterior part of the right flank, wounding the liver and right lung. At first his progress was satisfactory and his wounds had almost healed when transferred to a hospital ship three weeks later.

On the first day of the voyage, during dinner, he was seized with faintness and exhibited all the symptoms of internal haemorrhage. The abdomen was opened through the right rectus and the wound in the liver packed, the ends of the gauze were left protruding through the upper end of the incision, which was closed after the peritoneal cavity had been emptied of blood, and a counter-drain introduced in the flank. The patient quickly rallied, and the packing was removed after four days. There was no haemorrhage.

On arrival in Bombay he was admitted to the Victoria War Hospital. He was very ill, and had a sinus at the upper end of the abdominal incision which was discharging a considerable quantity of brown pus. The temperature showed an evening rise, which became more marked after a few days, and was thought to be due to a small haemothorax on the right side of his chest having become septic; this, however, proved on exploration to be sterile. As his condition did not improve and the temperature assumed a more septic type, it was deemed advisable to open up the sinus running down to the liver and introduce a small drainage tube.

The symptoms were relieved, but four or five days later a severe secondary haemorrhage occurred, which was checked by plugging but not permanently stopped. Under anaesthesia the abdominal sinus was opened up by an incision extending back below the costal margin to the counter-opening in the flank; the scar in the seventh intercostal space, which was bulging, was also opened. Haemorrhage was very free from both openings, which communicated; the blood clot was hastily removed, and the wound in the liver packed with gauze soaked in adrenalin. Two days later, when the packing was removed, after loosening with hydrogen peroxide, all haemorrhage had ceased. The wound was washed out with hydrogen peroxide and lightly packed daily.

He appeared to be doing well for a week, when another severe secondary haemorrhage occurred during the night, which was temporarily controlled by packing. When I saw the patient he showed signs of serious loss of blood, and his condition was critical. I resected six inches of the eighth rib, and divided the diaphragm and liver tissue between the chest wall and the track of the bullet; having powerfully retracted the seventh from the ninth rib, I was able to see and, by understitching, secure a large branch of the hepatic artery, which was bleeding freely, and had been no doubt the source of haemorrhage from the beginning. He was transfused intravenously on the table, and again into the cellular tissue of the axilla on the evening of the operation.

From this time onwards his recovery was continuous though slow, and he eventually left the hospital with both wounds healed, looking stout and well.

Reviews.

THE TREATMENT OF DIABETES.

THE book with this title by Dr. ELLIOTT P. JOSLIN,¹ Assistant Professor of Medicine at Harvard, is a full and authoritative account of the modern treatment of diabetes on the lines laid down by Dr. F. M. Allen. It is well up to date in its practical and theoretical matter, as might be expected from a past laboratory worker who has now treated 1,300 diabetics. So clearly and refreshingly is this inherently difficult subject treated, that it becomes a singularly attractive problem. The present clash of arms is echoed by the dedication to the medical profession of the United States and her allies, and by the dictum on the opposite page that "it is desirable in peace, but a duty in war, for every diabetic patient to keep sugar-free. The food which the untreated diabetic patient wastes in a week would feed a soldier for a day."

Success in the treatment of diabetes, as in pulmonary tuberculosis, depends on early diagnosis, and accordingly the old rule always to examine the urine is insisted on to the extent that it should form part of the celebration of every birthday; the practical importance of systematic urinary examination in the detection of the disease in an early stage is shown by its discovery during life assurance examination in 11 per cent. of the author's male cases above the age of 10 years. A great advantage in Allen's fasting treatment is its simplicity, which obviates the need for complicated analyses of the urine and blood; in fact, the diabetic patient should, as part of his education, invariably test his urine, and as an example of the ease with which this can be effected reference is made to a boy aged 7 years who was able, not only to test his own urine, but that of other patients in the hospital, and to a girl of 4 who takes it for granted that the diet will be changed when she sees her urine give a positive Benedict reaction.

The dietetic treatment is successful only when the urine is free from sugar, for the diabetic patient's tolerance for carbohydrates increases when this occurs. In the past, the first year after the discovery of diabetes was the danger zone for the patient, as 68 per cent. of the deaths occurred in this period, whereas now the author's cases show a mortality of 14.8 per cent. only. This improvement is ascribed, in the first place, to the fasting treatment, and, secondly, to the preparation for the fast by the omission of fat, then by the restriction and omission of protein, and then the restriction of carbohydrates. It is seldom necessary to prolong the fast for more than four days, and if the urine is not sugar-free then, there is probably some complicating infection. The prevention of acid intoxication is aimed at by the omission of fats from the diet in the preparatory stage and by a return to it after the carbohydrates and proteins have been resumed. When, however, it threatens to become severe a definite campaign is initiated, and here as elsewhere detailed and clear directions are set out; large quantities of fluid in the form of coffee, tea, thin broths—two pints within every six hours—rest in a warm bed, the avoidance of constipation by enemas, and digitalis or caffeine hypodermically to sustain the circulation, are ordered. Alkalis are forbidden; this may appear a revolutionary doctrine, but the author, who was formerly its strenuous supporter, now gives good reasons for the view that the dangers outweigh the advantages of this treatment.

The practitioner who wishes to employ the Allen treatment should have this practical volume with its useful tables of diets at his elbow to fortify and inspire him with the author's hopeful confidence.

TRENCH FEET.

LIFE in the trenches from the point of view of trench feet is admirably illustrated in a little Italian manual on *Congelamenti*,² which may be translated "congelation," or,

¹ *The Treatment of Diabetes Mellitus*. By Elliott P. Joslin, M.D., Assistant Professor of Medicine, Harvard Medical School, etc. Second edition, enlarged and thoroughly revised. Philadelphia and New York: Lea and Febiger. 1917. (Med. 8vo, pp. xvi + 559; illustrated, 4.50 dollars.)

² *Congelamenti: Patogenesi e Cura*. By Piero Casali, Maggiore Medico, and Felice Pulle, Capitano Medico. With a Preface by Professor Luigi Devoto. Milano: Urico Hoepli. 1917. (Fcap. 8vo, pp. xvi + 364; 117 figures. L. 6.50.)

more freely, "lesions due to exposure to cold," written by Major CASALI and Captain PULLE of the Italian army. They remark that trench foot was described by Xenophon, who details in his *Anabasis* how he had to leave behind him on his march home certain soldiers with snow conjunctivitis and snow gangrene of the toes. Our authors give a full account of the pathogenesis and pathology of trench foot, and insert a great number of excellent photographs of the types of trenches in which the disorder is or is not liable to make its appearance. They distinguish three types of trench foot: That due to exposure to cold alone, that aggravated by the use of tight leg wear in wet trenches, and that aggravated by the presence of a dermatomycosis, the infecting agent being *Scopulariopsis koeningii*, in muddy trenches, associated also with the presence of *Sterigmatocystis versicolor*. Instructions for medical officers in charge and also for the men in the trenches are given, together with details of the prophylaxis and treatment of trench feet; the advice here given may be briefly summed up in the words "cleanliness and warmth." The book contains a great deal of practical information and advice, and should be of considerable service.

PHARMACOLOGY.

MORE than ever before pharmacology is now an experimental science. Professor JACKSON of St. Louis has performed a useful piece of work in bringing out a large and generously illustrated textbook of *Experimental Pharmacology*,³ in which the reader, who is presumably engaged in teaching or learning pharmacology, may see the technique of the experimental basis of the science expounded. At the beginning of the book is an account of the fitting up of the experimental laboratory, at the end a chapter on the shop-work that may be done by a skilled artisan in charge of the upkeep of the apparatus employed by the laboratory workers. The greater part of the text is concerned with experiments on experimental animals of all sorts to illustrate the pharmacological actions of drugs of all sorts, and is divided for convenience into 168 sections. It is clearly written in conversational style, and the text gains enormously in value from the admirable illustrations of every kind with which it is elucidated. The book is a first-class production and should be in the hands of all workers in pharmacological laboratories. It may be noted that the name of the drug termed "phloridzin" (page 457) should more correctly be spelled "phlorhizin."

*The Practitioner's Pocket Pharmacology and Formulary*⁴ is a compact and serviceable little volume into which Dr. FREYBERGER has contrived to crowd a vast amount of information about the use and abuse of all the important drugs and preparations of our own pharmacopoeia and that of the United States of America; in addition some foreign pharmacopoeias have been laid under contribution, and many extrapharmacopoeial drugs have been included. The drugs are arranged in alphabetical order, and each is discussed under such headings as "Properties," "Use," "Indications," "Dose," "Incompatibles," and the like, all as briefly as possible. Suitable formulae for administration are often given, and the treatment for cases of poisoning in the case of toxic drugs is indicated. The last seventy pages of the book are occupied with an index of indications and counter-indications, which begins by recommending taraxacum for abdominal plethora and ends with recommending salvarsan in yaws. The book is well up to date, and contains a great deal that should be of service to the discriminating practitioner of medicine or medical student, to whom it may be recommended.

NOTES ON BOOKS.

*Lecciones de Antropología*⁵ is a curious work, bearing the imprimatur of the Archbishop of Bogotá, in which the author seeks to define the causes or principles that regu-

late the nature, powers, and actions of mankind. He fills his well documented pages with references to the works of modern scientists, of modern philosophers, and of the philosophers of days long gone by. Among the latter it is particularly to St. Thomas Aquinas, the prince of thirteenth century theologians and peripatetic philosophers, that the author refers. And so it comes about that the pages of this book present, to any reader unversed in Roman Church views of scholastic philosophy, a curious yet coherent medley of fact and fancy relating to the nature of man and his various potentialities, his various concupiscible and irascible appetites, the origin of his soul (the author is a creationist, and refutes the pretensions of both the emanationists and the traducianists here). Passing on from the rarefied atmosphere of these intellectual subtleties, the reader finds accounts of stratigraphical and palaeontological chronology based on mere fact and described as "more or less plausible"; he finds, too, a discussion of the question whether primitive man was more degraded than we are ourselves, or a far nobler creature, as Milton and the late Duke of Argyll argued. The various sections of the book form an interesting study, alternating as they do between hard fact and divagations into speculative philosophy and theology. They have been published, it may be gathered from the preface, for the edification of students at the Bogotá College of Rosario.

MINISTRY OF NATIONAL SERVICE: MEDICAL DEPARTMENT.

We are officially informed that the Medical Department of the Ministry of National Service is organized as follows:

1. There is a Chief Commissioner of Medical Services with direct responsibility to the Minister. His office is in the offices of the Ministry in Westminster. His duties are to organize and administer the medical service of the Ministry, and to carry out its general policy. The Chief Commissioner is James Galloway, M.D., F.R.C.P., F.R.C.S.

2. The immediate task before this department is to make a medical survey of the male population of the present military age. For this purpose England, Scotland, and Wales have been divided into ten regions. In every region there will be a Commissioner of Medical Services whose duty it will be to represent the Medical Department of the Ministry in his region, to co-ordinate his work with that of the other representatives of the Ministry in the region, and to organize and administer the work of the medical service under the control of head quarters in London. The regions are as follows:

1. Northern, comprising Northumberland, Durham, Cumberland, Westmorland.
2. North-Western, comprising Lancashire and Cheshire.
3. Yorks and East Midland, comprising Yorkshire, Lincolnshire, Nottingham, Derby, Leicester, Northampton, Rutland.
4. West Midland, comprising Stafford, Warwick, Worcester, Hereford, Shropshire.
5. Wales.
6. South-Western, comprising Gloucester, Wilts, Somerset, Dorset, Devonshire, Cornwall.
7. East Anglia, comprising Norfolk, Suffolk, Essex, Cambridge, Huntingdon, Bedford, Bucks, Oxford, Berks, Herts.
8. South-Eastern, comprising Kent, Sussex, Hants, Surrey.
9. London.
10. Scotland.

Up to the present the following Commissioners have been appointed:

Sir James Porter, K.C.B., K.C.M.G.	South-Western Region.
Colonel C. & Tyrell, C.B.	London Region.
Sir Charles Bedford	South-Eastern.
Dr. T. Wardrop Griffith	Yorks and East Midland.
Dr. W. Bickerton Edwards	Wales.
Colonel W. H. Bull	West Midland.
Dr. Norman Walker	Scotland.
Dr. Hale White	East Anglia.
Dr. G. Redmayne Murray	North-Western.

The regions will be divided into recruiting areas, in each of which will be established one or more medical boards. The supervision of these will be the special duty of the regional commissioners.

The number of these medical boards will be approximately one hundred, and each of them will have as president a medical officer with some experience of these examinations of men. To assist him there will usually be four members of the medical board taken from a panel of local medical men to be selected by the Advisory Board on the advice of the Statutory Medical Committees. In cases

³ *Experimental Pharmacology*. By Dennis E. Jackson, Ph.D., M.D., Associate Professor of Pharmacology, Washington University Medical School, St. Louis. London: Henry Kimpton. 1917. (Med. 8vo, pp. 536: 390 figures, including 24 coloured plates. 20s. net.)

⁴ *The Practitioner's Pocket Pharmacology and Formulary*. By L. Freyberger, J.P., M.D. Vienna. London: W. Heinemann. 1917. (Fcap. 8vo, pp. 555. 12s. 6d. net.)

⁵ *Lecciones de Antropología*. By Julian Restrepo-Hernandez. Bogotá: Arboleda and Valencia. 1917. (Roy. 8vo, pp. xxii + 227. 1.30 dollars.)

presenting difficulty, such as those of suspected tuberculosis, heart disease, and unusual defects of vision, the presidents of medical boards will be empowered to obtain the opinions of specialists, and it is hoped that the staffs of general and special hospitals throughout the country may be able to render assistance in giving special opinions.

3. Hitherto men who, having appealed against the result of their medical examination, were granted a re-examination, have been sent for this purpose to special medical boards, of which there were three for England and Wales, namely, two in London and one in Leeds; also one for Scotland in Edinburgh. This system caused delay and entailed long journeys upon the men. In future, three medical assessors, appointed by the Local Government Board, will be attached to the appeal tribunals. Should the appeal tribunal on hearing a case decide that a medical re-examination is desirable, they will forward all the papers bearing on the case to the medical assessors, who will re-examine the man. The decision of the medical assessors will be final as regards the man's physical condition and gradation.

4. This gradation will be in four groups, namely:

Grade I, to consist of men who attain the normal standard of health and strength, and are capable of the physical exertion suitable to their age.

Grade II includes those who do not attain the standard of *Grade I* from various causes, such as deficient physical development or slight defects, but are yet fit for work of a less strenuous kind. Most of these are capable of improvement by training.

Grade I corresponds to Class A, or general service of the late classification, and *Grade II* to Classes B 1 and C 1, that is, to garrison duty abroad and at home.

Grade III includes those who from any cause are not suitable to undergo military training as combatants, although they may be quite fit for one of the auxiliary services connected with the army, and fit also for the work on which they are already employed or its equivalent.

Grade IV includes all those who are unfit both for military service and any work of national importance.

5. Another serious function of this department will be to consider the supply of students in the medical schools as bearing upon the future strength of the medical profession, and to determine whether it will be necessary to bring back to the schools men from the services where they are now serving in some non-medical capacity, and so reconstitute the body of students required to make good the wastage of the medical profession.

6. In order that this Ministry may be kept in close touch with medical opinion, and may have the co-operation of existing organizations, an advisory medical board has been created on which are represented:

Advisory Medical Board.

The Committee of Reference (of the Royal Colleges in England) by Charles Ryall, Esq., F.R.C.S.

The Central Medical War Committee by E. B. Turner, Esq., F.R.C.S., and T. Jenner Verrall, Esq., LL.D.

The Scottish Medical Service Emergency Committee by J. W. B. Hodsdon, Esq., M.D., President of the Royal College of Surgeons, Edinburgh.

The other members of the Advisory Medical Committee are Sir Donald MacAlister, K.C.B., M.D., Professor Arthur Keith, M.D., F.R.S., Colonel J. Arnall Jones, K.H.S., V.D., M.D., and Dr. Percy Edwards, Liverpool.

The Chairman is the Minister, Sir A. C. Geddes, K.C.B., and the Vice-Chairman the Chief Commissioner, Dr. James Galloway.

7. A manual of general directions for the guidance of presidents and members of medical boards has been prepared in order to ensure uniformity in the grading of men throughout the country.

In this manual a scheme is outlined by which every man is seen by each member of the medical board at some stage of his examination, while his final gradation is settled by the consensus of opinion of the members and president of the board. Hence there will be no ground for the complaints sometimes made that the president omits to consult the opinion of his board or even over-rides them.

When a man wishes to appeal against the gradation of the medical board he must lodge his appeal within five clear days of his examination, and will forward in duplicate any medical certificates he may wish to place before the tribunal. If the appeal tribunal after hearing the case decides that the claim is one in which they think medical re-examination is desirable, they will forward all the documents bearing on the case to the medical assessors

appointed by the Local Government Board, accompanied by the appeal tribunal's recommendation that the man should be re-examined. The medical assessors will inform the man of the date on which he should present himself for re-examination, giving at least three clear days' notice. A representative of the medical board which graded the man will be present at the meeting of the medical assessors of the appeal tribunal, if they desire it, in order to supply any information which may be required.

The medical assessors will communicate their decision to the chairman of the appeal tribunal, who will then make arrangements for the final adjustment of the man's case. The medical assessors will also give the man a card (known as A.F.W. 3291) showing the grade in which they have placed him.

8. There may arise in the course of the work of the medical boards and of the medical assessors questions of principle in the gradation suitable to men suffering from certain disabilities which cannot be decided by reference to the manual of instructions issued by the Ministry. In such cases the particular question will be stated in writing by the medical board or the medical assessors concerned and forwarded to the Secretary of the Ministry of National Service. The matter may then be placed before the Advisory Board of the Medical Department for an opinion. It will be within the power of the Ministry to refer questions involving special difficulty to medical men whose opinions may be judged to be of value on the particular subject in question.

THE CONTINUED TREATMENT AND TRAINING OF DISCHARGED SOLDIERS.

A new Army Council Instruction, No. 1531, of 1917, bearing date October 6th, 1917, has been issued in substitution for A.C.Is. 449, 626 and 795 of 1917, which are cancelled.

1. The Ministry of Pensions and War Pensions Committees established in the several counties and county boroughs and in certain large towns are charged with the duty of securing any medical treatment or training for industrial life that a discharged soldier may need. It is important, therefore, that officers i/c hospitals should be placed in relation with these Committees in a manner to be presently described.

2. With reference to A.C.I. 1912 of 1916, it must be borne in mind that so long as in-patient treatment is required, whether by means of curative manual exercises or by other means, and accommodation is available, soldiers will be retained in the appropriate hospitals.

On the termination of such treatment, if the men are considered to be unfit for further service, they will be brought before an invaliding board, but will not be discharged from hospital until the date of their actual discharge from the service, i.e., 21 days after their discharge has been approved by the invaliding board.

This procedure will be followed in the case of all soldiers in hospital who are about to be discharged from the service on medical grounds, except in limbless and mental cases, and cases of tuberculosis who accept sanatorium treatment.

Men who have been fitted with an artificial limb may be allowed to leave hospital before the expiration of 21 days provided that the relatives or friends of the man expressly state that they are able and willing to take him, and that satisfactory arrangements can be made to ensure his receiving his pay up to the date of his discharge from the army, i.e., 21 days after his invaliding board.

Mental cases which are to be discharged under the provisions of paras. 403-410 King's Regulations (see A.C.I. 1171 of 1917), and are suitable cases to be handed over to the care of friends, may, provided the friends are able and willing to look after them, be so handed over as soon as their discharge has been approved by the invaliding board.

Cases which are unsuitable to be handed over to friends may be sent to the asylum to which they are chargeable as soon as practicable after their discharge has been approved by the invaliding board, instead of being retained in the military hospital for the full period of 21 days.

Medical officers should, as far as possible, anticipate the date on which the patient will complete his in-patient

treatment in order that the soldier's documents may be obtained and the board held approximately 21 days before that date. This procedure will obviate any undue congestion of hospital beds.

A. Treatment of Cases on Discharge.

3. When a soldier has been approved for discharge from the army on medical grounds, and when he is subsequently discharged from the hospital, or command dépôt, or other unit in the case of a man not in hospital, some further treatment as an out-patient (or in special cases, e.g., tuberculosis or paraplegia, as an in-patient) may be necessary. Where out-patient treatment is required it may often be suitably afforded at a military hospital or in a V.A.D. or Red Cross auxiliary hospital (see para. 12), and whenever a Local War Pensions Committee presents such cases for treatment this should be afforded for as long a period as may be required so far as available resources permit.

4. In order that Local Committees may be able to make themselves fully acquainted with the needs of men whom it is proposed to invalid, the fullest facilities should be given to duly accredited representatives of these Committees appointed as "Hospital Visitors" to visit and confer with the hospital authorities, or with the medical authorities of the command dépôt, or other unit in the case of a man not in hospital, and the man concerned.

In addition to treatment, an appropriate course of technical training may for many of the cases be desirable. The provision of the means for such training rests with the Ministry of Pensions, and full information bearing upon such matters should be placed at the disposal of the hospital visitor, and the officers i/c hospitals should assist with advice or in any way that lies within their power.

5. As soon as the soldier has been approved for invaliding from the army, the officer i/c hospital, or in the case of a man not in hospital, the president of the travelling or invaliding medical board, will forward to the Secretary of the Local Committee of the district in which the man proposes to reside a card (A.F. W. 3555), giving full particulars with regard to the man, his disability, and of the treatment recommended for him. If no treatment is recommended, the fact should be stated on the card, but in any case a card will be sent, as this notification is necessary to enable the Local Committee to visit the man immediately on discharge.

Where treatment is recommended at a military hospital or at a V.A.D. or Red Cross hospital the card will be sent to the officer i/c the hospital in which it is recommended that the man should receive treatment, and the officer of that hospital will, if the treatment can be given there, return it to the Committee with a note on it when the treatment is completed.

Officers i/c hospitals, or presidents of travelling or invaliding medical boards, as the case may be, will distinguish on A.F. W. 3555 between (a) cases which require out-patient treatment at a military orthopaedic hospital, and (b) those which can be dealt with satisfactorily at a general hospital, military or civil.

Orthopaedic Hospitals.

(a) Cases falling under one or more of the following headings will be certified for treatment at a military orthopaedic hospital, their cards (A.F. W. 3555) being marked "Orthopaedic A":—

- (i) Disabilities of hands and feet.
- (ii) Bony or fibrous ankylosis of joints requiring operative or manipulative treatment in order to restore functions, or flail-joints requiring operative or mechanical fixation.
- (iii) Mal-united or un-united fractures or any type of functional disability following fracture.
- (iv) Stiff or useless limbs the result of injuries to nerves, especially cases where nerve suturing having failed tendon transplantation is indicated.
- (v) Various contractions of the extremities due to scar tissue.
- (vi) Derangements of the knee due to injury of the semilunars or following upon operations for this condition.

(b) Other orthopaedic cases requiring out-patient treatment will be marked on A.F. W. 3555 "Orthopaedic B" for treatment at a civil or military general hospital.

B. Treatment of Post-Discharge Cases.

6. Men who have been discharged from the service on medical grounds, and are subsequently found to be in need

of further treatment, may be given such further treatment on the lines indicated in para. 3.

Such cases may also, if considered necessary, receive in-patient treatment at a military hospital, if facilities are available, under the conditions laid down in A.C.I. 210 of 1917.

In order, however, to keep within reasonable limits the cases which may receive out- or in-patient treatment in accordance with this para., it has been decided to limit the cases which may thus be sent for treatment to cases of wounds or injury sustained during military service.

7. All post-discharge cases will, in the first instance, apply to the Local War Pensions Committee, who will refer the man (unless the case is immediate and urgent, or the character of the case is obvious) to a medical referee, who will determine whether the case is one of wound or injury sustained during military service, and, if he so finds, the man will be referred to a military hospital for examination.

8. The officer i/c the military hospital to which the man is sent under the provisions of the preceding para., will cause the man to be examined and will enter full particulars on the treatment card (A.F. W. 3555), which he will immediately forward to the Local Committee by whom the man was referred. He will also give one copy of the completed card to the man examined.

A.F. W. 3555 will be clearly endorsed in red ink with the words "Post-Discharge Case" at the top of Part I by the medical officer examining the man, who will also record his opinion on the form as to:

- (a) The nature of the man's complaint;
- (b) Whether treatment can be given in the hospital where the man was examined, and if not, to what hospital he should be referred;
- (c) If in- or out-patient treatment should be given;
- (d) The probable period of treatment, so far as can be foreseen.

This treatment card will be accepted by the Local War Pensions Committee as authority for making the necessary arrangements for the man's further treatment, which treatment should, if practicable, be given at the military hospital where the man was examined.

C. General Arrangements for Securing Treatment on or after Discharge.

9. It will be necessary to give the widest possible publicity to the facilities thus to be afforded to discharged soldiers, and to this end a poster has been issued by the Ministry of Pensions, copies of which should be displayed in a prominent position in each ward and in any other convenient and conspicuous position in the hospital, command dépôt, or camp.

The lists of Local Committees therein referred to will be supplied by the Ministry of Pensions, Westminster House, Millbank, S.W. 1.

Supplies of the card should be demanded in the usual manner. Further copies of the poster will be supplied on application to the Ministry of Pensions.

10. The D.D.M.S. of the Command will furnish to the Ministry of Pensions and to the Local Committee, lists of the military hospitals which will serve the various districts concerned; also a list of special hospitals in the command, stating the nature of the special treatment afforded in each. The D.D.M.S. will also afford any further information and advice to any Local Committee or Joint (Disablement) Committee within the area of the command.

11. The details connected with the attendance of men for further treatment will be arranged locally by officers i/c hospitals in consultation with the secretaries of the Local Committees.

12. Payment for the treatment of discharged soldiers as out-patients at V.A.D. or Red Cross auxiliary hospitals will be made by the Ministry of Pensions to the hospitals concerned at a rate decided upon by the Ministry of Pensions and the Committee of the British Red Cross Society and the Order of St. John. No payment should be made from Army Funds in connexion with the hospital treatment either as in-patients or out-patients of pensioners at V.A.D. or Red Cross auxiliary hospitals.

THE Italian Sero-vaccino-therapeutic Institute founded by Professor Ivo Bandi was officially opened at Naples on September 29th. It is intended to be a centre of biological research, especially in connexion with colonial hygiene. Professor Bandi has founded bursaries for students attached to a chair of colonial hygiene, and others will be created with the object of attracting foreign students of bacteriology.

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

THE DEVELOPMENT OF COAL GAS AS A
MOTOR FUEL.

NECESSITY being ever the mother of invention, since last I wrote in these pages on the subject of the utilization of coal gas as an alternative motor fuel to spirits, which are becoming available in ever diminishing quantities, matters have marched rapidly as regards the evolution, and even the production, of new devices for containing the one form of motor fuel in these islands which is not experimental and the increasing use of which is all to the gain of the Ministry of Munitions, in that the more coal gas produced the greater the proportion of the necessary residuary products for the manufacture of high explosives, and so on.

We are now arrived at the fourth licensing term since the introduction of petrol rationing. Happily, the work medical men do is regarded as of national importance. Therefore there is no question that those who hold licences will secure renewals of sorts. The new order, which comes into force on November 1st, specifically permits the use of petrol or petrol substitute "in the conveyance of a duly qualified medical practitioner or veterinary surgeon while it is being used by him for the purposes of his profession." But it is equally plain that the amount which it has been possible to allot medical men in the past has been wholly inadequate. It is scarcely less plain that the amount it will be possible to allot in the future will be still less adequate. This is to be accounted for under many heads, perhaps the chief of which are that great increases have been made in the provision of agricultural motor machinery over what was anticipated earlier in the year, with the result that there are at least 6,000 tractors in this country to-day and there can scarcely be fewer than 15,000 available from the early part of next year onwards. Hence, a vast extra demand for motor fuel will arise under this head. It is of an essential nature, as brought out by the Premier last week in an address to farmers in regard to the urgency for their producing an unprecedented amount of cereals in these islands next year. The second head is the expansion of the Allied air services, including not merely the British, but the very ambitious American programme also, which is due to be launched any time from a couple of months onwards. Every gallon of motor fuel to operate it will have to be sea-borne to France and will therefore make additional demands on the strictly limited though, fortunately, increasing amount of tank-vessel tonnage available.

AT LEAST AN AUXILIARY FUEL FOR MEDICAL MEN.

It being certain that, under the new licensing scheme, the average medical man will not be able to obtain sufficient motor spirit for his needs, and the nature of the bulk of his work consisting of runs each of relatively brief distance, he may be classed as among the sections of motor owners for whom the use of coal gas as an alternative fuel is admirably suited, and almost imperative. Moreover, the approach of winter is a signal, on the one hand, for less economical consumption by reason of cold and windy weather, and on the other for experiencing greater difficulty in starting engines on motor spirits owing to their failing to vaporize satisfactorily while the carburettor intake pipes are chilled and the cylinders are cold. When coal gas is used as an alternative fuel to take out petrol supplies it is found that, in practice, the engine will start up much more readily in cold condition on coal gas than on motor spirit, because, with the former, the explosive mixture is ready made.

THE PROBLEM OF OBTAINING SUPPLIES.

The Government having tardily announced the appointment of various men to offices alike concerned with economizing the use of motor spirits and with encouraging the development of coal gas, the individual medical man may take it for granted that in a short time the present problem of inadequate supplies of gas for motor traction purposes will have been solved. At the moment, however, despite the exhortations of the Ministry of Munitions that gas should be used for power plant to increase the production of by-products for the making of high

explosives and other munitions of war, the Sheffield Gas Company, to take an instance, is unable to undertake any measures to supply gas for motor traction owing to a shortage of labour, which is the sole trouble, for this particular company has both the plant and the coal; therefore, in that centre some enthusiastic pioneers in the use of coal gas for motor traction are unable to get their requirements. It may, however, be taken for granted that this problem of providing the necessary labour for the manufacture of gas will be readily solved, not merely in one locality, but in all localities where it may occur at present.

Nor should the medical man, as an individual, be discouraged from the use of coal gas for traction purposes by the present problem of guaranteeing users the provision of supply stations at the necessarily frequent intervals. In face of the fact that the range of gas fuel contained in fabric bags at atmospheric pressure is rarely more than from twelve to twenty miles per charge, and, in steel cylinders under compression, is fifty miles per charge, it will be appreciated that many medical men can make most of their journeys quite safely without risk of being stranded between supply stations. Besides, inasmuch as a medical man is assured of a certain proportion of petrol supplies being allowed during the next six months, he could always ensure against being stranded on the road by carrying petrol in his tank, on which he could fall back in the event of the supplies in his gas container becoming exhausted *en route*. Such petrol as he is licensed to buy could be kept, besides, in reserve for such long distance journeys as he may be called on to make occasionally.

Not quite so simple a problem at the moment, however, is the matter of his obtaining supplies anywhere he may chance to find himself. With characteristic enterprise, the Manchester Gas Department, which went full early into this matter, has advocated a standard set of filling arrangements throughout the district. This may be taken as the basis for a scheme which should obtain throughout the country. Indeed, the Government is to blame in not having anticipated the Manchester Gas Corporation in having both devised and determined the standard methods and systems of distribution.

A MODEL DISTRIBUTION SCHEME.

The Manchester scheme is so admirable that I give a summary of it here.

Meters.—Automatic type, 100-light size, fitted with special quick opening and instantaneous closing valve, the valve having a gas way equal in area to a 2-in. pipe, to be operated by a metal token (not coin size), each token representing 100 cubic feet of gas.

Fittings.—The outlet of meters to be fitted with flanges for 2-in. iron pipe, into which a 2-in. iron full-way plug cock is fitted. Each installation to be supplied with a 20-ft. length of 2-in. rubber packed flexible metallic tubing, fitted each end with a 2-in. gas thread female flat-face union.

Position of Meters.—Meters to be fixed at garages or similar establishments on all main roads, and to be fixed free of charge to tenant. The tenant to be allowed a rebate of 10 per cent. on the face value of all tokens collected from the meter fixed on his premises as a remuneration for rent and any trouble he may be caused in connecting up to vehicles, although it must be made clear that the responsibility for connecting up rests entirely with the driver of the vehicle.

Price of Gas.—4d (fourpence) per 100 cubic ft.

Tokens.—Tokens (each being value for 100 cubic ft.) may be purchased at gas offices or other convenient places at 4d. (fourpence) each for cash, and must be stamped with the name and address of the gas undertaking issuing them.

Interchange of Tokens.—Arrangements are to be made whereby foreign tokens collected from a meter may be returned to the issuing office, who should give either a credit note or cash for the face value of such tokens, or tokens of similar value, to the collecting company.

Working Instructions.—An enamelled plate to be fixed in a prominent position close to each meter, lettered somewhat as follows:

Instructions.

1. Connect up union end of flexible tube to inlet pipe of gas container, taking care that all joints are gas-tight.
2. If the vehicle is fitted with a main cock in the inlet pipe to gas container, see that it is open. See that the engine control cock is closed. See that main cock fitted to outlet of meter is closed.
3. Insert one or more tokens and turn handle in the direction of the arrow.
4. When gas container is filled:

Close the main cock on meter.

Close main cock on inlet of gas container.

Disconnect flexible tubing.

Advertising.—The situation of these (meters, and the hours the establishment is open and the meter available for a supply of gas, to be stated by the gas undertakings joining in this scheme.

The whole of the information thus obtained to be issued in a booklet and distributed free of charge to owners of motor vehicles on application.

Enamelled plates to be provided and fixed in a prominent position on the premises in which meters have been fixed, indicating that motor vehicles may be charged up with coal gas.

Standard Pipe Fittings for Motor Vehicles.—If 2 in. gas thread is adopted as the standard fitting on the flexible tube, the gas undertakings joining in this scheme should advise all vehicle owners (and assist if necessary) to fit up their vehicles with the inlet pipe to gas container fitted with a similar size thread—namely, 2 in. gas. A drawing of a vehicle fitted up in the way advised should be made and a line block made from it. This block should be reproduced in the booklet referred to, together with a copy of the working instructions and advice as to how the best results from coal gas may be obtained.

OCCASIONAL EXPLOITATION OF THE USER NEEDS PROHIBITING.

That is a sound and simple working basis. The first point that strikes one about it is that Manchester does not mean to utilize this new market for fuel as a means of profiteering by exploiting motor users in their extremity. The price of gas is fixed at 3s. 4d. per 1,000 cubic feet, which is practically equivalent to petrol at 10d. per gallon, representing an enormous economy, and being, therefore, of direct interest to the average medical man.

Unfortunately, the integrity of the Manchester Gas Department, and those at Windsor and many other districts, is not at present universal. Thus there are gas companies in London—which is greatly backward in this matter—which are seizing the opportunity to charge motorists *more for the act of filling* their containers at mere atmospheric pressure than they are for the actual gas put into them. For example, while the price of gas in some western districts is 3s. 4d. per 1,000 cubic feet, a 200 foot container which should be filled at atmospheric pressure for a charge of 8d. is, nevertheless, charged at a cost of 2s. 2d., representing an extortionate demand of no less than 1s. 6d. for the mere act of filling.

If we were dealing with gas supplied to steel cylinders under compression the matter might be different. As it is, there is no excuse for this sort of thing, particularly inasmuch as all gas so sold is additional to the gas companies' ordinary profit-making scheme, in that its dead charges for plant, rates, rents, taxes, and so forth do not increase, but only those for the bare raw materials and for labour. Inasmuch, too, as the additional residuary products suitable for the making of munitions of war are also saleable to the Government on most profitable terms, and as such extra supplies could not be available for sale at profit unless motorists come to take the extra supply of gas made at the given factory, there is no excuse for allowing London gas companies to act as Manchester ones

do not. Lastly, all gas companies' charges are arrived at on a profit-paying basis, and it does not matter in the least to the individual gas maker what use is made of his commodity after he has produced it—that is say, whether it is used for lighting, for cooking, for power plant in a factory, or for motor traction on the road.

We may with reasonable confidence, therefore, look to the Government promptly to take measures, both in the interests of the prosecution of this war and in the interest of those in need of medical attention, as a single and over-present section of the community, to ensure that the gas

companies shall not hold up to ransom those patriotic motorists of all classes, from lorry to limousine users, who have had, or who will have, their vehicles adapted to run on town gas, with the dual aim of relieving the demands on motor spirit and of enabling them each to get through more of their given national work in the course of every twenty-four hours. The medical man without the freest possible facilities for getting about is perforce restricted in the amount of work he can do in a day.



FIG. 1.—B.S.A. landaulette, belonging to the Evesham Motor Engineering Co.

POINTS FOR AND AGAINST THE VARIOUS GAS HOLDERS AVAILABLE.

The medical man's difficulty in the matter of dealing with gas as a motor fuel is its bulk. Containers at atmospheric pressure and fashioned of fabric are ideal for his purpose from every point of view save as regards volume. The fact that an individual container will hold a charge barely sufficient for more than twelve to twenty miles range does not matter to him particularly, because he has his petrol rations to fall back on for long journeys, and because, doubtless at no distant date, the Government will order the gas companies to approve and cause to be installed certain apparatus, much on the Manchester scheme, which could be set up even at the individual's house on extremely moderate terms, so that the

cost could be saved by the individual user on a month's fuel bill at the outside. But whereas omnibuses or cabs kept in large, specially built motor houses, or the average utility vehicle run by big firms, also provided with specially built accommodation, could carry a flexible fabric gas container on its roof, the entrance to the average medical man's motor house



FIG. 2.—Gas container (280 cubic feet) on two-wheel Cox trailer coupled to car. A flexible coupling leads from gas bag to carburettor.

is too shallow to admit a vehicle of such depth as, say, a limousine, a landaulette, or an ordinary touring collapsible hood kept up permanently with an inflated gas bag on the top of it. The ingenuity of designers and manufacturers may, perhaps, eventually overcome this objection.

But inasmuch as the average medical man has no call to motor either fast or far on each journey there is no reason why he should not with advantage employ the trailer scheme, such as has been devised and used successfully even on such heavy vehicles as those carrying four-ton loads, for which it will suffice for a twenty miles run per charge. As applied to the private motor vehicle, such

devices as Cox's gas trailer of 200 cubic feet capacity, or Barton's, are well worth the consideration of the average medical man, particularly if he has occasionally to make longer journeys than ordinary, and therefore to run on his petrol rations instead of gas. Then the trailer can be readily detached, and the car is available for use in normal condition.

The disadvantage of gas bags that can be contained in, say, the back of the car, is that their capacity is too limited; also on occasion the medical man has need of the full seating capacity of his vehicle. True, an alternative scheme to this has been evolved by Mr. F. A. Wilkinson of Hatfield, Herts, which is akin to two large square flexible trunks carried on the grid at the back of the car without undue overhang, and giving six miles range on a single charge. Such a device is also readily detachable when the medical man is running on an alternative fuel.

GAS UNDER COMPRESSION.

Assuming that the medical man can obtain supplies of one or another of the many devices employing metal cylinders for containing gas under compression, he has to consider various points before deciding to adopt such apparatus. The great advantages of compactness and of giving much greater vehicle range for each charge—say, up to fifty miles, against twenty on gas at atmospheric pressure only—is offset, first, by the problem of weight. A set of cylinders rarely weighs less than 6 cwt., while the lighter single cylinder scales something in the neighbourhood of 112 lb. That becomes an important item in these days of constantly deteriorating road surfaces, putting additional strain on springs, which are generally extremely hard to obtain as spares in the event of a spring breaking. Secondly, a certain amount of cost must obviously attach to supplying cylinders that take gas under high compression, whereas the filling of a collapsible fabric bag at mere atmospheric pressure is a matter involving no cost.

Nevertheless, a wide variety of steel gas cylinder devices has been forthcoming, one of them even employing the one-wheel auto trailer scheme carrying a nest of five cylinders. Most gas cylinders, however, are carried on the vehicle, as for instance the triple cylinder Pulham scheme introduced by the Marine Garage of Bexhill-on-Sea, and containing about 300 cubic feet of gas for each charge at a pressure of 150 lb. per square inch, or, approximately, 10 atmospheres, and giving a range of about twenty three miles for a weight of 650 to 675 lb.

Against this the advantages of the collapsible fabric gas holder at atmospheric pressure of 14.7 lb. per square inch include the fact that there is no weight whatever. In this connexion the following summary of facts in regard to gas holders has been drawn up by Mr. Edmund Dangerfield's organs, the *Commercial Motor* and the *Motor*, which have done most of the spade work in compelling the authorities to give attention to the very important proposition of the use of coal gas as an alternative fuel.

Gas-holder Capacities.

Type of Holder and Size.	Cubic Capacity at Atmospheric Pressure, 14.7 lb. per sq. in.	Capacity.		
		At 200 lb. Pressure above Atmosphere.	At 500 lb. Pressure above Atmosphere.	At 1,000 lb. Pressure above Atmosphere.
Flexible holder— 12 ft. x 5 ft. x 5 ft. ...	300	—	—	—
Railway cylinders— 5 ft. 6 in. x 1 ft. 8 in.	12.2	170	—	—
CO ₂ cylinders— 4 ft. 2 in. x 5 in. ... Special high pressure cylinders.	0.6	8.4	21	42

Flexible holders are obtainable in all sizes.

Railway cylinders are obtainable in sizes from 3 ft. 6 in. up to 9 ft. in length x 20 in. diameter; also 4 ft. 6 in. x 2 ft.; 6 ft. 4 in. x 2 ft.; 4 ft. 6 in. x 18 in., and 10 ft. 3 in. x 18 in.

CO₂ cylinders are obtainable in sizes from 4 ft. to 5 ft. x 5 in.

Standard gas filling connexions recommended:

Meter: 100-light automatic type.

Meter fittings: Meter outlet with flanges for 2 in. iron pipe, with 2 in. iron full-way stopcock. Installation to be supplied with 20 ft. length of 2 in. rubber packed metallic tubing fitted at each end with a 2 in. gas thread female flat-face union.

Car: Gas container to have a main cock on the inlet male union to fit end of tubing from meter installation.

LENGTH OF WEARING LIFE OF APPARATUS.

A not unimportant point in connexion with the fitting of apparatus of this sort is the question of its wearing life. Obviously, the life of metal cylinders is long. As far as I am aware, none has yet been known to wear out, though small parts, such as valves and so forth, may need renewal from time to time and are easily replaceable at a moderate cost. The railway type of cylinder, is of course, no experiment.

Until the Ministry of Munitions releases the metals and materials necessary for real progress in the matter of supplying coal gas under compression, however, it will be difficult to move rapidly or extensively in this particular direction, especially since manufacturers are not eager to spend time and money on experiments which cannot yet be followed up by quantity production of the article evolved. Doubtless, however, this unsatisfactory condition of affairs will be altered now that the Government is setting to work.

An alternative scheme is to attempt something in the nature of gas compression in non-metallic fabric containers, such as that which Messrs. Wood-Milne, Ltd., are endeavouring to produce to withstand high internal pressure.

Much, however, might be done in the way of using discarded gas holders from railway coaches, each vessel with about 12 cubic feet capacity, capable of being charged up to 14 volumes of gas.

In regard to fabric containers for holding gas at atmospheric pressure, one has been in service for twelve months on the top of a single decker omnibus which has run more than 20,000 miles on coal gas; it is found to show little signs of wear to-day. Indeed, it seems to be agreed that, in regard to this class of apparatus, a generous maximum is to put depreciation at one-tenth of a penny a mile run, with the largest sorts, and about half that for passenger car types. If the apparatus is carried on the top of a vehicle, as is not likely in the case of an ordinary doctor's car for reasons previously specified, care must be taken in regard to driving lest overhanging branches or other projecting obstacles cause a ripping of the fabric of the holder. Even so, doubtless the individual when taking to the use of a gas holder can arrange with his insurance company that his car policy will cover anything occurring to any such attachment. In any case, he could insure against it for a purely nominal sum.

A PRACTICAL MAKESHIFT.

Flexible holders cost from £10 upwards, and are so light that they can be easily supported.

Admittedly, the atmospheric pressure scheme is neither more nor less than a war time makeshift; but that is all the medical man is asking for. His case is not that, say, of a commercial motor owner using gas, which may become a permanent form of fuel for such purposes.

After the war the market will be flooded with a large number of motor spirits, while the sudden cessation of the enormous demands for campaign purposes, with the continual increase in the building of tank vessels, will certainly ensure plenty of liquid fuel being available for motoring in this country, particularly because the present situation has given a great impetus to steam wagons operating with coal fuel, and because coal gas will probably remain a very favourite form of motor fuel for commercial motor vehicles on grounds of economy alone, and will doubtless be introduced within a season or so, at the outside, for agricultural motoring.

Obviously, the atmospheric pressure scheme is the best for the medical man, not only because metal containers for holding gas under pressure are not to be obtained in unlimited numbers, but also because the necessary apparatus for compressing the gas is not generally available. The medical man's point of view is that he must do something at once, and here is an available and non-experimental alternative, as instance the report issued last August by the British Commercial Gas Association, representing the

leading gas companies of the United Kingdom, which gives data on the subject of the utilization of coal gas for traction purposes. A copy of the report is obtainable from the Association at 47, Victoria Street, London, S.W.1.

Even when coal gas costs as much as 4s. per 1,000 cubic feet, it is equal to petrol at 1s. a gallon only. In England and Scotland coal gas is being used, particularly for omnibus and char-a-banc services, with thoroughly satisfactory results, and nearly always at merely atmospheric pressure, as instance the services operating at Edinburgh, Birmingham, Bristol, Bournemouth, and Eastbourne, and the rapid increase in the numbers of utility motor vehicles on the same scheme in Manchester and elsewhere.

Inasmuch as progress is being made so extremely rapidly that an increasingly large number of firms all over the country are laying themselves out specially to fit cars to run on town gas, the individual medical man may be recommended to read the *Motor*, which publishes a list, brought up to date weekly, of the various firms throughout the country that manufacture gas holders or which are laying themselves out for fitting the necessary, simple adaptor apparatus to individual cars.

Coal gas is clean in use, it needs no vaporization, the fuel control need call for no alteration; no carbon deposit is left; and the power obtainable is at least 85 per cent. of the efficiency of the best petrol.

[We are indebted to the *Commercial Motor* for the use of the two illustrations.]

PERMITS FOR THE USE OF PURE WHEATEN FLOUR FOR INVALIDS.

The following memorandum has been issued by the Ministry of Food, after consultation with the War Bread Medical Subcommittee:

Memorandum.

Since some misunderstanding appears to exist as to the granting of permits to use white flour, it seems advisable to indicate the procedure adopted in dealing with applications. These are considered in the first instance by the Scientific Adviser to the Food Controller acting under the guidance of the War Bread Medical Subcommittee of the Royal Society. After this first sifting of applications doubtful cases are referred to certain members of the subcommittee, who have agreed to act as referees, or they are laid before the whole subcommittee. It should be understood that applications are becoming so numerous and the necessity for economizing wheat so imperative, that it is not possible to accede to all the requests sent in. The committee is of opinion that in many cases no substantial grounds exist for the applications, which appear to be made merely to satisfy some whim of the patient and not because the Government regulation flour has been found to be deleterious. Speaking generally, it may be said that unless some affection of the digestive organs is present which, in the opinion of the War Bread Medical Subcommittee justifies the use of pure wheaten flour, an application cannot be granted. Thus, for instance:

1. *Acute affections of the stomach* (acute gastric catarrh, ulcer in its acute stages, etc.). In these cases the use of any form of bread whilst the disease is at its height is probably inadmissible. During the convalescent stages the prescription of pure wheaten flour for a limited period may be permissible if rusks and breakfast biscuits or ordinary bread boiled and sieved, or bread jelly, do not meet the case.

2. *Chronic affections of the stomach.* In chronic functional disorders of the stomach (which make up the majority of cases of chronic dyspepsia) the use of pure wheaten flour can rarely be allowed, for the reason that such cases are so numerous and so protracted in their course that it would be impossible to meet demand without seriously depleting the wheat supply of the rest of the population. The use of the present bread, well toasted and thoroughly chewed, or of biscuits and rusks, should be recommended. In chronic organic disease of the stomach (carcinoma and chronic ulcer) white flour may sometimes be advisable if the patient is able to take bread at all.

3. *Acute affections of the intestine* (acute diarrhoea, enteritis, colitis, ulcerative conditions, etc.). In these

cases the same remark applies as in acute affections of the stomach.

4. *Chronic intestinal affections* (chronic diarrhoea, chronic colitis, malignant disease, etc.). In some of these the use of white flour may be desirable; but evidence would be required to show that ordinary bread, toasted and thoroughly chewed, and the use of other measures, have failed to relieve the symptoms.

5. Cases of disease of the nervous, circulatory, or respiratory systems, or of the urinary organs or skin, or such general conditions as anaemia and diabetes, can rarely be considered suitable for grants.

6. As regards tuberculosis, there is no evidence that the present bread is injurious. Inquiries have been made from the principal sanatoriums for the treatment of this disease, and in the great majority of cases the medical superintendents support the above opinion. No institution for the treatment of this disease is receiving grants of pure wheaten flour.

To sum up, there are very few conditions, in the opinion of the War Bread Medical Subcommittee, in which the use of pure wheaten flour is essential.

The subcommittee is well aware of the difficult position in which the medical practitioners are placed; but it is necessary to conserve the wheat supplies of the country, and every means of doing this must be adopted, and if need be enforced. Refusal to give a permit does not imply that the medical certificate has been disregarded, but merely that the need of other applicants appeared to be more urgent. Above all, it is important that no discrimination be made between rich and poor in recommending these grants. Nothing is easier to arouse or more difficult to allay than a suspicion that the poor are denied what the rich find no difficulty in obtaining.

Under war conditions, when variety in foods is limited, the bread made from Government regulation flour is probably a more wholesome article of diet than that made from fine wheaten flour in pre-war time. The flour contains more lime salts than fine wheaten flour, and presumably is therefore more suitable for growing children. It contains a greater variety of proteins, which it is important to have, especially if bread enters largely into the dietary. It contains more "germ," which adds to the proteins and increases the fat. It also contains more of the class of substances known as "vitamines," about which our knowledge is far from complete, but it is known that a deficiency of these profoundly impairs nutrition. The bread requires to be thoroughly masticated, but if chewed well, or eaten as toast which necessitates chewing, or, finally (in the case of invalids), if it be used as indicated in paragraph 1, there are very few people with whom it could disagree.

The twenty-sixth meeting of the Congress of the Italian Society of Internal Medicine will be devoted to diseases among troops—icterus, malaria, cardiac affections, renal diseases and tuberculosis. It is to be held at the end of October in some city within the war zone, the name of which, together with the exact date of meeting, will be published later. Professor Luigi Lucatello, director of the medical clinic at Padua, is president of the organizing committee.

The total number of medical students in Switzerland in the summer semester of 1917 was 1,823. These were distributed in the five universities as follows: Bâle 227, including 13 Swiss women and 48 foreigners, of whom 2 were women; Berne 407, including 14 Swiss women and 168 foreigners, of whom 29 were women; Geneva 488, including 17 Swiss women and 334 foreigners, of whom 84 were women; Lausanne 208, among whom were 11 Swiss women and 92 foreigners, of whom 20 were women; Zürich 493, including 52 Swiss women and 177 foreigners, of whom 40 were women.

It was stated recently on the authority of the Federal chemist of Kansas that court plaster full of tetanus bacilli was being sold throughout the State. This report led to the arrest of five Germans, and samples of the plaster were submitted to the United States Department of Justice for examination. It is now officially announced that the Director of the Hygiene Laboratory of the United States Public Health Service has reported that among thirteen specimens of plaster purchased in the ordinary way in Washington and one from the Ohio Department of Health two contained tetanus bacilli. He states that there is no reason to believe that the contamination was intentional.

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THE FOOD POSITION TO-DAY.

THE Food Controller and his lieutenants have recently issued several fresh appeals for the practice of food economy. Lord Rhondda, addressing the Food Control Committees, states that "the harvests of the world will not meet the requirements of ourselves and our allies during the next twelve months unless our present rate of consumption is materially reduced," and he adds that the need for the strictest economy is intensified by the steps which the Government have taken to reduce the price of essential foodstuffs. He asks the Food Control Committees to appoint Economy Committees for the prosecution of the food saving campaign, because unless the plain facts can be brought home promptly to every household the coming winter will be a time of the gravest anxiety. There is, he says, no alternative between a rigid economy voluntarily effected and a compulsory system of rationing.

The world shortage of food affects both cereals and meat, including bacon, as well as many other food commodities. It is due to two causes. The first is the poor harvests in certain countries, which have diminished the world stock, not only of wheat, but of other cereals generally used for the feeding of horses and the fattening of stock and pigs, so that it will not be economical to keep, or at least to "finish off," so large a head of food animals. The second cause is shortage of tonnage, produced partly by sinkings and partly by the diversion of much shipping to carry raw material to munition factories in this and other allied countries, and supplies of all sorts to the British armies in France, the Mediterranean, and Mesopotamia.

A comparison of the weight of bread allowed in countries rationed compulsorily or voluntarily shows that the differences are not very great, whether the nation be belligerent or neutral. Expressed in grams, the weight is: In Germany 280, Austria 280, Switzerland 250, Holland 254, Denmark 315, Sweden 260, France and Italy 250, Great Britain 259. The exceptions among belligerent countries are Bulgaria and Turkey; in the former the weight of bread allowed daily is said to be as high as 500 grams and in Turkey as low as 160, but the potato is not much used in Bulgaria, and probably more rice is consumed by the Turks than by other nations of Europe.

The Paris Academy of Medicine received on October 2nd the report of a committee on the bread now actually consumed in France, and adopted a number of resolutions. There is a suspicion that the bread sometimes supplied by bakers is injurious because the grain is not properly cleaned before grinding, and one of the resolutions of the Academy was directed to remedy this defect. Reason was found also to think that the bread was sometimes injurious because it had undergone an acid fermentation, and another resolution of the Academy suggested that lime water should be used in making bread, the majority of the Academy considering that this could have no evil effect on health. In view of the shortage of cereals the Academy recommended the more general use of rice as an article of food in France, and advised that a proportion of rice, barley, rye,

buckwheat, or maize flours should be used in the manufacture of bread.

The comparison of the amounts of bread allowed is crude in so far as it takes no account of quality. The ration of potatoes is in Germany about 450 grams a day, in Austria 1,000, in Holland 3,000. In Great Britain potatoes have not been rationed; at present they are plentiful, and an appeal has been made to make as much use of potatoes and fresh vegetables as possible. The food value of three ounces of bread, an ordinary allowance at a mixed meal, is 222 calories; of six ounces of potatoes, an ordinary helping, 155 calories. Potato dishes are cheap, and can be substituted for bread in whole or in part at all meals. It is pointed out, too, that potatoes may not keep well this year, whereas cereals will. The difference in the amount of meat allowed in different nations was this summer very great. It is said that in Germany it had fallen to 250 grams a week and in Holland to 200. In this country the voluntary ration is 1,130 grams a week. In Austria and Italy there are two meatless days a week; in Bulgaria there are three, but the Bulgarian has always obtained a large part of the protein and fat in his diet from the sour milk lately so fashionable here. In Germany fat is rationed to 90 grams a week, in Austria to 120, and in Holland to 50. These are maximum amounts; there is no guarantee that they will be available; and there can be no doubt that for a long time fats have been very difficult to procure in Germany, even at very high prices. We have experience in this country of what may be called market deficiency, as, for instance, in sugar, the half-pound a week allowed by the Food Controller having been at times unobtainable.

In spite of the many fallacies in these comparative figures, they serve to justify the official statements made in this country as to a world shortage of food. Our only consolation is that, in spite of ruthless submarine frightfulness, we are better off than the German, who is at present boasting that he can produce four-fifths of what he consumes. It is thought probable that there will be a serious shortage of butchers' meat this winter, and there is already a shortage of bacon. The difficulty for the housekeeper and caterer is to provide a palatable, nutritious, and varied diet while observing the restrictions of the Food Controller, and not exceeding the expenditure permissible to the family or the individual. Probably the best way of meeting the meat difficulty is to institute meatless days. This policy, enforced in Austria and Italy, has been followed voluntarily in some London clubs. The most popular substitute is probably fish, but the only kinds having a high nutritive value and available in sufficient quantities at a fairly cheap price are mackerel and herring. Sprats, when they can be obtained, are the most nutritious of all fish. Recently Scotch salmon has been as cheap, when nutritive values are compared, or cheaper than cod, and frozen Canadian salmon certainly cheaper; if well chosen and allowed to thaw thoroughly before cooking (boiling or grilling), it is very good eating. The food value of salmon is, however, about half that of mutton (leg) for the same expenditure. Probably the best all-round substitute for meat on a meatless day is cheese, cooked or uncooked. "Cheese should be restored to its old place as a staple food for all classes" is a statement to be found in a pamphlet *Food and How to Save it*,¹ written by Dr. E. I. Spriggs and published by the Ministry of Food for the guidance of the perplexed

¹ His Majesty's Stationery Office, 1917. To be obtained through any bookseller, price 3d.

housekeeper. It explains very clearly the principles upon which the nutritive value and relative cost of foods may be calculated, and gives much practical advice, although, like all essays on the subject at a time when supplies are uncertain and prices unstable, some of the detailed conclusions do not quite fit existing conditions, for there have been important changes in the market supply, especially in respect to potatoes, since the author wrote his preface last July. Modern civilized man dislikes a monotonous diet, and a worker tired by physical or mental labour craves for variety. It is probably because it is easier for even an indifferent cook to achieve some degree of variety, if only by varying the kind of meat, that it has become so established a custom to serve meat in the houses of the well-to-do middle and industrial classes in England twice if not thrice a day. Dr. Spriggs does not disdain housekeeping and cooking details: he has a chapter on how to make up the controller's allowance most cheaply, and another on how the allowance may be made up by the well-to-do and those earning good wages. Both contain suggestions for daily diets, and a third chapter deals with weekly budgets for families with three different scales of expenditure, the cost ranging from 8s. 9d. to 14s. 5d. a head a week.

The position with regard to permits for the use of pure wheaten flour for invalids is very clearly defined in the official memorandum, published at page 524, addressed to medical men by the Ministry of Food after consultation with the War Bread Medical Subcommittee. It is a very uncompromising document, but the Ministry, while it admits the difficult position in which medical practitioners are placed, states that the necessity is so great that every means must be adopted, and, if need be, enforced, for conserving the wheat supplies of the country. The procedure followed on receipt of an application is detailed. It is first considered by the scientific adviser to the Food Controller, and doubtful cases are laid before the whole subcommittee or referred to certain members who have agreed to act as referees. The memorandum states that, speaking generally, unless some affection of the digestive organs exists which, in the opinion of the subcommittee, justifies the use of pure wheaten flour, an application will not be granted. Various affections of the digestive organs are examined *seriatim* in the memorandum and reference is made to certain chronic conditions, with the general result that the Ministry, on the advice of the War Bread Medical Subcommittee, expresses the opinion that there are few conditions in which the use of pure wheaten flour is essential. It desires it to be understood that refusal to give a permit does not imply that the medical certificate has been disregarded, but merely that the needs of other applicants appear to be more urgent. The position of individual medical practitioners in dealing with the individual patient is often very difficult, especially, perhaps, in the case of well-to-do patients, but it is essential that no distinction should be drawn between rich and poor. The memorandum will undoubtedly prove helpful to medical practitioners when difficulties arise, and for this reason we counsel the preservation of this number of the JOURNAL.

REINFECTION IN SYPHILIS.

THE old dictum "*omnis syphilitic always syphilitic*," which implied that syphilis could only be contracted once in a lifetime, no longer holds good, for second attacks of syphilis, or *reinfection*, have been recorded by many careful observers, including such eminent authorities as the late Sir Jonathan Hutchinson and

the late Mr. Berkeley Hill. In order to prove absolutely that a case is one of true reinfection it is necessary for the patient to show definite signs of two infections presenting the primary signs of syphilis followed by typical secondary symptoms in due course. Hutchinson observed two such cases; in one the patient had two attacks of primary and secondary syphilis with an interval of five years; in the other the patient is said to have had three attacks at intervals of fourteen and nine years. Berkeley Hill reported the case of a surgeon who acquired syphilis in the usual way, and eleven years later contracted a digital chancre which was followed by secondary symptoms. Mentberger collected 356 cases of alleged reinfection from the literature, and found that only 119 fulfilled the condition mentioned.

A diagnosis of reinfection founded merely on the apparent development of a second chancre is insufficient and open to several fallacies, such as the occurrence of a chancreiform gumma of the penis, and relapsing chancre, or chancre *redux*, which, it would appear, is more frequently observed after the modern arsenical treatment. Such sources of error should be easily avoided, for the gumma is not accompanied by inguinal adenitis, and the *redux* chancre is situated on the site of the original one. Since the treatment of syphilis by salvarsan and similar arsenical compounds has been in vogue numerous cases of reinfection have been recorded on the evidence of a second chancre only, and such cases have been adduced in support of the curative value of this treatment. In this connexion the series reported by Major C. F. White, in the paper printed at page 509, is of considerable interest. It will be noted that the conditions he requires to prove reinfection depend mainly upon laboratory diagnosis. The most remarkable point is the short interval of time between the original infection and the alleged reinfection. In the series of 28 cases this interval was less than a year in 18, six months or less in 6, and in one case three months only.

The question naturally arises whether these were instances of true reinfection or whether the lesions can be accounted for in some other way. It is conceivable that they were irritation reactions due to the presence of active spirochaetes within the body—that is to say, that the lesions were of internal and not external origin. Neisser, by experiments on apes, found that the internal organs were virulent when the skin had acquired a definite degree of immunity, and Levaditi states that the skin may be immune to external spirochaetes, but receptive to internal spirochaetes. Against this hypothesis it may be argued that intensive treatment with salvarsan will destroy all the spirochaetes in the body, and that a negative Wassermann reaction after such treatment is evidence in support of this. But this reaction may be negative in cases with obvious clinical signs of syphilis, and may change from negative to positive and vice versa independently of treatment. It may also be objected that if the lesions in question were irritation phenomena due to infection of the skin by internal spirochaetes the lesions produced a few months after the original infection would resemble those of secondary and not primary syphilis, since Finger and Landsteiner found that inoculation of patients in the tertiary stage of syphilis with virus from primary and secondary doses produced lesions of a tertiary nature, showing that these lesions do not depend on the quality of the virus but on the mode of reaction of the tissues. The problem of immunity in syphilis is complicated, and it is difficult to exclude all the sources of fallacy.

THE UNIVERSITIES DURING AND AFTER THE WAR.

THE address delivered at a memorial service for members of Manchester University who have fallen in the war, by Sir A. W. Ward, now Master of Peterhouse, Cambridge, formerly Principal of the Owens College and Vice-Chancellor of the University of Manchester, has been printed by the Manchester University Press.¹ It is largely concerned with the history of that university, but will repay perusal by those not directly connected with it. While speaking of the past, Sir A. W. Ward spoke also of the present, "some part of whose sacrifices and achievements," he said, "engraved for ever upon our hearts as they will some day be inscribed upon these walls, may, without presumptuousness or mere conventionality, be traced to the inspiring influences of our common academic life and its traditions. In return these very sacrifices and achievements are themselves also to be numbered among the more generous and enduring incentives to the exertions of the future." He interpreted the feelings of his audience when he further said that they desired to send a word to the graduates, teachers, and students, past and present, officers and employees of the university, a message of the pride taken in the thought that service such as theirs had been and is being rendered. The message, he said, was also addressed to those members of two learned professions—medicine and the Church—who wore the King's uniform in token of services rendered never more assiduously and unselfishly than during the present war. The physicians and surgeons, he continued, who form part of the medical faculty or hold its degrees, "have given evidence at the front, and in our military and naval hospital wards, abroad and at home, of a devotion unsurpassed even in the annals of their magnanimous profession." Speaking then particularly of women, he referred to the nurses abroad and at home, to the women doctors, of whom many had bravely rendered valuable service in Serbia, and more recently in Southern Russia, and to those women graduates who had undertaken temporary administrative work of various kinds. Nothing, he thought, proved better the wisdom of the decision that men and women should work together in the university than the way in which women students had proved themselves impressed by a sense of the duty resting upon all. After some words of consolation to those who by reason of age or infirmity were unable to do active war work, he went on to remind them that, with the help of the younger graduates, they must prepare for future changes. "You will not," he said, "and your sister universities will not, be able so to 'shape your old course in a country new' that you can without changes suit your system to the demands which new necessities, new developments, new possibilities bring with them." The more serious the changes the more careful, he said, must be the deliberation for which they would call, and he deprecated the too speedy adoption of piecemeal reforms when they involved more than the filling up of unmistakable gaps in a system of academical studies, or the removal of palpable obstacles to its legitimate expansion. These are wise words, and the principle they embody has an application beyond university policies.

CARDIAC DISORDERS DUE TO THE NEW POISONOUS GASES.

THE symptoms of gassing have been tabulated as respiratory, gastro-intestinal, and nervous, but there seems to be evidence for the recognition of other forms depending on the nature of the gaseous constituents. The better known gases employed in the war mainly contain chlorine and its

allies and act on the respiratory system, causing sudden and intense asphyxia with rapid death, acute asphyxia after an interval with only slight symptoms of poisoning, or a caustic tracheitis and bronchitis; the symptoms of the two latter groups have been recently studied by Colard and Spehl¹ who recommend free venesection and the continuous inhalation of oxygen conducted through a Wulff's bottle to the nasopharynx by means of a catheter passed through the nostrils. As late results of respiratory gassing pulmonary tuberculosis, empyema and pyopneumothorax may occur. There are other gases not yet completely analysed but containing cyanogen compounds, which though only recently introduced into warfare are known to cause industrial poisoning of a chronic form. Recently Professor L. Barker,² of the Johns Hopkins Hospital, has referred to a case of sudden but quite transient auricular fibrillation induced by the fumes of hydrogen sulphide. According to C. Fiessinger³ soldiers suffer from acute and severe symptoms due to poisoning of the medulla by these gases. After noticing a sweet smell the victims get burning in the throat, extreme weakness, frequent attacks of syncope especially on movement, extremely slow (25 to 30) but regular pulse, pallor, vomiting, vertigo, and a low blood pressure. The disorder lasts for a long time and necessitates rest in bed for many months. Treatment at the onset consists in immediate bleeding and injection of camphor. Subsequently the gastric symptoms may require bismuth. For the cardiac condition small doses of caffeine and strychnine are recommended, but digitalis, strophanthus and sparteine do harm, and, in spite of statements that it does good, adrenalin has been disappointing.

FIRING ON THE RED CROSS.

WE published last week a letter from a correspondent who was near the spot where the American surgeon was killed in a British hospital at a French seacoast village. He suggests that it was by accident that the bomb fell on the hospital, being intended for ammunition dumps, cement works, reinforcement camps, and training grounds, which he described, perhaps with a little poetic licence, as "cheek by jowl" with the hospitals. We are glad to give the German raider the benefit of the doubt, but in the article which our correspondent was criticizing reference was more particularly made to the bombing of advanced hospitals on the Western front, both of the British and the French armies. We shall be very glad to doubt these stories also, but the evidence for their truth is strong and seems to have been fully accepted by the French authorities. That the Germans have indulged in the sniping of stretcher-bearers has often been asserted, and the correspondents sent home last Sunday a very circumstantial story of the deliberate sniping after the battle on the previous Friday. Late in the afternoon British stretcher-bearers, who had been working all day under heavy fire, went forward to collect wounded who had been lying out. On the slopes of Passchendaele the enemy stretcher-bearers, were seen working too, and one body of 200 men came out, waving a Red Cross flag, with the stretcher-bearers and ambulances, and were left undisturbed by the British. "But," says the correspondent of the *Daily Telegraph*, "shots from the German snipers were still flying and our stretcher-bearers were hit. Three of them carrying one stretcher were killed, and an officer with them directing this work near Poelcapelle was fired with a flame of anger. He seized a Red Cross flag and made his way very quickly over the shell-holes towards the enemy's position, and, standing there, this officer of the R.A.M.C. shouted out a speech which rang high above the noise of the gun-fire and all the murmur of the battlefield. I do not know what he said, the exact words he shouted out in his fine

¹ *Founders' Day in War Time*. By Sir Adolphus William Ward, Litt.D., F.B.A. 1917. Manchester: The University Press; London, New York, Bombay: Longmans, Green, and Co. (Crown 8vo, pp. 65, 1s. 6d.)

¹ A. Colard et P. Spehl, *Arch. méd. Belg.*, Paris, 1917, tome lxx, p. 573.

² *Medical Clinics of North America*, 1917, vol. 1, p. 84.

³ C. Fiessinger, *Bull. Acad. de Méd.*, Paris, 1917, 3^e sér., tome lxxviii, p. 322.

fury. But he cursed men so lost to all humanity that they would shoot the rescuers of the wounded. He cursed them as cruel beasts, worse than savages, and he raised his flag and pointed to it and then to the German stretcher-bearers beyond, and spoke other flaming things. Perhaps what he said was quite incoherent and wild. Perhaps no man who heard him could understand a word of what he said, but there in shell-holes, hidden from him in mud, were listening men, with loaded rifles, and they may have raised their heads to look at that single figure with the flag. They understood what he meant, his accusing figure was a message to them. After that there was no deliberate sniping of stretcher-bearers, though they still had to go through the shell-fire." It was a gallant act, and whatever excuse may be devised for the German snipers in this instance also, the story affords a vivid picture of the risks willingly taken by stretcher-bearers at the front, as well as by officers of the R.A.M.C.

PARAFFIN DRESSINGS.

PROFESSOR RUTHERFORD MORISON gives an account this week of the method he now follows in the treatment of wounds by means of the bismuth iodoform paraffin paste which he introduced last year. The results have been very satisfactory, not only in his own hands but in those of other surgeons, and his present paper is intended to draw attention to the technique which should be followed, as some failures have been due to faulty surgery. But the paper, taken along with others published in this issue, will probably raise in the mind of some readers the question as to the part played respectively by the paraffin, and the bismuth and iodoform dissolved in it. Bismuth is admittedly a poor antiseptic, and Beck's bismuth paste, which consists of 30 per cent. of bismuth oxycarbonate dissolved in soft paraffin, has been proved valuable in the treatment of chronic suppuration and sinuses; but as Mr. Rutherford Morison has remarked elsewhere, no satisfactory bacteriological explanation of its action has been offered. The general conclusion to be drawn from the paper by Drs. Helen Chambers and J. N. Goldsmith to which he refers seems to be that the bactericidal action of bipp results from the free iodine liberated by the oxidation of the iodoform by oxygen, and by the nitric acid formed by the hydrolysis of bismuth nitrate. In his paper published this week Professor Morison mentions the risk of iodoform and bismuth poisoning as a drawback to his method, although he says that since adopting the plan of smearing the surface of the wound and rubbing in the bipp, removing the excess, he has met with no trouble of the sort. The paste recommended by Captain Hey, on which a report by Captains Rendle Short, Arkle and King is published at p. 506, seems to give equally good results; they, however, follow the practice of excising the wound, which, we gather, Professor Rutherford Morison considers to be unnecessary. They state that by using the Hey paste they have been able with fair consistency to obtain healing within a fortnight of cases of compound fracture, even when complicated by joint injury. On the other hand, they say that the original pasting is not effective after three days, whereas Professor Morison leaves the dressing unchanged after the application of bipp for as long as three weeks, or longer, unless pain or constitutional disturbance indicates interference. The method may possibly, as Professor Morison anticipates, be improved, but obviously it is applicable as it is to severe wounds in civil life. In connexion with the use of an oily medium for applications to wounds it may be useful to recall the attention of surgeons to the paper (BRITISH MEDICAL JOURNAL, August 25th, 1917, p. 249) by Professor J. E. Sweet, of Philadelphia, relating his experiences in France with the oily solution of dichloramine-T devised by Drs. Dakin and Dunham for another purpose—namely, disinfection of the nasopharynx.

PRIMARY TUBERCULOSIS OF THE FAUCIAL TONSILS.

THE common belief that primary tuberculosis of the faucial tonsils is rare probably depends on the usual absence of signs and symptoms apart from the secondary infection of the cervical glands, and on the impossibility of recognizing it without the help of the microscope, and inoculation experiments. Dr. A. Philip Mitchell, in a paper on this subject in the *Journal of Pathology and Bacteriology*,¹ gives the results of examination of material obtained from surgical operations during six years of hospital practice, his investigations forming part of a study of tuberculosis of the cervical lymph nodes, reported on in the *BRITISH MEDICAL JOURNAL* of January 17th, 1914. This inquiry fell naturally into two divisions: the examination of tonsils removed from children affected by tuberculosis of the upper deep cervical glands, and the examination of hypertrophied tonsils removed from children with no clinical evidence of tuberculosis of the cervical lymph nodes, or other parts. Four points received particular attention: age of patient; source of material—that is, whether obtained during life or *post mortem*; clinical evidence of tuberculosis; and history of tuberculosis in other members of the household. By means of histological examination and animal inoculations Dr. Mitchell finds that primary tuberculosis of the tonsils, at least in Edinburgh, where, out of 406 samples of mixed milk collected from milk shops, 82 (20 per cent.) contained tubercle bacilli, is much more frequent than is usually held. Thus, out of 106 (100 children, 6 adults) operation cases of tuberculous cervical glands, 41, or 38 per cent., showed tonsillar tuberculosis, most often immediately under the surface mucosa, less frequently in relation to the deeper parts of the crypts or close to the capsule. In 80 out of the 106 cases the tonsillar lymphatic gland in the angle formed by the junction of the common facial and internal jugular veins under the posterior belly of the digastric muscle showed at operation evidence of the most advanced tuberculous change. The inoculation test was positive in 20 out of 92 cases, the bovine type being present in 16 and the human in 4. The reason why inoculation was less often positive than the microscopic test is that many of the guinea-pigs died from rapid septic infection before the tuberculous changes had time to develop. The size and shape of the tonsil do not show any special relation to tuberculous infection; in 51 cases the tonsils were small, submerged, and firm, in 27 cases large, and in 28 of medium size. Among a further series of 100 chronically hypertrophied tonsils without tuberculous cervical glands tuberculosis was found in nine. Dr. Mitchell's main conclusions may be put briefly as follows: Tuberculosis of the upper deep cervical glands develops from a primary focus in the tonsils much more often than is generally supposed, but the primary tonsillar infection can only be detected by the aid of the microscope and inoculation experiments. The lesions are principally found just under the surface epithelium and near the mouths of the lacunae; less often in the deeper portions. Hypertrophied tonsils may be the seat of primary tuberculosis, though rarely as compared with tonsils from cases of tuberculous cervical adenitis. In Scotland at any rate primary tuberculosis of the tonsils in children is attributable rather to the ingestion of tuberculous milk than to the inhalation of human tubercle bacilli; it is, therefore, essential in the present state of the milk supply that children's milk should be boiled. In all cases of tuberculous glands in the neck removal of the tonsils entire in their capsule is necessary. Lastly, bovine and human types of tubercle bacilli are present in the tonsillar crypts of a small percentage of children without demonstrable tuberculous lesions, either in the tonsils or elsewhere.

¹ *Journal of Pathology and Bacteriology*, 1917, vol. xxi, pp. 248-266.

PROPHYLAXIS OF VENEREAL DISEASE IN THE AUSTRALASIAN FORCES.

THE report of the last annual general meeting of the Royal Prince Alfred Hospital, Sydney, of which a copy has reached us, is mainly given up to an interesting survey of the past year's work by the Chairman of the Board, Sir Thomas Anderson Stuart, M.D., who is professor of physiology, and Dean of the Faculty of Medicine in the University of Sydney. Discussing the work of the special departments, the chairman made pointed reference to the problem of venereal disease. After reference to the establishment of venereal clinics—in which matter the Alfred Hospital has served as a model for the establishment of similar clinics in three other Australian states, and in New Zealand—he proceeded: "I now come to an important aspect of this matter which has arisen out of our participation in the treatment of venereal diseases. I refer to a communication which I addressed to the Minister of Defence covering a report which was made to me by the Medical Superintendent, who had just returned from Egypt, where, as a major in the Medical Service, Expeditionary Force, he had been instrumental in carrying certain measures into effect with the most happy results. In consequence of this communication the Defence Department ultimately established similar arrangements at each of the camps in the different states. These measures I need not go into in detail here, but they might be shortly stated thus: What is called a prophylactic or preventive tent is established at the entrance of each camp. Certain measures are there taken, as men who have exposed themselves to infection return to their quarters, with the result that of a certain series of 2,000 cases reported upon, only three developed the diseases, while in another series in the first month after the system had been established, of 432 men who were attended to in the tent not one developed the disease, while of 35 men who developed the disease, not one had visited the tent. These results show how sinful it is on the part of authorities to neglect such cases, because the results show that the diseases are entirely amenable to preventive treatment. The cost of the measures is practically negligible. When we review these magnificent results there is every reason to expect that if these measures were only applied as completely in the civil community as in the military, the frequency of these diseases would be enormously diminished, and with continued strenuous application and effort they might be practically wiped out." By way of footnote to this extract it may be mentioned that we have received from the honorary secretary of the New Zealand Volunteer Sisterhood an account of what is about to be attempted, by means of "soldiers' medical clubs," to check the spread of venereal disease among soldiers of the New Zealand Expeditionary Force in the United Kingdom. It appears that the objects and policy of the clubs are approved and encouraged by the commandant of the force. The honorary medical adviser will give elementary instruction in sex hygiene and the general prophylaxis of venereal disease. In addition, prophylactic outfits will be supplied, together with explicit directions as to their use; and this we take to be the main reason for the establishment of these clubs.

A NEW ELECTRICAL STARTER FOR MOTOR-CAR ENGINES.

ELECTRICAL devices for starting motor-car engines by mechanical means may be classified, according to the method of applying the energy, into those that are friction driven and those that operate by the meshing of gears. Hitherto the mechanical engine starters made by the electrical firm of C. A. Vandervell, Warple Way, Acton, have started on the friction principle. A demonstration of a new model employing the gear principle, evolved by Mr. A. H. Midgeley, reveals sundry advantages for the new type, which is the outcome of lengthy tests. It is lighter,

cheaper, easier to fit, more efficient, and, as presented by the C. A. V. firm, more economical of current than their friction driven varieties. On the other hand, unless the design is carried out very carefully, it is easy for a device of this sort to manifest a series of faults. Consequently, interest centres as much on the features that are omitted from the C. A. V. scheme as on those that are embraced in it. The new machine has no chain to stretch, necessitating adjustment. There is no resistance switch, with its consequent possibility of burning out. There is nothing in the nature of an overrunning clutch. The features that are embodied in it include the fact that the starter motor is practically inaudible, and quite automatic when engaging the gear on the fly-wheel. It does not rely on speed to effect a proper engagement. It is only possible to apply the whole power of the motor when the gears are fully meshed. No damage can result from anything in the nature of backfires. The release of the pinion is automatic immediately the engine starts. No sort of spring is relied on for disengaging the gears. To keep them in mesh once the engine is running is impossible. The system is, in a sense, a combination of well-tried features. Thus the armature shaft of the starting motor can move endways as the result of magnetic influence acting against the pressure of a spring. At the end of the armature shaft there is a small pinion which is kept in mesh with the spur wheel on the periphery of the engine fly-wheel. The longitudinal motion of the armature and its shaft brings the spur wheel into mesh, and subsequently disengages it. The series-wound starting motor has four poles. One pair of these is wound with comparatively fine gauge wire, and the other with comparatively large gauge wire. Of the three brushes on the commutator, two are main ones. The other is a subsidiary brush, capable of short-circuiting a section of the armature winding. When the foot switch is pressed down, the first result is to bring all these three brushes into action, using only the poles wound with fine wire. The current converts the armature into a magnet, which, in turn, draws the armature shaft endways until the pinion comes just into mesh with the spur wheel. A quick thread on the armature shaft brings the two into mesh as promptly as possible, running the pinion rapidly along into line with the spur wheel on the engine fly-wheel. In synchronism, a further pressure of the foot switch throws the subsidiary short-circuit brush out of action, and brings into circuit the pair of poles wound with heavy gauge wire. They come into circuit in parallel with the other field windings, whereupon the motor develops full power for the purpose of rotating and starting the engine of the car. The driver has merely to remember that he should depress the starter switch slowly but firmly. A momentary pause is observable at about half its traverse. A little grease should be applied occasionally to the pinion, fly-wheel gear, and the screw of the shaft extension and springs. The grease cups of the motor should be refilled periodically, at which intervals a few drops of oil should be supplied to the dynamo bearings. Flanges are furnished to the plunger type switch designed to be used with this starter. By this means the switch can be fitted under the floor boards of the car or in other convenient places determined on for foot operation. The apparatus is made in three sizes. The first is for engines up to 16 horse power, the middle range for those up to 40 horse power, and the largest of all for car engines or marine motors not exceeding 150 horse power each.

WAR AND ALCOHOL.

THE seventh Norman Kerr Memorial Lecture of the Society for the Study of Inebriety was delivered by Major W. McAdam Eccles, surgeon to St. Bartholomew's Hospital, last week. He said that nearly half of the population of the British Isles were total abstainers, but that

the sum of £200,000,000 sterling was spent on excisable alcoholic beverages. They were drunk for the alcohol they contained far more than for the small amount of food present, and the question was whether the alcohol was beneficial or harmful to health and efficiency. Ethyl alcohol as a food was not essential and most expensive, so that it was a "luxury" food. Any part of the supply used for human consumption was wasted, but alcohol was essential for manufactures connected with the war; if there were not enough alcohol for the industrial, chemical, and scientific purposes for which it was essential, its human consumption was direct waste. Although the present industrial unrest had resulted from the scarcity and high price of beer, the majority of the female munition workers were able to perform their duties and keep in good health without alcoholic beverages. Proper industrial use had not been made of alcohol in this country. The German empire was shorter of petrol than the British, but the German chemist had manufactured cheap alcohol, and the German engineer had made engines to be driven by its combustion. Even if there were no war, it would be a sound policy to manufacture methyl alcohol for motor purposes. As it was, all the alcohol now in bond in this country and all the alcohol made by distillers and brewers should be used for munitions, motive power, and industrial and scientific purposes. His general conclusion was that alcohol before the war was greatly to blame for poverty and inefficiency. During the war it had tended to prolong hostilities and to render hardships more numerous and more difficult to bear; during demobilization it might lead to very serious consequences.

MEMORIAL SCHOLARSHIPS.

THE Royal Medical Benevolent Fund Guild has undertaken the administration of an educational fund which has been raised by the friends of the late Mrs. John Phillips to perpetuate her memory. Mrs. Phillips, at the time of her death, was one of the members especially engaged upon making more widely known the work of the Guild in aiding necessitous families of the medical profession. A sum exceeding £500 has already been raised to found a scholarship or exhibition, and as the fund is still open, it is hoped that the amount will be materially increased. Mrs. Muir (Honorary Treasurer), "Vellow Wood," Weybridge, will be glad to receive subscriptions. A sum of £368 has also been allocated to the Royal Medical Benevolent Fund Guild by the friends and patients of Dr. L. Vernon Jones who died a year ago. The annual income of both these memorial funds will be administered by the Guild for the educational benefit of the children of those who are beneficiaries of the Royal Medical Benevolent Fund.

Medical Notes in Parliament.

Parliament at Work Again.

PARLIAMENT has resumed its sittings after a recess of a little more than seven weeks, and the probability is that the session will not be concluded much before Christmas. The redistribution clauses of the Reform Bill came up for consideration this week, and it was natural, both for local reasons and as they involved an enlargement of the membership of the House of Commons by thirty-one members, that they should require careful attention. It has long been held that the membership of the House of Commons should not be increased, and the Speaker's Committee did not favour an increase. On the other hand, it is pointed out that "if and when" Home Rule for Ireland operates, the membership at Westminster will be reduced by more than thirty-one, and it is urged that the Boundary Commissioners found the task of preserving natural boundaries for constituencies within the old total to be impossible, and that they were bound, therefore, to exercise discretion. The scheme disclosed in the schedules

provides an increase of university representatives in Great Britain from seven to ten. The Universities of Oxford and Cambridge would retain two members each, but the University of London would be linked with the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, Bristol, and Wales, in a joint constituency returning three members. It is proposed also to link the Scottish Universities into a single constituency represented by three members. The hope is that the bill will be passed through the Lords by the end of the year. Unless there is to be a general election on the old register and before Christmas, a bill to extend further the life of the present Parliament will be required this autumn. The existing extension carries only to November 30th.

Discussions on the conduct of the war will occur on the next vote of credit, which will be needed within a few weeks. Since the opening of the financial year the sum of £1,500,000,000 has been voted, as against £2,010,000,000 for the whole of the financial year 1916-17, and the rate of expenditure continues to rise. The expectation is, however, that as America is now participating so thoroughly in the war, our loans to allies will be lower than in recent votes.

Mr. Lloyd George's reply to a deputation dismissed any lingering hope of action being taken in the near future to set up a Ministry of Health. The Prime Minister, while expressing sympathy with the project put forward by Lord Rhondda when at the Local Government Board, intimated that in the present stage of the war it could not be done.

It is stated that Sir Edwin Cornwall, Chairman of the Joint Committee of Insurance Commissioners, intends to introduce a bill to remedy defects in the machinery of the Insurance Acts. The finances of the Acts will also require attention. To meet the deficiency a grant of £500,000 has already been made, but the Prime Minister has announced that the Government proposes to grant £250,000 a year in addition to the £150,000 promised by the Ryan Committee.

There appears reason to hope that the Education Bill, introduced by Mr. Fisher just before the House adjourned, may be passed this session. It is based on the lines of his Education Budget speech. Its provisions have been generally approved, but it is a bill which will require a good deal of time for consideration on account of its scope.

Mr. Bonar Law stated on Tuesday that a bill to constitute an Air Ministry would shortly be introduced. Meanwhile General Smuts would continue to supervise the Air Service. In cross-examination by Mr. Kennedy Jones and Mr. Pemberton Billing, Mr. Law said there had been no change of policy on the part of the Government as to air raid policy. It was intended to employ our machines over German towns so far as military needs rendered us free to do so. Our course of action depended, he said, "on the best way of damaging the enemy."

There will be a medical interest--as regards the treatment of hunger strikers in prison--in the Irish debate to take place in the Commons on Tuesday. Mr. Redmond's motion, which asks the House "to deplore the action of the Irish Executive and Irish military authorities," arises out of the death of Thomas Ashe, which occurred after hunger striking, some short time after his release from a Dublin prison. Mr. Duke said on Tuesday that he believed that no Irish prisoners are now being forcibly fed. It is reported that four who had been on hunger strike in Cork prison have been released.

It is understood that a motion in gratitude to our fighting forces is to be moved in both Houses of Parliament. Usually such a tribute is deferred until the end of a war, but it is felt that the prolonged and tremendous character of the present conflict makes the exceptional tribute appropriate and desirable.

A seat is to be found for the Minister of National Service (Sir Auckland Geddes) in the Basingstoke Division of Hampshire, where a vacancy has been produced by the appointment of Mr. Clavell Salter, K.C., to be a judge.

THE Calendar of the Royal Society of Medicine for 1917-18 contains a diary of the meetings of its twenty sections, with particulars of their officers, a short history of the foundation of the society, an enumeration of the privileges of Fellows, and of the subscriptions paid by them and by members of sections who are not Fellows.

THE WAR.

THE ARMY MEDICAL COLLECTION OF WAR SPECIMENS AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ADMISSION OF SIR ALFRED KEOGH TO THE HONORARY FELLOWSHIP.

THE collection of war specimens formed under the aegis of the Royal Army Medical Corps, with the main object of serving the needs of the members of that body, was opened on October 11th. The collection has been rearranged and much extended since last we referred to it; it now occupies three rooms, two of them among the largest in the college buildings. The ceremony was attended by a large and distinguished audience, who doubtless desired to take the opportunity of testifying by their presence the admiration inspired by the eminent services rendered by Sir Alfred Keogh to the country and to surgery.

PRESIDENT'S ADDRESS.

The President, Surgeon-General Sir GEORGE MAKINS, said:—Gentlemen: It is with a feeling of the warmest satisfaction that we meet you here to-day, not only because the Council welcomes any occasion of receiving the profession within these walls, but also because we can congratulate this College on adding to the important personal services which have been rendered to the empire by its Fellows and Members one other item, scarcely less important for the future—the provision of a permanent record of the injuries and diseases from which our fellow countrymen have suffered during the great war. As to the details of the measures which have been taken to allow of the assemblage of specimens and drawings which you will shortly visit, Sir Alfred Keogh will address you, but I cannot omit on the part of the Council to mention the debt of gratitude which we and the country owe to our own officers. Sir John Bland-Sutton, Chairman of the Museum Committee, has spent time and labour on the scheme. Our Conservator, Professor Keith, has worked with untiring enthusiasm at every detail. Professor Shattock and Mr. Beadles have produced dissections of which their scientific ancestor, Mr. Hunter, would have been proud, and they have been seconded by the sadly depleted museum staff in the most loyal manner. The aid rendered by these gentlemen is an earnest of the close co-operation of the civil and military branches of the profession, and will remain a permanent record of its intimate character for all time.

Gentlemen, I have one further duty to perform, that of introducing to you the Director-General of the Medical Service of the Army, and welcoming him as an addition to the roll of Honorary Fellows of this College. You are already acquainted with his public career. I have had the privilege of working with him and under his direction and control through not a small part of its most active and fruitful stage. My first introduction to his name was when the P.M.O. of the South African Field Force said to me with satisfaction in the midst of difficulties that Major Keogh was arriving in the country. Later, I witnessed his success as an administrator in that country and the valuable services he rendered on Mr. Brodrick's Committee, to the work of which much of the success attained in the present war must be attributed. Still later, Sir Alfred Keogh himself was chosen to develop the lines laid down by that Committee, with a degree of success that is known to us all. The Royal Army Medical College remains as a monument of his effort to improve both the scientific and social status of his colleagues. Lastly, his judgement and far-seeing policy led him to apply all his energy to the development of the Territorial Medical Service, at a time when too little was thought of the all-important duties which it might be called upon to perform at a not very distant date. The lapse of time and office caused his transference to a new sphere, where his energy, capacity, and enthusiasm was opening up a future for technical science, which may have a greater opportunity to fructify when war is over than might have been the case had the country continued to enjoy an undisturbed peace. Recalled from the realms of technical science he has been faced with the most stupendous task which ever

tried the resources of a Director-General—the administration of the medical service of four armies any one of which is greater than had ever left our shores, and right loyally has he faced the difficulties with untiring devotion, foresight, and success. Great as all these services had been, it is perhaps in one other respect that Sir Alfred has shone pre-eminently in office. I refer to the strenuous and successful efforts which he has made to unite the civil and military elements of the profession in one united body. The improvement and approximation of the relations existing between us has not been a mere matter of pursuing a general policy, but one of personal solicitude, and to-day he has gained the respect and the affection of us all. Ever ready to listen to suggestions, to act promptly upon them if feasible, his whole aim has been to further the success of medicine, and thereby to raise the position and importance of the profession. Gentlemen, he has our thanks.

Then, addressing Sir Alfred Keogh, the President said: "In electing you an Honorary Fellow of this College, its Fellows and Members are conferring upon you the highest honour it is in their power to bestow. You may look with satisfaction—and, I think, a justifiable pride—at the list of distinguished men to which your name has now been added, and may you remain strong and active to complete your present labours, and carry out the great work which has been interrupted by the all-absorbing duties of the moment."

SIR ALFRED KEOGH, in expressing his thanks for a dignity which he recognized was not often conferred, said that he knew that in honouring him the College was honouring also the service to which he belonged, and expressed his consciousness of the help and kindly advice and counsel received from the profession in the organization of the medical arrangements of the five campaigns in which the country was involved. Turning then to the exhibition, which he formally declared open, he said that it would have rejoiced the heart of John Hunter, who did in his time so much to promote knowledge of the injuries of war. Hunter's views in certain branches had been fully vindicated by recent experience. The exhibition was intended to be educationally useful at once and also to serve as a record for the instruction of the future. He paid a tribute to the work of Dr. W. M. Fletcher, F.R.S., and Sir John Bland-Sutton, in England, of Lieut.-Colonel T. R. Elliott, F.R.S., in France, of Captain Bartlett in Egypt, Colonel Lister, C.M.G., Mr. Izzard of Cambridge, and to the staff of the Museum of the Royal College of Surgeons, especially to Professor Keith, who had made the collection a real living thing. All the Dominions were represented in the collection, but the specimens remained theirs, and would, he hoped, form the nucleus of others in their own countries. He hoped the military hospitals would each form collections out of the abundant material available, and that from these contributions might be made to complete that at the Royal College of Surgeons.

THE PURPOSE AND NATURE OF THE COLLECTION.

The collection, as has been said, has been greatly enlarged, and as opportunity and time permit will be steadily increased. Meanwhile the following account, slightly shortened from a guide written by Professor Arthur Keith, will be read with interest, and may serve to stimulate further contributions, especially in those directions in which the collection is at present deficient.

PART I.—HISTORICAL.

In November, 1914, a Committee was constituted under the presidency of the Director-General of Army Medical Services—Sir Alfred Keogh—to compile a medical history of the war. One of the aims of this Committee was to collect from casualty clearing stations and military hospitals examples of the wounds and diseases suffered by soldiers in the present war; to dissect and examine such specimens in order to fully understand their extent and nature so that the best means might be adopted for their treatment; and to preserve instructive examples so that they might be examined and studied not only by army surgeons of to-day, but also by medical men for many generations to come. Such examples or specimens are original documents; they constitute an original and reliable source of knowledge for all time.

It can be readily understood that in the earlier phases of the war, when every endeavour had to be concentrated on the immediate medical needs of the army, the depleted staff of the Army Medical College at Millbank was not in a position to undertake the formation of such a collection as the Medical History Committee had in view. Hence, in May, 1915, Dr. W. M. Fletcher, Secretary of the Medical History Committee, asked the assistance of the Council of the Royal College of Surgeons, which at once placed its museum staff and workrooms at the disposal of the Army Council. Memoranda were issued detailing the aims of the Committee and the methods to be observed in selecting, preserving, and dispatching of specimens, and in January, 1916, Lieut.-Colonel T. R. Elliott, F.R.S., was placed in charge of this particular service in France. Specimens then arrived in numbers; they were selected examples preserved by the latest and best methods. Lieut.-Colonel Elliott was successful in enlisting the willing co-operation of younger pathologists attached to the clearing stations and hospitals in France—Captain Herbert Henry, Captain H. W. Kaye, Lieutenant T. G. Shore, Captain G. Richardson, Captain Adrian Stokes, Captain Lazarus-Barlow, Captain E. M. Cowell, Major J. W. McNee, Captain A. Petrie. Specimens from Egypt represented the diseases and wounds of the campaign in Gallipoli, those sent by Captain G. B. Bartlett, R.A.M.C., being of particular value. In the spring of 1917 Lieut.-Colonel Sir John Bland-Sutton was appointed by the Director-General to organize the collection of specimens from hospitals at home, particularly hospitals at which particular kinds of wounds are being treated, and in that direction, too, the objects of the Medical History Committee are now being fulfilled.

Owing to the depletion of the museum staff of the Royal College of Surgeons by the war the original intention on the part of those responsible for the collection was to postpone the examination, study, and exhibition of specimens until the end of the war, when a body of experts could be appointed for this purpose. But it was urged by Sir Arthur Sloggett, the Director-General of Medical Services in France, that the collection possessed an immediate educative value for the medical officers now serving with His Majesty's forces. Arrangements were accordingly made to proceed with the preparation of specimens for exhibition, materials for their preservation and exhibition being supplied by the War Office, and the Medical Research Committee giving financial assistance. Mr. S. G. Shattock, F.R.S., pathological curator to the college, and Mr. Cecil Beadles, assistant curator, undertook the dissection, examination, and exhibition of wounds as they affect the various systems of the body—bones, muscle, joints, blood vessels, deeply seated organs, etc. Captain Raymond Johnson, R.A.M.C., gave assistance in selecting specimens of surgical interest. The conservator of the museum, Professor A. Keith, assumed responsibility for the description and arrangement of macerated specimens illustrating the lesions inflicted by modern missiles so far as bones and joints are concerned. These preparations were obtained partly from No. 1 Eastern General Hospital, Cambridge, and partly from hospitals in France. The greater number of these excellent and instructive war records are the work of Sergeant F. A. Izzard, of the Pathological Museum, University of Cambridge. Many, too, are owing to Captain G. Richardson, who applied new methods for the preparation of such specimens. The responsibility for arranging and cataloguing the collection of skiagrams, many of them of great merit, the workmanship of Captain H. E. Gamlen and of Dr. Florence Stoney of Fulham Military Hospital, was undertaken by Mr. R. H. Burne. Dr. W. Colin Mackenzie rendered a constant and valuable service by indexing all specimens as they arrived.

From the commencement of the enterprise an imperial view of its possibilities has been taken. The aim has been not only to build up a "central" or "national" collection, but also to encourage the Canadian, Australian, and New Zealand Army Medical Services to share in a common endeavour. Such specimens as are sent by these services are ear-marked for special collections to be set up in Canada, Australia, and New Zealand. In every case where the Medical History Committee does not desire to retain a specimen for the "national" collection the sender has the right to have such specimens forwarded to the medical museum of his university or hospital.

Besides specimens derived from this war there have also been placed on exhibition for the purposes of com-

parison the sparse records that have come down to us from former wars. Such specimens and also drawings have been obtained from the Museum of the Royal College of Surgeons, St. Thomas's Hospital, University College Hospital, and the Royal Army Medical College at Millbank.

These collections will arouse a feeling of regret that military surgeons of former campaigns had not taken pains to preserve the medical and surgical conditions they were called on to face. It is so hard for a surgeon to realize that the conditions he is only too familiar with in the heat of a campaign are unknown to those who do not share with him the labours of the field and will also remain unknown to those who have to undertake the care of soldiers in future unless a record is made. It was to secure the fruits of our experience—for our present as well as for our future needs—that the Medical History Committee was constituted; the collection, examination, and preservation of examples of wounds and diseases is only one of the many methods it has adopted to secure its chief object—the recording of experiment and experience. Many of the most valuable records appear weekly, monthly, and quarterly, in medical and surgical journals.

There are certain conditions which must appear but rarely in the experience of the individual surgeon and are yet not uncommon when experiences are pooled. Almost at the commencement of the war a heart was received from which a surgeon had successfully removed a bullet when the soldier was alive, and no wound of entrance to the heart was perceived at the time of operation or afterwards. Soon two similar examples of fragments of metal in the heart were received, and are now exhibited. It was then inferred that such foreign bodies must first enter a large vein and be subsequently swept on to the heart in the circulation. Further experience has shown that such is their origin; cases in which foreign bodies such as bullets and fragments of shell have been swept into the heart are by no means rare. Another set of cases may be cited. Quite early in the war three examples of fracture of the neck were received—one from England, one from Egypt, and one from France. All three were caused in the same way: in each case the soldier had dived into shallow water and his head had struck the bottom. An examination of such specimens showed that in most cases the lives of such soldiers could be saved by the prompt adoption of certain means, and that death will certainly be produced by improper handling. Many more could be cited in support of the immediate utility of a central army collection of pathological specimens.

In peace medical men in search of the newest knowledge and latest means of treatment go from hospital to hospital and watch the practice of physicians and surgeons. In war those who have such objects in view must visit the various military hospitals in which special work is being done. The best knowledge can be obtained only at original sources. Much, however, can be done for the dissemination of knowledge—as well as making known deficiencies in our knowledge—by means of such a central exhibition as that now opened at the Royal College of Surgeons. It could be arranged for special and general hospitals to make such an exhibition a centre for the exchange and spread of knowledge. To take an instance: the exigencies of the present war have led us to revise completely the means by which we obtained full immobilization of joints and limbs. It would be possible to give a concrete representation of the various splints and their proper application—according to the teaching of the school represented by Colonel Sir Robert Jones. It is hoped that additions of this and of many other kinds will be made to the present exhibition.

The real nucleus, the essential part of the present exhibition, is the dissections made by Mr. S. G. Shattock and Mr. Cecil Beadles, which now occupy Room II of the museum. Each specimen represents an exact investigation of a wound or injury, made in such a way as to permit the visitor to gain at a glance results which have taken the investigators laborious pains to elucidate. The dissections actually displayed are little more than a tithe of material which awaits a fuller investigation.

It is only right that acknowledgement should be made here of the great services rendered by Lieut.-Colonel T. R. Elliott. Without his foresight, energy, judgement, and enthusiasm, the collection, planned by the Medical History Committee, could never have been realized. To Captain

E. M. Cowell must also be given the special thanks of the Medical History Committee; at personal risk he has secured records of great value.

PART II.—DESCRIPTION.

The collection is displayed in three rooms of the museum, in peace devoted to the exhibition of anatomical and pathological preparations, many of them the work of John Hunter, and most of them mounted in glass jars filled with inflammable spirit. At the outbreak of war they had to be placed in cellars for safety, for those in authority well knew that the people who trained their guns on the invaluable collections of the Natural History Museum of Paris in the spring of 1871 would not respect any British collection, no matter what its scientific value or humanitarian worth might be.

Means of Protection.

In Room I a section thus labelled includes metal helmets, breast-plates, masks, respirators; and other inventions employed for the protection of soldiers. Several helmets are shown bearing evidence that the head of the wearer has been saved from a wound which otherwise would have proved mortal. With these helmets are shown a series of calvaria, perforated, with fatal results, by missiles which could have been turned aside by protective helmets. The gas masks for the protection of the lungs are of various patterns and dates.

Wounds of the Skull.

This series begins with examples of extensive destruction—injuries caused by large fragments of shell or by bullets of high velocity—giving rise to an "explosive" effect, a shattering of the whole skull. Then follow examples of minor wounds of the forehead and frontal bone, showing many forms and many stages of healing, and of wounds caused by missiles which have passed through the skull from side to side. These may be named "bifrontal," "biparietal," or "bioccipital," according to the site of injury. Others illustrate the results of missiles perforating the head in an antero-posterior or oblique direction; such wounds we may name "fronto-parietal," "fronto-occipital," or "parieto-frontal," the first named bone being the site of the entrance wound, the second one that of the wound of exit. Examples of all of these varieties are to be seen, but "gutter" wounds, caused by a bullet or missile merely plunging the surface of the skull, are scarcely represented. Numerous examples illustrate the well-recognized fact that the injury to the external plate of the skull is no index to the extent of injury to the internal plate. There are two specimens in which a blow has caused a fracture of the inner plate of bone, and yet the corresponding outer plate remains intact. Other specimens are examples of injuries of the basal part of the skull, and others illustrate wounds and injuries of the face and jaws. In some cases of fractured jaw the dental splints which have been used to keep fragments in position are still attached to the specimens. Attention is particularly directed to the injuries of the lower jaw.

Injuries to the Spinal Column, Thorax, and Pelvis.

There is one remarkable specimen in this series, where the bullet has entered and passed along the spinal canal in the dorsal region, shattering the laminae as it passed; the bodies of the vertebrae are fissured on the median plane—showing the rending or "explosive" effect of a bullet of high velocity. Several other specimens show fissures in bodies of the vertebrae. Gunshot injuries of the sacrum and pelvis of various kinds are illustrated, but injuries to the ribs and sternum are as yet meagrely represented.

Injuries of the Limbs.

In the series showing injuries to the bones of the shoulder, the shoulder-joint, the arm, elbow, wrist, and hand, all the bones of the upper extremity are represented, and there is a most instructive series illustrating injuries to the lower limb. The series begins with the manifold injuries of the hip-joint and the results which follow such injuries. There follow illustrations of fractured thigh-bones. A study of these specimens will show that there are several types of fracture produced by missiles, but the prevailing type is that described by the term

"butterfly" or X-shaped type. There is a tendency for a bullet to break the part of the bone into two main fragments resembling the two wings of a butterfly. In most cases the articulator has restored these fragments to their proper place in the whole bone, thus giving a somewhat misleading idea, except to the expert, of the disorder produced by a bullet wound of a bone. It will also be noted that most bones which have been struck by projectiles show fine fissures far beyond the point of impact. A gunshot injury of bone produces a much more extensive rupture and exposure of torn surface than a mere casual examination reveals.

The specimens of injuries of the lower limb form a continuous series—injuries of the knee, injuries of the leg, the condition of "stumps" removed by secondary amputation, injuries to the ankle and foot being represented in a consecutive manner. There is one remarkable instance amongst the injuries of the bones of the leg—one where the lower end of the broken tibia has become united to the upper end of the broken fibula.

Wounds of Soft Parts.

The specimens prepared by Mr. S. G. Shattock and Mr. Cecil Beadles are displayed in Room II. They form the essential part of the exhibition, for they give an opportunity of studying in their immediate and in their remote effects the peculiar characters of the wounds met with in modern warfare. Such examples as are available from former wars—chiefly dried or bone preparations, and also examples of gunshot wounds culled from civil practice—form a group by themselves. The Napoleonic wars are represented by specimens from soldiers who fought with Sir John Moore in his retreat to Corunna, and there are a very few examples from Waterloo. Examples of the wounds and injuries of the Crimean war are more plentiful; there is quite a good series from the Austro-Prussian and Franco-Prussian wars—those from the latter war having been collected by Sir William MacCormac. In those wars the same type of bone injury, the same septic inflammatory sequelae, are to be seen as have been noted in the present war, for the wounds produced by shrapnel and by shell fragments are of the same nature now as in former wars; the septic sequelae are also the same. It is not, however, until we come to the examples obtained from the Sudanese campaign of 1898 that we recognize the results produced by missiles of high velocity—the shattering, expansive, "explosive" effects of the more modern missiles. Examples of the more modern rifle ammunition are displayed as well as a number of models obtained by the late Sir Victor Horsley from his experiments to demonstrate the explosive effects of high velocity bullets, by firing into blocks of soft clay.

Opportunities for the study of modern military wounds are next afforded—wounds of entrance, wounds of exit, wounds at various stages after the date of infliction, in various stages of healing, and in various stages of sepsis, and there are specimens also of "excised wounds." The next series illustrates injuries to the chest, pleura, and lungs, with the various sequelae which may follow such lesions, and hard by are examples of wounds of the structures in the posterior mediastinum—of the oesophagus and aorta; then of the diaphragm, and finally of the heart. There is one very remarkable injury of the heart: the anterior wall of the right ventricle is extensively lacerated—yet the officer (a member of the Flying Corps) brought his machine safely to earth! A very complete representation has been obtained of the forms of vascular injury so common in this war. The majority of these have been selected and recorded by Surgeon-General Sir George Makins, President of the College. One preparation on this stand particularly worthy of study is a dissection of the popliteal space which has been pierced by a bullet of high velocity. The damage is seen to extend far beyond the immediate track of the missile. Other series represent gunshot injuries of the liver, the bowel, the stomach, the kidney, and bladder; of the spleen, larynx, and spine, and lesions of the spinal cord.

On a screen are displayed most accurate delineations of war wounds by Sgt. A. K. Maxwell, who has succeeded in rendering a permanent and faithful record of conditions which could not be recorded except by pen and brush. His rendering of the appearance of muscles at various stages of invasion by the bacillus which produces gas

gangrene are particularly worthy of attention. Some of them were reproduced in colours in the issue of the *BRITISH MEDICAL JOURNAL* for June 2nd, 1917.

Another series of specimens represent the lungs of men who suffered in the first cloud of poisonous gas sent over our lines by the enemy early in 1915—at Ypres. The effects of that poison may be studied at all stages, early and late, the effect on the whole respiratory system. There is also a series of kidneys from cases of trench nephritis, and another of the conditions, organic disturbances, and disorganization produced by the gas-producing organism, *Bacillus aerogenes*.

Illustrations of Successful Treatment.

Many of the specimens represent surgical measures which saved the lives of soldiers—such as excised wounds, excision of parts of lacerated bowel, removal of dead and infected tissues. The successful aspect of surgery is more fully brought out in the collections of drawings, models, casts, and apparatus for treatment to be seen in Room III. Apart from the operations on fractured limbs which have furnished many specimens, there is, it is to be remembered, the vast number of cases where damaged limbs, even after compound and infected fracture, are saved by the various methods of combating infection. Such successes cannot be represented in such a collection as is shown in Room II. One can see, however, that no organ lies outside the range of modern surgery; cases where the heart has been successfully operated on—death resulting from some lesion elsewhere in the body—are represented. Missiles lying in the ventricles have been removed and life saved.

In one group of specimens are shown successful operations of a general kind, as distinguished from those upon special parts like the face and mouth. This group comprises successful removal of injured kidney or spleen, of pieces of wounded blood vessels, cases where vessels have been successfully sutured, the successful removal of wounded loops of intestine, artificial union of the fractured ends of bones, removal of large fragments of bone or even entire bones, such as the astragalus and scapula, resulting in the saving of limbs.

Some Groups and Blanks.

The specimens in Room III are set in groups, each group or section being the work of a single hospital or of a single individual, an arrangement which gives visitors an opportunity of learning at a glance the methods practised at particular hospitals, and the results which attend the application of such methods.

Not any part of this exhibition is really complete; every section is capable of extension and improvement, and there can be no doubt that as time goes on and visitors become aware of the utility and needs of the collection that additions will be made. That statement is likely to prove especially true of the sections now shown in Room III.

Reference may first be made to a series of drawings by Sir Charles Bell, borrowed from the Museum of the Royal Army Medical College. They were done in Belgium when he was studying and treating the wounded from Waterloo. Some of the wounds represented are rarely seen in the present war—the dragoon with sword wounds of the head and neck, the French soldier with the sloughing colon protruding from a sabre wound of the abdomen, the Hanoverian soldier whose right arm has been removed by cannon shot (“left to Nature and returned to Hanover in December, quite well”)—are all uncommon nowadays. On the other hand, another (a lower limb with gunshot fracture of the tibia) represents a condition as common to-day as in 1815. The same may be said of the pictures which represent gunshot wounds of the shoulder and head. On the wall, beyond Sir Charles Bell’s drawings, is a series of sketches by Colonel F. M. Caird representing certain conditions studied by him in France. The various stages in the development of “trench foot” are portrayed; there are rapid drawings of the conditions resulting from guillotine amputations, and pictorial notes of the effects of “Yperite”—one of the poisonous offensive German gases. Then follow a collection of Sergeant A. K. Maxwell’s drawings, and also excellent drawings by Mr. S. A. Sewell. In this room are a series of specimens, for which Major Valadier, R.A.M.C. (No. 13 Stationary Hospital, B.E.F.), and H. L. Whale, R.A.M.C., are responsible, illustrating the

nature of the jaw wounds and facial injuries, and an exhibit from Queen’s Hospital, Sidcup (formerly Cambridge Hospital, Aldershot) of wax models, plaster casts, and a series of strong and vivid drawings by Professor Henry Tonks, F.R.C.S., of the Slade School of Art, depict for the visitor the facial deformities which Major H. D. Gillies and Captain J. L. Aymard are called on to treat, the methods which they invent and adopt, and the degree of success which attends their efforts.

On a stand in the centre of the room, immediately in front of the Hunter statue by Weekes, is placed Colonel W. T. Lister’s collection of injuries and wounds of the eye, and a series of drawings elucidates the functional and clinical disturbances which were observed in each case. There is also a large collection of casts, models, and splints from Queen Alexandra Military Hospital, Millbank, for which Captain F. A. Hort, R.A.M.C., is entirely responsible. We see here the art of the cast-maker put to a double purpose: (1) To record clinical conditions, such as flat-foot and paralytic deformities—the same parts under various degrees of action and at various stages of development; (2) to supply those who have to fit splints or artificial limbs with an accurate basis on which to mould their appliances.

Those who are responsible for the exhibition have the hope that the exhibits in Room III will be extended in scope and character. They want to see models demonstrating the most recent and effective methods of applying splints so as to secure perfect immobilization of fractured parts. It is possible, too, that such collections as are now shown in Room III might become the centres round which surgeons from special military hospitals could meet for informal conferences concerning the best methods of treating particularly difficult cases of military injury.

THE WOUNDED FROM THE PASSCHENDAELE ACTIONS.

THE weather we have recently been experiencing in this country makes it easy to understand the accounts given by correspondents of the condition of the ground in Flanders and of the extreme difficulty not only of the advance of the troops but of the carrying back of the wounded.

In August, by means of trench tramways, corduroy roads, and so on, it was comparatively easy to get up to the advanced dressing stations and from the advanced dressing stations to the regimental aid posts. As soon as the ground in front of a jumping off point is assuredly taken, the trench tramways and corduroy roads are pushed up with extraordinary rapidity, and though intended primarily to facilitate the bringing up of ammunition and other supplies they can also be used for bringing wounded down. Corduroy roads, however, are usually few and far between, and carrying stretchers to them over heavy ground is very laborious; it is not easy to walk on a corduroy road, for, unless the rain has been recent and heavy, it is covered with slippery mud. Further, it is to be remembered that there must be a greater or less extent of ground in front of the point to which any corduroy road or trench tramway can be taken, and that a considerable number of hours must elapse before either one aid or the other can be extended beyond the point to which it had been brought before the offensive started. Consequently there is always a time during which casualties have to be collected over a scattered area and carried over rough ground. The distance in the present war over which a casualty has to be carried may be anything from two or three yards to two or three miles—that is to say, the distance between the place at which the man falls and the place at which his bearers reach anything like a real path. The difficulty of carrying depends partly on the patient’s weight and partly on the character of the ground surface over which he is carried. The weight of a man ordinarily weighing 11 or 12 stone may easily be brought up to 13 or 14 if his clothes are soaked with rain or mud; and if the ground is soft or the rain has been heavy, the bearers may sink at every step over the ankles.

These are the conditions on high-lying ground at the best of times, except in very dry weather. They have often been very much worse, so that it has been difficult to walk without falling or dragging a leg every now and then out of a knee-deep or thigh-deep mudpit. The present

conditions are apparently as bad as, if not worse than, at any previous period. The going over the country where the actual fighting is taking place, or, rather, where the front-line casualties are occurring—that is to say, alongside the corduroy roads and beyond the points to which they reach—may not be more difficult than it was on some portions of the Vimy front during the spring offensive, or during the later stages of the Somme and especially the Ancre offensives. Be this as it may, the difficulties must now be very great owing to the contour and character of the soil; eye-witnesses find it impossible to describe a strip of Flanders after it has been ploughed up for days by shell fire. There are many places—almost, in fact, the whole ground east and north-east of Ypres—which closely resemble the ground where the fighting in front of Passchendaele is now taking place. Even the rising ground is little above sea level, and the shallow valleys are commonly below it. The soil is of such a character that, after heavy or continuous rain, water lies on the surface even of slopes, and anyone walking across these slopes sinks to the ankles. Lower down the water is not merely visible here and there, but forms marshes, interspersed at places by regular lakes. It is easy to understand that when such country is exposed to heavy shell fire it is a matter of considerable difficulty to traverse it even unladen. The difficulty of collecting the wounded is increased by the fact that they may have fallen into shell holes anything from a foot to many feet deep. It often takes hours to carry a single case a couple of miles, even if ample relays of bearers are available, and meantime the bearers are exposed to shell fire and sniping. The account given in the *Times* and other newspapers last Monday is, we believe, in no wise exaggerated.

Once the patients have been got back as far as an advanced dressing station progress is rapid, but it is impossible not to believe that the difficulty of getting patients to the advanced dressing stations, and their exposure meanwhile to rain and mud, must increase the aggregate number of cases in which profound shock occurs. Nevertheless the cases seem to be arriving at the bases in very good condition. The case mortality probably will prove to be low, and the number of amputations not high; the cases in which gas gangrene occurs would appear to be almost rare. There can be no doubt that the progress in this respect, even in comparison with recent offensives, has been considerable and that it is still more marked when compared with the position, say, as recently as eighteen months or two years ago. The explanation is probably to be found in the fact that the medical authorities have continued their policy of developing the work of the casualty clearing stations. They are placed not only in the rear of any part of the line where heavy fighting is expected, and are now so numerous that they can deal with an enormous number of casualties if required, but they are also so staffed that they can perform a very large number of operations. They are not so staffed permanently, but they are so staffed by the addition of surgical teams whenever an offensive is in view. It may be recalled that a surgical team consists of an operating surgeon accustomed to front line work and three assistants all of whom know his methods, one being an anaesthetist, another a nurse, and the third a theatre orderly. The net result is that though, in the first hours of an offensive, a certain number of patients may be passed through to a general hospital without operation at the front (when it is known that such hospital will be reached within six hours or so), the greater proportion of all cases are kept at the casualty clearing stations until they have been satisfactorily treated, and no seriously wounded men are allowed to pass through without having their wounds radically treated if necessary. This is of much moment, because there is no doubt that the final result in any case depends very much less upon any drug employed in its treatment than on its early and thorough surgical cleansing—by which is meant the excision of all damaged tissue before bacteria have had time to propagate themselves. There is equally little doubt that during recent operations hundreds if not thousands of limbs and lives have been saved which would have been lost at an earlier period of the war, and that very large numbers of men have been restored to the ranks within a few weeks who earlier in the war would necessarily have been lost. Both as an instrument for the reduction of suffering and for

keeping the British forces up to fighting strength, the medical machine is paying for itself over and over again. What is more, it is still being improved week by week.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Wounded.

Staff Surgeon E. L. Atkinson.

ARMY.

Killed in Action.

CAPTAIN D. AUCUTT.

Captain Donald Aucutt, Royal Warwickshire Regiment, was killed in action on October 9th, aged 24. He was educated at Alleyn's School, Dulwich, and King's College, London, and took the diploma of L.M.S.S.A. in 1914. He joined the Special Reserve of the R.A.M.C. in September, 1914, but resigned after a year's service and enlisted in the Royal Sussex Regiment, subsequently gaining a commission in the Warwicks, and was promoted to captain in July, 1917. He was the son of Mr. Aucutt of Denmark Hill, S.E.

CAPTAIN W. T. CHANING-PEARCE, M.C., R.A.M.C.

Captain Wilfrid Thomas Channing-Pearce, M.C., R.A.M.C., was killed in action on October 1st. He was the third son of Dr. J. Channing-Pearce of Ramsgate, and was educated at Guy's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1911, and at Cambridge, where he graduated B.A., and in 1913 M.B. and B.C. After filling the posts of obstetric resident and house anaesthetist at Guy's, and of house-surgeon to the West London Hospital and to the Croydon General Hospital, he took a temporary commission as lieutenant in the R.A.M.C. on October 5th, 1914, and was promoted to captain on completion of a year's service. He received the Military Cross so recently as September 26th last.

CAPTAIN J. DAVIE, A.A.M.C.

Captain James Davie, killed in action on October 6th, was the second son of the late John Davie and Mrs. Davie of Edinburgh. He received his medical education at the University of Edinburgh, where he graduated M.B., Ch.B. in 1909. He subsequently served the office of house-surgeon to the Peterborough Infirmary. Prior to joining the Australian Army Medical Corps he held the post of medical officer to the District Hospital, Jerilder.

CAPTAIN J. H. C. GATCHELL, R.A.M.C.

Captain James Harcourt Cecil Gatchell, R.A.M.C., was reported as killed in action, in the casualty list published on October 16th. He was a native of Dunamanagh, co. Tyrone, and was educated in Dublin, where he took the diploma of L.A.H. in 1912.

CAPTAIN T. J. GOLDING, R.A.M.C.

Captain Thomas James Golding, R.A.M.C., was reported as killed in action, in the casualty list published on October 10th. He took the diplomas of L.R.C.P.I. and L.R.C.S.I. in 1906, and went into practice at Cork. Joining the R.A.M.C. as a temporary lieutenant in 1916, he became captain after a year's service.

CAPTAIN K. T. LIMBERY, R.A.M.C.

Captain Kenneth Thomas Limbery, R.A.M.C., was reported as killed in action, in the casualty list published on October 11th. He was educated at St. Thomas's Hospital, took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1916, and immediately afterwards joined the R.A.M.C. as a temporary lieutenant, being promoted to captain after a year's service.

CAPTAIN L. OLDERSHAW, R.A.M.C.(T.F.).

Captain Leslie Oldershaw, R.A.M.C.(T.F.), was officially reported as having died of wounds, in the casualty list published on October 15th. He was the youngest son of Dr. G. Oldershaw of Walton, Liverpool. After studying medicine at Liverpool University, he graduated M.B. and Ch.B. in 1915, joining the R.A.M.C.(T.F.) immediately afterwards as lieutenant, and being promoted to captain after six months' service. He had served at Gallipoli and in Egypt, and was transferred to France last spring.

According to later information, Captain Oldershaw was killed instantaneously by shrapnel on October 2nd whilst returning from the firing line to the support trenches.

CAPTAIN W. D. REID, M.C., R.A.M.C.

Captain William Douglas Reid, M.C., R.A.M.C., was killed in action on October 5th, aged 30. He was born in 1887, the eldest son of the late Mr. John Reid of Blenheim, New Zealand, and was educated in New Zealand and at Edinburgh University, where he graduated M.B. and Ch.B. in 1910. He took a temporary commission as lieutenant in the R.A.M.C. on August 22nd, 1914, and was promoted to captain after a year's service. He was awarded the Military Cross on March 3rd, 1917, "for great courage and skill in tending the wounded under heavy fire, continuing to dress the wounded after being wounded himself."

CAPTAIN N. H. W. SAW, M.C., R.A.M.C.

Captain Noel Humphrey Wykeham Saw, M.C., R.A.M.C., was killed in action on October 9th, aged 25. He was the younger son of Mr. Samuel Saw of Blackbeath, and was educated at Guy's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1915. He at once joined the Special Reserve of the R.A.M.C. as lieutenant on February 10th, 1915, and was promoted to captain after a year's service. He gained the Military Cross on September 22nd, 1916.

Died of Wounds.

CAPTAIN J. J. P. CHARLES, R.A.M.C.

Captain John James Percival Charles, R.A.M.C., died on October 6th of wounds received on July 31st. He was the son of the late Professor Charles, M.D., of Queen's University, Cork, and was educated at Cork and at Edinburgh University, where he graduated M.B. and Ch.B. in 1909. After acting as house-surgeon of the London Lock Hospital and as house-physician of the Norfolk and Norwich Hospital at Norwich, he went into practice at Swanage. He took a temporary commission as lieutenant in the R.A.M.C. on September 1st, 1914, and was promoted to captain after a year's service.

Died on Service.

CAPTAIN J. W. PETTINGER, R.A.M.C.

Captain James Wilson Pettinger, R.A.M.C., died of pneumonia in the Military Hospital, Aldershot, on October 6th, aged 43. He was the son of the late Dr. George W. Pettinger of Manchester, and was educated at Cambridge, where he graduated B.A. in 1896, and M.B. and B.C. in 1902, and at St. George's Hospital, also taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1899. After acting as house-surgeon, house-physician, and assistant surgical registrar at St. George's he went into practice at Kingsbridge, South Devon, where he was honorary medical officer to the Kingsbridge and District Cottage Hospital. He took a temporary commission in the R.A.M.C. last year, and was promoted to captain after a year's service.

Wounded.

Major J. S. Y. Rogers, R.A.M.C. (T.F.).

Captain D. S. Cassidy, R.A.M.C. (temporary).

Captain W. McM. Chesney, R.A.M.C. (S.R.).

Captain A. R. Grant, R.A.M.C. (temporary).

Captain R. W. Hill, R.A.M.C. (temporary).

Captain W. McConnell, R.A.M.C. (temporary).

Captain A. E. Mackenzie, R.A.M.C. (T.F.).

Captain A. Morris, R.A.M.C. (T.F.).

Captain W. A. Rees, R.A.M.C. (temporary).

Captain S. J. Simpson, R.A.M.C. (temporary).

Captain H. F. Warwick, R.A.M.C. (temporary).

Captain W. F. Wilson, M.C., R.A.M.C. (T.F.).

Captain W. F. Young, R.A.M.C. (temporary).

Lieutenant G. S. Lawrence, R.A.M.C. (temporary).

Lieutenant R. C. Rogers, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Bartholomew, George Hugh Freeland, Captain Argyll and Sutherland Highlanders, second son of Dr. Bartholomew of Edinburgh, died of wounds October 2nd, aged 21. He was educated at Merchiston, and was entered for Corpus Christi College, Oxford, when the war began. He obtained a commission from the O.T.C. on January 4th, 1915, went to the front in June, 1916, and got his company in May, 1917.

Botting, William Ralph, Second Lieutenant Royal Sussex Regiment, elder son of the late Dr. Herbert Botting of Brighton, killed recently. Before the war he was assistant organist at St. Augustine's Church, Preston Park, Brighton.

Chalmers, H. Stewart, Captain Royal Field Artillery, second son of Dr. A. K. Chalmers, M.O.H. Glasgow, died of wounds September 29th, aged 22. He was educated at Glasgow Academy, and at Emmanuel College, Cambridge, where he was studying medicine when the war began. He took a commission in the 4th Lowland Howitzer Ammunition Column (T.F.) on December 8th, 1913, and went to the front early in 1917.

Chetham-Strode, Edward Randall, Captain Border Regiment, son of Dr. Chetham-Strode, of 60, Wimpole Street, London, killed October 1st. He was educated at St. Paul's, where he was in the eleven, and soon after leaving school went to Australia, but returned in April, 1914. He got a commission in the 3rd (Reserve) Battalion of the Border Regiment on October 14th, 1914, and went to the front in December, 1914, attached to the Duke of Cornwall's Light Infantry. He was invalided home in April, 1915, but returned to the front in July, rejoining his own, the Border, Regiment. He was wounded on June 28th, 1916, and again returned to the front in January, 1917.

Clarke, Arthur Aubrey, M.C., Captain Leicestershire Regiment, only son of Dr. Arthur Clarke, Breaun Down, Morley, Yorkshire, killed October 2nd. He got his commission in December, 1915.

Conway, Brian Wiseman, Captain Manchester Regiment, eldest son of Dr. Conway, of Overton House, Longsight, Manchester, killed October 4th. He was educated at Epsom College and at the Grammar School and University of Manchester, where he was a third year medical student when the war began. He enlisted in the R.A.M.C. in September, 1914, went abroad in that corps, and rose to be sergeant-major. He was given a commission in October, 1915, and was wounded in September, 1916.

De Denne, Thomas Geoffrey, Second Lieutenant 8th Devons, aged 27, youngest son of Dr. de Denne of Sidmouth, killed in action on October 4th. He was educated at Stoneygate School, Leicester, and Eastbourne College, and enlisted in Victoria, B.C., in September, 1914. He was wounded in May, 1915, at Festubert, got his commission in March of this year, and returned to the front in May.

Fink, Laurence Alexander Lewis, M.C., Captain Bedfordshire Regiment, son of Major G. H. Fink, I.M.S. (retired), killed October 4th, aged 26. He was educated at St. Paul's, and was employed upon a rubber plantation in Java when the war began. Returning home he got his first commission on April 27th, 1915. He got the Military Cross in October, 1916.

Fleming, H. W., Second Lieutenant Bedfordshire Regiment, second son of the late Dr. A. J. Fleming of Hampstead, killed October 5th.

Harington, William Guy, D.S.O., Major Indian Army, elder son of Lieut.-Colonel H. N. V. Harington, I.M.S. (retired), died of wounds September 28th, aged 32. He was born on May 5th, 1885, passed from Woolwich into the Royal Artillery on December 21st, 1904, and joined the Indian army, being posted to the 5th Gurkhas, on March 26th, 1908. He got his company on December 21st, 1913, and gained his majority and the D.S.O. in the present war.

Heald, Donald, Second Lieutenant Rifle Brigade, only surviving son of Dr. Hugh Heald of Abbotsford, Ormskirk, died October 6th of wounds received the previous day.

Joscelyne, Laurence Arthur, M.C., Second Lieutenant Somerset Light Infantry, only son of Dr. Arthur Joscelyne of Taunton, killed October 1st, aged 19. He was educated at Epsom College, where he passed the preliminary science examination of London University and gained a leaving scholarship at Trinity College, Oxford. He went to the front last January, and gained the Military Cross on August 16th.

Tobin-Willis, Jack, Lieutenant Royal Flying Corps, only son of Dr. Willis, and nephew of Dr. Tobin of Ilkeston, Derbyshire, killed in an air fight on August 17th, aged 21. He was educated at Douai Abbey and at London University, where he was studying law when the war began. He got a commission in the Army Service Corps on November 3rd, 1914, went to France in January, 1915, and served with the 1st Cavalry Division as supply officer, till he was transferred to the R.F.C. early in 1917.

Wayte, S. W., M.C., Second Lieutenant Royal Field Artillery, younger son of Dr. Waite of Croydon, died on October 7th of wounds received on October 4th, aged 22.

MEDICAL STUDENT.

Clark, Marcus Broadfoot, Lieutenant Argyll and Sutherland Highlanders, killed September 25th. He was the seventh son of Allan Clark of Cathcart, late of Severn Lodge, Inellan, and was educated at Glasgow High School and University, where he was a fourth year medical student before the war, and a member of the O.T.C. He got his commission on November 27th, 1914, and on January 11th, 1915, was posted to the Army Cyclist Corps, but subsequently rejoined his own regiment. He went to the front in 1915, was present in the battle of Loos, and was promoted to lieutenant in October, 1916.

The casualty list published on October 12th contained the names of four nurses, killed, presumably, by enemy aircraft dropping bombs on hospitals: Sister M. Milne and Staff Nurse A. Clime, both of the Territorial Force Nursing Service; and Nurses E. Thompson and D. Coles, V.A.D. nurses. A brief notice of Miss Coles was given in last week's number of the BRITISH MEDICAL JOURNAL.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

MILITARY ORTHOPAEDIC HOSPITALS IN THE UNITED STATES.
A DEPARTMENT of military orthopaedics of the United States Army has been established, with its head quarters at the Surgeon-General's office in Washington. Sites have been selected for orthopaedic war hospitals in nineteen cities of the United States, including New York, Philadelphia, Baltimore, Washington, Boston, and Chicago. Orthopaedic base hospitals are to be established near the front, where early treatment of injured and ankylosed joints will be given, and the new hospitals in the States will be used more especially for industrial training than for surgical treatment. There will at first be accommodation for 500 men in each hospital, but provision will be made for enlarging their capacity to 1,000.

England and Wales.

TAVERNS FOR MUNITION WORKERS.

THE Duke of Connaught, during a visit to the Enfield factories on October 12th, opened a reconstructed tavern in the neighbourhood, in furtherance of the experiment of the Central Control Board (Liquor Traffic), by which public-houses in certain areas are acquired and managed on behalf of the Board. The principle underlying this policy has been fully explained in the *BRITISH MEDICAL JOURNAL* in connexion with the experiments at Carlisle and the tavern opened last November at Enfield Lock. The Royal Small Arms Tavern at the gates of the factory has now been transformed. A dining hall has been built to accommodate 600 men at a time to a substantial dinner served from up-to-date kitchens, and the place is not only spacious but artistically pleasing. Nothing remains, either within or without, of the customary "decorations" of the public-house, nor of its close, unhealthy atmosphere; the new tavern, in spite of lattice windows and low rafters, has abundance of light and air. A salaried manager works under the Board, and has no inducement to press the sale of liquor; he is assisted by a committee of the factory workers themselves. The Duke said that he hoped the Enfield experiment marked the beginning of a better system for the supply of food to industrial workers in the intervals between their hours of labour, and he remarked upon the importance, not only of securing a sufficient and wholesome meal, but of obtaining it under comfortable and refined conditions.

MEMORIAL TO THE LATE MR. PUZEY OF LIVERPOOL.

On October 10th a memorial service was held in the chapel of the David Lewis Northern Hospital, Liverpool, when a tablet was unveiled and a chancel rail dedicated to the memory of the late Mr. Chauncy Puzey by the Rev. J. Bell-Cox, who, in the course of a eulogy of his old friend, paid a warm tribute to his life's work and influence. The tablet was inscribed: "To the memory of Chauncy Puzey, F.R.C.S., Surgeon and Consulting Surgeon to this Hospital 1875-1916. This tablet is erected by the committee and his colleagues in recognition of his long, valued, and devoted services. Died October 10th, 1916." Among those present were Mr. Anthony Puzey (brother), Mr. W. H. S. Oulton (vice-chairman), Mr. S. Rennie, Mr. Peter Brown, and Dr. Macfie Campbell (members of the committee), Mr. John Davidson, Colonel Rushton Parker, Professor Glynn, Dr. Caton, Dr. Nott, the Reverend R. F. Winter, Mrs. George Walker, Mrs. Jolliman, Miss Garnett, Mrs. Macfie Campbell, and Mrs. Bradshaw and Bernard.

ANNUAL MEDICAL SERVICE, LIVERPOOL.

The annual medical service for the benefit of the Royal Medical Benevolent Fund was held on Sunday afternoon, October 14th, at St. Luke's Church. There was a large congregation far outnumbering the members of the medical profession, many of whom were in military uniform. The service was conducted by the Vicar, the Rev. J. R. Darbyshire, M.A.; the Bishop of the Diocese, the Right Reverend Francis J. Chavasse, read the lesson and pronounced the benediction, and the Very Reverend H. Henley Henson, D.D., Dean of Durham, preached the sermon, and took for his text, "He endured as seeing Him who is invisible" (Hebrews xi, 27). Dr. Henley Henson set forth the lofty

ideals which permeated the Red Cross in its ministering capacity in the war. He contrasted in moving language the two great streams of tendency which had coursed through centuries side by side in opposite directions, and now in this world-war had dashed against each other in conflict—the one characterized by advancing human life, rising ever towards high ideals, the other seizing with malignant skill the products of man's ingenuity to impose on humanity the soul-killing idea of might. The preacher emphasized this dualism in history, not only of mankind, but existing in individual man. It was the duty of his profession, as of the medical profession and the ancillary vocations, ever to preserve the high aspirations set forth in the text. The Dean paid a touching tribute to all branches of the combatant and healing forces of the country; the service and sacrifice given amid terrors despised and risks unnumbered were among the inestimable riches acquired in the darkest hours, and would ever remain an imperishable heritage of moral greatness. The committee which arranged the service deserve the thanks of the profession for the opportunity of listening to so gifted a preacher. It is a matter of regret that there was no opportunity of meeting Dr. Henley Henson and the clergy of the city, as on a former occasion at the Liverpool Medical Institution, after the service. It is to be hoped that the committee will endeavour to repeat such a meeting. The offertory amounted to £48, which is considerably above the average, and it is expected that this amount will be forwarded intact without deduction for the incidental expenses to which those members who were unable to be present would doubtless wish to contribute. Mr. R. J. Hamilton, 82, Rodney Street, is the honorary treasurer.

CENTRAL MIDWIVES BOARD.

At a meeting of the Central Midwives Board on October 11th, when Sir Francis Champneys was in the chair, the proposals of the Association for Promoting the Training and Supply of Midwives for a State-aided midwifery service in England and Wales were considered. The proposals had been submitted to the Home Secretary, and had been referred to the Board by the Privy Council. The Board agreed to inform the Privy Council that while reserving its opinion on its financial aspects, it gave its general approval to the scheme. A communication was received from the Scottish Central Midwives Board calling attention to the following statement in the report of the Departmental Committee on the welfare of the blind:

The Central Midwives Board have deleted from the instructions certain parts of the treatment known as the *Crédé* method, which method is known to have led to a large reduction in cases of ophthalmia neonatorum. We are of opinion that this should receive immediate attention.

The Central Midwives Board agreed to reply that the statement in the paragraph quoted was incorrect; in view of the fact that medical opinion on the value of the *Crédé* treatment was not unanimous the Board had from the outset carefully abstained from prescribing the use of that method or any other specific treatment of the eyes of the newly born infant. The Chairman reported on the results of the inspection of eighteen training schools and institutions in the London area conducted by midwives approved for the purpose. At a meeting on the previous day four women were struck off the roll for general incompetence, one was censured, and in two other cases judgement was suspended for reports in three and six months respectively.

Scotland.

SHORTLY after the death of Dr. J. Munro Campbell, a well-known practitioner in the southern suburbs of Glasgow, a committee was formed to raise £100 to name a bed in the Samaritan Hospital, to which he was one of the visiting surgeons. Subscriptions received from 600 persons amount to £373, and it has been determined not only to name a bed but to found a bursary for children at the Pollok Academy and the Sir John Maxwell School, Pollokshaws, and to place a medallion on a public building in Pollokshaws and a marble slab on the grave.

At a meeting of the Midlothian County Council last week it was decided to vote £300 towards the scheme

desired by the Board of Agriculture for the destruction of rats, provided the Board refunded £100. The damage done to grain has been so considerable during the last few years that the Secretary for Scotland has stated that a reasonable contribution towards the expenditure might be made by the Board under certain conditions, but that it was expected that agricultural and commercial interests concerned would contribute liberally.

REPORT OF THE ROYAL COMMISSION ON HOUSING.

In 1909 the Scottish Miners' Federation had an interview with the then Secretary for Scotland as to the defects in the housing accommodation available in some of the colliery districts. Subsequently the Local Government Board for Scotland obtained reports from county medical officers of health, and after further interviews between the Secretary for Scotland, the Scottish Miners' Federation, and Scottish members of Parliament, a Royal Commission was appointed on October 30th, 1912. It has now presented its report, which is the more voluminous because, although all the members of the Commission are agreed as to the nature and extent of the evils, there is a difference of opinion as to the remedies which can best and most quickly be applied. The main report is signed by eight members and the minority report by four. The broad results of their survey, which has extended to the whole of Scotland, are summed up by the Commissioners in the following paragraphs:

Unsatisfactory sites of houses and villages, insufficient supplies of water, unsatisfactory provision for drainage, grossly inadequate provision for the removal of refuse, widespread absence of decent sanitary conveniences, the persistence of the unspeakably filthy privy-midden in many of the mining areas, badly constructed, incurably damp labourers' cottages on farms, whole townships unfit for human occupation in the crofting counties and islands, primitive and casual provision for many of the seasonal workers, gross overcrowding and huddling of the sexes together in the congested industrial villages and towns, occupation of one-room houses by large families, groups of lightless and unventilated houses in the older burghs, clotted masses of slums in the great cities. To these add the special problems symbolized by the farmed-out houses, the model lodging-houses, congested back-lands, and ancient closes. To these, again, add the cottages a hundred years old in some of the rural villages, ramshackle brick survivals of the mining outbursts of seventy years ago in the mining fields, monotonous miners' rows flung down without a vestige of town plan or any effort to secure modern conditions of sanitation, ill-planned houses that must become slums in a few years, old houses converted without necessary sanitary appliances and proper adaptation into tenements for many families, thus intensifying existing evils, streets of new tenements in the towns developed with the minimum of regard for amenity. The last census showed that thousands of one-room houses continue to be occupied by families; that overcrowding, reckoned even by the most moderate standard, is practically universal in the one- and two-room houses; that, in spite of protest and administrative superintendence, domestic overcrowding of houses and overbuilding of areas have not been prevented.

To our amazement we found that even if we take overcrowding to mean more than three persons per room, we should, to secure even this moderate standard for Scotland, have to displace some 284,000 of the population. But this is not all. We conclude that at least 50 per cent. of the one-room houses and 15 per cent. of the two-room houses ought to be replaced by new houses. In brief, merely to relieve existing overcrowding, and replace houses that should be demolished, some 121,000 houses are required, and if an improved standard is adopted, as we recommend, the total number of new houses required would approach 236,000. For such gigantic figures our report submits full justification. It is only now that the nation has had the means of discovering how far Scotland has been left behind, and by what poor standards the housing of her working classes has been measured. Our report, and the evidence it rests upon, will carry conviction to every disinterested person.

Reference to the remedies proposed and the nature of the difference of opinion on this head must be deferred.

Ireland.

DR. FITZGERALD, who has been medical officer of the Newtownbutler district for the past forty years, has just recovered from a severe illness; the people of the district, to mark the high esteem in which he is held, presented

him with an illuminated address and a cheque for £350, and Mrs. Fitzgerald with a gold wrist watch.

THE LOCAL GOVERNMENT BOARD.

The Gorey Guardians, who have been for six weeks on strike as a protest against the order of the Local Government Board enforcing the Vaccination Acts, have been notified that, if they fail to meet on Saturday next the Board will be dissolved on the following Monday and the conduct of business entrusted to paid officers. The Wexford Guardians, who had alleged that they were unable to find a substitute for the medical officer for one of their dispensary districts, except a doctor of military age, have yielded to the suggestion of the Local Government Board to appoint a woman doctor to act as substitute.

Correspondence.

REFRESHMENT HOUSE EXPERIMENTS IN CARLISLE.

SIR,—From time to time I have forwarded to you particulars with regard to the State control of the liquor traffic in this city, and in a letter to the JOURNAL published on June 9th last I gave you a brief summary of the results which had been obtained. At the same time I gave you the record of convictions for drunkenness for the first five months of this year as compared with the corresponding period of 1916. Since then there has been a steady decrease of convictions for drunkenness, as the following table will show:

Year.	July.	August.	September.	Total.
1916	91	46	62	199
1917	14	20	14	48
Decrease	77	26	48	151

The totals for the first three quarters of 1916 were 763, and for the corresponding periods of 1917 were 277, a decrease of 486. The convictions for assaults on the police during the same periods in 1916 were 33 and in 1917 they were 15, a decrease of 18. The prohibition of the sale of spirits on Saturdays continues to have a very beneficial effect. It should be stated that there has been a change in the population during the present year, the rough element engaged in construction work having disappeared, but, making due allowance for this, it must be obvious that there has been a great advantage in the restrictions that have been imposed on the community. With the opening of the Citadel Tavern this week the scheme of the Control Board's (Liquor Traffic) reconstruction programme in Carlisle has been completed, and they may now claim that they are providing for the needs of every class of the community in respects of meals and refreshments. The Citadel Tavern is the only house under the Board's management in Carlisle in which meals costing more than 1s. 3d. for food only will be served. It has been formed out of the reconstruction of the premises of the Wellington Hotel and the Three Crowns Inn. The premises have been converted into a handsome dining room, lounge, café, and restaurant. There will be a table d'hôte luncheon on weekdays from 12 to 2.30 at 1s. 6d. per head, including soup, entrée or joint, sweet or cheese, and a cup of tea or coffee. Each evening dinner will be served from 6 to 8 o'clock at 2s. 6d. per head, the menu being soup, fish, entrée or joint, sweets, and cheese. Refreshments will be served also *à la carte*. There are now seven taverns in different parts of the city, and at three of them arrangements have been made for the "off" sale of food. This arrangement is to some extent on the lines of the communal kitchen, and the view taken by the board is that if the poor people availed themselves more widely of the facilities provided for them under the new régime it would be greatly to their advantage. This development is being closely watched, and at a later date I propose to send you details showing how far it has succeeded.—I am, etc.,

Carlisle, Oct. 16th.

HENRY BARNES, M.D.

DYSENTERY AT GALLIPOLI.

SIR,—The letters from Captains Bahr and Bartlett, R.A.M.C., on dysentery at Gallipoli, which appeared in your issue of September 22nd, were of considerable interest to me.

I had an opportunity of studying the epidemic in question from the clinical aspect at Mudros and Suvla Bay during July and August, 1915, and later from the bacteriological aspect at the Central Laboratory, Alexandria. My conclusions were embodied in a paper which appeared in October, 1916. I am in complete agreement with Captain Bartlett that the large majority of the cases were of amoebic origin. This belief was supported by the clinical features characterizing the cases with which I came in contact, the response to emetine treatment, the findings during microscopical and cultural examination of the stools, the results of serological tests, and the appearance presented by the intestines of fatal cases.

Clinical Features.—All cases occurring amongst the men under my charge were characterized by the insidious apyrexial onset supposed to be characteristic of amoebic dysentery. Symptoms of severe diarrhoea with abdominal pain heralded the onset, and it was not for twenty-four to forty-eight hours or later that the patient, frightened by the appearance of blood in his motions or compelled by the increasing severity of the symptoms, reported sick.

Response to Emetine.—During the early stages of the epidemic the patients rarely received emetine until their arrival at the base, and during this period the cases admitted to hospital in Egypt were very severe, showing as a rule abundant blood and mucus in the stools. Later, when emetine was injected at the field ambulances and stationary hospitals, the type of case coming under our observation at the base was certainly much less severe. Many showed no blood in the stools and some were convalescent.

Examination of Stools and Serological Tests.—In my series of cases 12 per cent. were shown to be pure amoebic infections, in 7.6 per cent. dysentery bacilli were isolated, and in 2.6 per cent. both *E. histolytica* and dysentery bacilli were found. Therefore, of the positive cases, the amoebic far outnumbered the bacillary.

How can the failure to detect the causative agent in such a large number (over 70 per cent.) of cases be explained? Was it due to incomplete examination or to disappearance of the latter previous to the time of examination? The greater number of negative cases in this series were examined on several occasions, so that I do not believe that any considerable error was introduced owing to incomplete examination. The conclusion reached was that the majority of these cases were entamoebic in origin, the entamoebae having disappeared from the stools as the result of emetine treatment.

This view was supported by the fact that serological tests carried out during December, 1915, and January, 1916—months during which amoebic dysentery was presumably reaching its ebb—resulted in only 30 per cent. being shown to be of bacillary nature. Therefore even at this period of the year the amoebic cases outnumbered the bacillary.

Appearance of Intestines.—Evidence of the amoebic nature of the lesions is afforded by the appearance of isolated nodular projection and flask-shaped ulcers separated by normal mucous membrane. This appearance is only presented by the intestine in the early stages of the disease as secondary bacterial invasion of the ulcers soon alters the appearances, and gives rise to the picture of a more or less diffuse inflammation, with numerous irregularly shaped ulcers. In an advanced case of the disease, therefore, the amoebic origin of the lesions can only be proved by microscopical demonstration of the parasite in the intestinal wall.

In this regard I may mention that the amoeba-like appearance presented by certain phagocytic and vacuolated cells, alluded to by Captain Bahr, was well recognized, and reference was made to them in the paper previously mentioned.¹

I was privileged to attend a large number of *post-mortem* examinations carried out by Captain Bartlett on fatal cases of dysentery, and of these the large majority showed, either to the naked eye or microscopically, typical amoebic

lesions. Details will be found in Captain Bartlett's own paper on this subject.²—I am, etc.,

W. MAGNER, ex-Lieutenant R.A.M.C.,
Pathology Department, University College, Cork.

September 28th.

RUPTURE OF UTERUS.

SIR,—Dr. H. Davies-Jones's concluding sentence in his letter on the above subject in your issue of September 22nd should be sufficient to warn off most of us; but I mean, with your permission, in all diffidence, to enter the arena.

First, I desire to add my congratulations to Dr. Rigden on the eventual recovery of his patient, though childless and without her uterus.³ The history and Dr. Rigden's statement show us that it was a case of flat pelvis, though to what extent of contraction we are not informed, nor, what is equally important, do we know the disproportion between child and pelvis, which cannot be estimated without some data as to weight of child as well. What a text for the advocates of antenatal treatment this case affords! And, in passing, one may note that according to the new rules of the Central Midwives Board, 1916, the midwife erred in not advising her patient to have medical advice before labour.

The important decision as to immediate turning, or, alternatively, the application of forceps in flat pelvis, depends largely on an unfavourable or favourable position of the head respectively, but, personally, the forceps in nearly all cases is my choice. Probably the most salient point in this remarkable case for comment and our guidance to treatment is the fact that there was *no pulsation* of the umbilical cord, consequently, the child being dead, immediate perforation, and embryotomy if necessary for easy extraction, was indicated.

I do not think it fair for any one not present at the case to comment on the subsequent surgical treatment, but I think it is arguable that the immediate removal of the placenta per vaginam might have saved the abdominal section, bearing in mind in this connexion that figures of mortality after uterine rupture by themselves are insufficient to decide the relative claims of plugging and drainage as against immediate abdominal section.—I am, etc.,

Norwich, Sept. 24th.

ARTHUR CROOK.

RECURRENCE OF ADENOIDS AND TONSILS.

SIR,—It is one's common experience to examine children whose respiratory deficiency is undoubtedly due in the first instance to a deflected septum, with the usual turbinate deformity. Very frequently there is a history of operation for removal of tonsils and adenoids, with, naturally, poor results, as judged by the unaltered mouth breathing and unchecked facial deformity. Heredity plays a very prominent part, with the result that "asthma in the family" may often be interpreted as inherited nasal deformity; and unfortunately, so far, very little can be done in children to remedy this abnormality, with its usual resulting train of signs and symptoms.

A few days ago I became possessed of a remarkably well-preserved skull, recently unearthed on the site of the Roman settlement of Caerwent. There is well-marked septum and turbinate deformity, and the usual alteration in the palate, antrum, etc. General skull shape, facial angle, and well-formed nasal bones presume a male Roman.—I am, etc.,

Newport (Mon.), Oct. 6th.

J. LEWIS THOMAS.

TREATMENT OF ACUTE GONORRHOEA.

SIR,—The article by Captain Lumb, R.A.M.C., in the BRITISH MEDICAL JOURNAL, October 6th, 1917, calls for some comment, since the electrical process he used is described as similar to my method. I must point out that he made deviations from my method, and these doubtless affected his results. First, Captain Lumb has employed a silver catheter, and he must surely be aware that during electrolysis this instrument is being dissolved, and silver ions are being driven into the lining of the urethra. He has, therefore, been treating these cases by silver ionization—a process I have never described or recommended. The second important variation is an arrangement of an

¹ Some Observations on Dysentery, *Lancet*, October 21st, 1916.

² *Quarterly Journal of Medicine*, April, 1917.

³ BRITISH MEDICAL JOURNAL, September 1st, 1917, p. 289.

in-and-out flow of a liquid under pressure to produce distension of the urethra by the contained liquid. This is a procedure I have never practised, as I believe it to be harmful; my reasons have been given in the *BRITISH MEDICAL JOURNAL*, May 12th, 1917.—I am, etc.,

London, W., Oct. 12th.

CHARLES RUSS.

THE SUPPLY OF MORPHINE, ETC., TO ARMY MEDICAL OFFICERS.

SIR,—May I point out that Dr. William Martin (September 29th, p. 439) is evidently referring in his letter to the Regulations Nos. 40, 40A, and 40B, issued under the Defence of the Realm Act? The order referred to by the *Pharmaceutical Journal*, however, is that issued by the Army Council, dated May 11th, 1916, which prohibits the sale or supply of the drugs specified in those regulations, or of any preparations, derivatives, or admixtures prepared therewith or therefrom, to or for any member of His Majesty's forces without written prescription in the specified form.

The effect of this order as interpreted by the *Pharmaceutical Journal*—and the interpretation seems to have received some form of endorsement from the War Office—prohibits the supply of any of these drugs to any medical practitioner who is a member of His Majesty's forces, whether he requires these drugs for his private practice or not. The order is thus another instance of hastily promulgated decrees, the effect of which is, as Dr. Martin says, an intolerably unfair restriction on the legitimate freedom of action of medical practitioners.—I am, etc.,

October 4th.

PHARMACIST.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—I was very pleased to see Dr. Dewar's letter in your issue of October 6th, p. 467. The Insurance Acts Committee did the profession a distinct service when they persuaded the Commission to release it from the trouble of keeping the record card. I have never seen any letters of thanks and yet the Insurance Acts Committee is ever working on behalf of the panel practitioners. The extremist is the man who rushes into print. Why does not the moderate medical man write oftener and express his views? Dr. Brackenbury is doing a great service to the profession, but the moderates must be up and doing and give him every support, or the extremists will get their own way, and then, indeed, there will be a crisis in the profession. The conference on the 18th is fraught with great dangers. I hear of impossible demands. We must remember there is a very strong section of lay extremists in the country doing all they can to persuade the Government to scrap the present panel system and start a whole-time salaried service. There is also, I believe, a stronger section still in favour of the panel system. If the profession is coerced to support extreme demands, they will only force the moderate section who are still in favour of the panel system to go over to the extremists, and a whole-time State medical service will be forced on the profession.—I am, etc.,

Birmingham, Oct. 9th.

F. A. L. BURGESS.

SIR,—It is high time that rural practitioners should protest against the terms offered them for attending discharged soldiers. For going three miles (the last half mile or more of which they may have to walk through mud and snow) to see a patient they are to be paid half a crown, no more than the town doctor is paid for seeing his patient next door or in the same street. Such terms are quite impossible at the present day. The same injustice is done with regard to attending temporary residents, and I am surprised rural practitioners have put up with that arrangement. We are told that there were no data at hand to enable an accurate computation to be come to, but surely no datum but common sense is necessary to show the manifest unfairness in the treatment of the country doctor. I see one "leader" of our profession tries to excuse the small fee offered by saying that if we make a good many attendances at even a small fee, the whole will amount to quite a considerable sum. Surely this is the most pernicious stuff ever written—the argument of the cheap-jack.—I am, etc.,

October 15th.

RUS IN URBE.

PANEL PRACTICE AND REMUNERATION FOR DRUGS AND MILEAGE.

SIR,—I am glad to see "Old October's" letter (October 13th, p. 498). Surely panel practitioners cannot be satisfied with the present state of affairs. For those who dispense and also have long journeys; the enormous increase in the cost of drugs, petrol, and various other necessities has brought the actual remuneration down to an extremely small figure.

In my own case, though my panel list has gradually increased, my pay has decreased since the early days of the Act. I believe the figures have been as follows:

	1913.	1914.	1915.	1916.
Average numbers on list, all of whom are dispensed for	232	246	265	281
Remuneration, including dispensing, but excluding temporary residents	£ s. d. 112 12 1	£ s. d. 103 19 6	£ s. d. 107 0 10	£ s. d. 105 3 10

Even if these rates have been correct according to the strictly legal interpretation of the Act, they certainly prove that we can have no idea whatever until the end of the financial year, or rather until the final instalment is paid, what we are entitled to receive.

What would the ordinary man in the street who is receiving a war bonus on account of extra cost of living say to such figures? Our professional brethren who are not panel practitioners but salaried officers of various kinds have in many instances, no doubt deservedly, received war bonuses on account of extra expense, though these may simply apply to cost of living. Are we, with the hugely increased expenses thrust upon us since 1913, not equally deserving? Inflation or no inflation, I have no hesitation in saying that my work has very considerably increased.

"Old October" appears to make a very moderate demand when he suggests that this obsolete scale (which few understand and none can check should be "revised and adjusted to meet these increased costs." The justice of this suggestion applies, I imagine, most especially to country practitioners, on whom fall most heavily the extra costs of drugs, petrol, and other motoring necessities.

In any possible new arrangement it should be a *sine qua non* that the terms stated should be only capable of one meaning, should require no explanatory statement, and should be such as to enable each panel practitioner to know how much was due to him. In no other way can we judge as to whether the game is worth the candle.—I am, etc.,

West End, Hants, Oct. 15th.

C. H. POWERS.

THE AIR WAR.

SIR,—I see that in your issue for October 13th a territorial medical officer objects to your suggesting or having given currency to a statement to the effect that the bombing of a certain base hospital was intentional. It is superfluous for this officer or any other well-wisher of the allied cause to take upon his shoulders the task of excusing the Germans. It is not a question of defending interests of eternal truth, for on both sides nothing but suppositions are involved. You suppose the bombing was intentional, he supposes it was not. I believe myself that the probabilities are in your favour. The number of hospitals bombed at the front is indicated by the number of deaths and injuries of nurses recorded. The hospitals concerned have lain in more than one case at a considerable distance from any legitimate object, and a hospital camp is of such a character that no Taube can well fail to recognize what it is.—I am, etc.,

France, Oct. 15th.

UNBIASED.

As a war measure a limited number of women are to be admitted to the course of Harvard Medical School this year. They will not, however, be eligible for any medical degree.

The Mayo Foundation has become the absolute property of the University of Minnesota. The fund is to be used for higher medical education, research, and investigation. The expenses of the foundation will be defrayed by Drs. Charles H. and William J. Mayo till a fund of £400,000 has been accumulated; afterwards the income from the fund will suffice to maintain the foundation.

The Services.

EXCHANGE.

LIEUTENANT R.A.M.C., who has served a year in France at a base hospital, desires an exchange for the winter months with a medical officer in England.—Address, No. 3603, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

The following candidates have satisfied the examiners in both parts of the examination in Sanitary Science: Captain A. J. Gibson, R.A.M.C., Captain G. B. Mason, R.A.M.C., D. Wainwright.

UNIVERSITY OF LONDON.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.

MR. R. H. O. B. ROBINSON has been awarded the University Scholarship of £50. He is the son of Mr. Betham Robinson, surgeon to the hospital.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.

The following scholarships, medals, and prizes have been awarded during the session 1916-17:

Entrance Scholarships: H. B. Shaw (first), E. B. Dancy (second), J. Whitby (third). Broderip Scholarships: R. E. S. Webb (first); second not awarded. Lyell Medal and Scholarship: S. C. Shaw. Freeman Scholarship: S. C. Shaw. Hetley Clinical Prize: R. E. S. Webb. Second Year's Exhibition: O. S. Hillman.

UNIVERSITY OF EDINBURGH.

GRADUATION CEREMONY.

A GRADUATION ceremony was held in the McEwan Hall on October 12th, when the degree of Bachelor of Science in the Department of Veterinary Science was conferred for the first time. The principal, Sir Alfred Ewing, in a short address after the ceremony, said that notwithstanding the preoccupations of war and the difficulty of meeting its claims and sustaining its losses the need for new developments had not been forgotten and definite progress had been made in more than one department. Satisfactory arrangements had now been made to give to women in medical classes the same privileges as men in respect of clinical as well as academic instruction. A professorship of tuberculosis and allied diseases had been instituted, and in Sir Robert Philip the university had received an accession to its medical staff which would bring additional lustre to the school. Steps had been taken to divide the subject of chemistry among three more professors—of general chemistry, of chemistry in relation to medicine, and of technical chemistry. The initial steps for the establishment of chairs in French language and literature and German language and literature, and lectureships in Spanish and Italian languages had been taken.

The following degrees were conferred:

M.B., CH.B.—D. Chanis, H. C. Elder, R. N. Mackenzie, Ikbal Singh, Naiwa, A. J. Pollock, J. H. Sypkens, A. Ba Thaw, J. Thompson, K. L. S. Ward.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

A MEETING of Fellows and Members will be held at the College, Lincoln's Inn Fields, on Thursday, November 15th, at 3 p.m., when a report, copies of which can be obtained by Fellows and Members on application to the Secretary, will be laid before the meeting. Notices of motion must be received by the Secretary not later than November 6th. On and after November 13th a printed copy of the agenda will be issued to any Fellow or Member who may apply for one.

The honorary secretary of the Society of Members, Dr. Sidney C. Lawrence, informs us that the society addressed a letter to the Council of the College respectfully suggesting that in view of the present great pressure on the time and money of medical men at home and the absence of so many Members abroad on His Majesty's Service the annual meeting of Fellows and Members should not be held. In taking this step the Society reserved its right to advocate the cause of the Members on future suitable occasions. Dr. Lawrence adds that the Society regrets the decision of the Council to hold the meeting, as many Members will be unable to attend, and the expenses associated with the meeting might have been saved to the College funds.

CALENDAR.

The *Calendar of the Royal College of Surgeons of England for 1917*,¹ just issued, contains the customary historical and formal information, together with lists of Fellows, Members, Licentiates, and Diplomates, reports of proceedings, and financial statement. A short account is given of the work of the Committee of Reference, which during the year ending July, 1917, held fifty-two meetings. Professor Arthur Keith, in his report as Conservator of the Museum, states that the measures taken to safeguard its contents against aerial attack have not been in

any way relaxed. Until the conclusion of peace it is unlikely that preparations will be restored to their proper places in the Museum, but it should be understood that although the Museum is closed to ordinary visitors, its contents are made accessible to those who wish to carry on research or to make a study of a particular series of specimens or preparations. During the past three years the depleted staff of the Museum has been increasingly occupied with the War Office collection, and at the present time this work monopolizes the time and energy of all concerned.

COUNCIL MEETING.

An ordinary quarterly council was held on October 11th, when Sir George Makins, President, was in the chair.

Leave of Absence.

Leave of absence was granted to the President for three months, and to Sir Berkeley Moynihan for October and November, both during absence abroad on Government duties.

Catalogue of Surgical Instruments.

The thanks of the Council were given to Mr. Alban Doran for his services in continuing to arrange and catalogue the collection of surgical instruments in the museum.

University of Liverpool.

Sir George Makins was appointed a member of the Court of the University of Liverpool for three years from January 1st, 1918, the late Sir Frederic Eve having been the last so appointed.

Obituary.

DEPUTY SURGEON-GENERAL WILLIAM CHERRY, R.A.M.C. (ret.), late of New Ross, Ireland, died at Bournemouth on September 21st. He took the diplomas of L.K.Q.C.P. and L.R.C.S.I. in 1859, and entered the Army Medical Department as assistant surgeon on January 19th, 1860, becoming surgeon in January, 1872, surgeon-major on March 1st, 1873, and retiring as brigade surgeon, with an honorary step, on March 28th, 1887.

DEPUTY INSPECTOR-GENERAL WILLIAM HENRY PATTERSON, R.N. (ret.), died after a long illness on October 4th, aged 67. He was educated at the Ledwich School, Dublin, and took the diplomas of L.R.C.S.I. and L.K.Q.C.P. in 1871. Entering the navy soon after qualifying, he attained the rank of fleet surgeon on December 9th, 1890, and retired with an honorary step of rank on September 26th, 1905.

COLONEL JAMES HYSLOP, D.S.O., Deputy Director of Medical Services, Union of South Africa, died at the Sanatorium, Pietermaritzburg, Natal, on October 5th, at the age of 60. He was the son of the late Thomas Hyslop of Woodpark, Kirkeudbright, and was educated at Edinburgh University, where he graduated M.B. and C.M. in 1879, afterwards studying at Berlin, Vienna, and Munich. For the past thirty years he had been Superintendent of the Natal Government Asylum at Pietermaritzburg; he was also President of the Natal Medical Council. He served in the South African war, gaining the medal and the D.S.O., and again in the suppression of the Natal Native Rebellion in 1906. He was for some years Principal Medical Officer of the Natal Militia. In 1899 he represented the Natal Government at the South African conference on plague, and acted as chairman of the plague conference at Durban.

DR. LEWIS A. STIMSON of New York, who died suddenly in September, was born at Paterson, New Jersey, in 1844. He graduated in arts at Yale in 1863, and served as a captain in the Union army till the end of the Civil War. He was professor of physiology from 1883 to 1885, of anatomy from 1885 to 1889, and of surgery from 1889 to 1898 in the New York University Medical College. In 1898 he was called to the chair of surgery in the Cornell Medical College, New York City. Dr. Stimson was consulting surgeon to the New York and Bellevue Hospitals, and his name was well known to surgeons throughout the world by his work on operative surgery published in 1900 and his *Treatise on Fractures and Dislocations*, which has gone through eight editions. He was also the author of numerous other contributions to medical literature. He was an enthusiastic yachtsman, and some years ago sailed his own boat in a race across the Atlantic.

¹ London: Taylor and Francis, 1917. (Demy 8vo, pp. 502. 1s.)

Medical News.

THE scientific meetings of the Zoological Society of London will be resumed at the house of the society, Regent's Park, on Tuesday next, October 23rd, at 5.30 p.m.

DR. PRESTON KING has been nominated as mayor of Bath for the ensuing year, and Dr. James Pearson as mayor of Bootle. Both have previously held the office of mayor.

DR. JOHN DIVINE of Hull, lately a member of the Insurance Acts Committee of the British Medical Association, has been added to the Commission of the Peace for the city of Hull.

MR. ALEXANDER ADAIR ROCHE, K.C., who has been appointed one of the Justices of the High Court in the King's Bench Division, is the son of Dr. William Roche, who formerly practised at Ipswich and now, we believe, resides in retirement at Honiton.

A JAPANESE medical corps of one hundred men has gone to Rumania to help in the effort to control the epidemic of typhus fever in that country. The corps is divided into three sections—internal diseases, surgery, and epidemics—each with its own chief. The head quarters of the corps will be at Jassy.

THE Minister of Pensions has received from a Manchester gentleman, who wishes to remain anonymous, an offer to subscribe £50,000 towards the cost of institutional treatment for disabled sailors and soldiers. Half of the American Red Cross gift of £200,000 to the British Red Cross is to be devoted to institutions for orthopaedic and facial treatment and for general restorative work for disabled British soldiers.

AT the next meeting of the Medical Society of London, to be held on Monday, October 22nd, at 8.30 p.m., at 11, Chandos Street, Cavendish Square, W.1. Mr. Muirhead Little and Major R. C. Elmslie, R.A.M.C.(T.) will introduce a discussion on modern artificial limbs and their influence upon methods of amputation. There will be a practical demonstration with patients and appliances. Colonial and American medical men on active service will be welcomed at the meeting.

A MEETING of the Royal Sanitary Institute will be held in Newcastle on Friday and Saturday, November 9th and 10th. On Friday, at 7 p.m., a discussion on "Standards of meat inspection under war time and other conditions" will be opened by Mr. Thomas Parker, F.R.C.V.S., veterinary officer and inspector of provisions, Newcastle. On Saturday morning (10.30) Mr. John H. Mole, sanitary inspector and surveyor, Chester-le-Street R.D.C., will open a discussion, illustrated by an exhibit of building materials, on "Structure in municipal housing." On Saturday afternoon a visit will be paid to Elisabethville, a Belgian village where the buildings are of both temporary and permanent types, in order to inspect the planning and structure adopted.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2631, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

THE address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

RHEUMATIC CRIPPLES.

SEVERAL correspondents have asked us recently for assistance in finding homes for persons suffering from rheumatoid arthritis or chronic rheumatism, only able to pay a small sum weekly. It appears that at the present time some such homes are occupied for military purposes. If any member is able to assist we shall be happy to publish the information or forward it to our correspondents.

LETTERS, NOTES, ETC.

COFFEE AND TEA.

THE difficulty recently experienced in getting tea, greater in some districts than in others, has probably disconcerted British housekeepers more than any of the shortages they have experienced during the last year. Some grocers have refused to serve to any one customer more than a quarter of a pound, which is the weekly ration of the British soldier in France. He no doubt likes his tea strong, but even so the ration is liberal, for half an ounce of tea is reckoned to make six cups, probably much more than he would have consumed at home. Large War Office purchases may account for the present shortage, but as the total consumption of tea in the United Kingdom is estimated to be about three-hundred million pounds a year the twenty-six millions a year required for the British armies in France ought not to cause any permanent dislocation of the trade, and it is believed that the situation will soon be relieved by new arrivals. The comparative neglect of coffee in this country is probably due to ignorance of how it should be made, although the greater palatability of a cup of coffee made from the bean recently roasted and ground may have something to do with it. The common fault, however, is to treat the ground coffee in the same way as tea and to make much too weak an infusion. Two ounces of coffee to a pint of water is probably a proper proportion, and, according to Hutchison, a teaspoonful of such coffee will contain very much the same amount of caffeine and tannic acid as an equal quantity of tea. It should be noted that caffeine in coffee is combined with a peculiar acid, allied possibly to tannic acid, but exhibiting different properties from the tannin present in tea. This "caffetannic acid" is not particularly astringent. Further, according to the investigations of the *Lancet*, whereas the caffeine tannate of tea is precipitated by weak acids and therefore probably by the gastric juice, so that the caffeine is not absorbed until it reaches the alkaline alimentary tract, in the case of coffee the caffeine is soluble in both alkaline and acid fluids, so that the absorption of the alkaloid probably takes place in the stomach. This may explain the opinion generally accepted that coffee is a more powerful and rapid restorative than tea. A breakfastcup of *caffetannic acid* is composed of about one part of black coffee to three of milk and will not contain more alkaloid than a teaspoonful of tea.

SHORTAGE OF MEDICAL STUDENTS AND THE MILITARY AGE.

A CORRESPONDENT writes with reference to the article on the shortage of medical students published in our issue of September 29th, p. 428, to express the opinion that the age limits for military service in the American army, namely, not less than 21 years and extending to 45 years, are more correct scientifically considered than those hitherto applied in this country, and continues: Boys of 18 years of age, if healthy, are generally high spirited, active, and fond of adventure, but from a medical point of view are not sufficiently developed, in most instances, to withstand the strain of either military training or active service, owing to their organs being not fully developed and the bones of the arms and legs not completely ossified. This is an anatomical fact and has had due weight with the Americans. Neither have boys of 18 the calculating steadiness of the man of 21 years upwards. At this stage of the war, then, it does not appear to me to be at all necessary to continue taking boys of age of 18 years away from their studies. By all means let these youths go on with their civil studies or training until they are 21 years of age, and organs, bones, and mind fully developed. Compulsion up to 45 or 47 years of age is certainly better. The military age should be raised from both ends of the scale. Another point respecting boys is that the compulsory calling up of an only boy, who is also an only child, ought not to be enforced, as by so doing there is the risk of exterminating (by compulsion) the family line.

TREATMENT OF SCABIES.

DR. R. HOGARTH CLAY (Plymouth) writes: I have never failed to cure scabies by using a bath containing 3 ounces of potassium sulphuret in as much water as will entirely cover the patient, who should remain immersed up to his neck, with hands and arms under water for twenty minutes. The bath should be of comfortable warmth, and of course all underclothing must be disinfected.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postae restante* letters addressed either in initials or numbers.

The Harveian Oration

ON

HARVEY'S WORK CONSIDERED IN RELATION TO SCIENTIFIC KNOWLEDGE AND UNI- VERSITY EDUCATION IN HIS TIME.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS
OF LONDON ON OCTOBER 18TH, 1917.

BY

ROBERT SAUNDBY, M.D., F.R.C.P., M.Sc., LL.D.,

EX-PROFESSOR OF MEDICINE, UNIVERSITY OF BIRMINGHAM; CON-
SULTING PHYSICIAN, BIRMINGHAM GENERAL HOSPITAL.

MR. PRESIDENT, FELLOWS OF THE COLLEGE, AND GENTLEMEN,—In the first place I have to thank you, Sir, for entrusting me with the most honourable duty of delivering the annual oration founded by our greatest associate, Dr. William Harvey, the supreme glory of our College, whose memory we all cherish and whose work is universally regarded as the peculiar pride of English medicine. In founding this oration he enjoined in the deed of gift that the orator should exhort the Fellows of the College to search out and study the secrets of nature by way of experiment, and for the honour of the profession to continue in mutual love and affection among themselves. It was also his wish that on this occasion should be commemorated those benefactors of the College who by gifts or by their contributions to medical knowledge have forwarded the interests of this College in the course of the bygone year.

RECOGNITION OF HARVEY'S WORK.

Harvey's work has been justly regarded as remarkable by its great success in his own lifetime, and especially in his own country and among his colleagues in this College, where there appear to have been no discordant voices. So far from it being true, as a recent British writer has ventured to say, that the only criticisms on his work were heard from his fellow-countrymen, the very contrary is the truth, and, as Willis expressly says, the appearance of Harvey's book seems almost immediately to have attracted the attention of all the better intellects among the medical men of Europe. The controversy on the circulation was carried on abroad rather than at home, for Harvey seems to have won over to his side all the men of his own country who by their education and acquirements might have been fitted to array themselves against him, and the first publication to deal with the question by one of Harvey's countrymen was that of Dr. George Ent, who undertook to defend Harvey's teaching against the criticisms of Parisanus.

A century had to elapse before the voice of criticism was heard from any British authority, and then it was the extremely able but somewhat quarrelsome anatomist Dr. William Hunter, who sought to depreciate the work of Harvey by comparing it with the discovery of America by Columbus, and the astronomical induction of Copernicus, disparaging Harvey's mental abilities on the ground of his failure to recognize the value of the discovery of the lacteals by Asellius, whose book was published about the same time as that of Harvey on the circulation of the blood (1627). William Hunter's quarrel with his glorious brother John over the placental circulation does not show him in a very amiable or even an altogether honest light; and much as we may regret that so able an anatomist should have adopted this hypercritical attitude, I think we may fairly say that his comments in no way succeeded in diminishing the glory of Harvey.

Contributions to Harveian Literature.

Successive Harveian orators have so diligently explored the somewhat scanty literary remains that throw any light upon the life and doings of our illustrious fellow-countryman, that the College warmly appreciated the address by the late President, Sir Thomas Barlow, who occupied this chair in October, 1916, and by his munificence had placed in the possession of the College certain documents, consisting of eight of Harvey's own letters written at the time when he accompanied the Earl of Arundel on an embassy to the Emperor Ferdinand. Although these letters deal with only a short episode in the life of Harvey and throw

no light whatever upon his physiological researches, they are exceedingly welcome as being contemporary accounts in his own handwriting, illustrating some at least of the difficulties that a traveller in those days met with even when forming part of the suite of a British Ambassador. It is not often that a Fellow of this College enjoys the opportunity of making a benefaction which is so closely related to the personality of Harvey, but it is possible that in the much greater attention now paid to the State papers which were so long neglected, more may be found bearing upon the life of Harvey in his position at the Court of Charles I, where he undoubtedly enjoyed the favour and the personal friendship of the King.

The College must acknowledge a valuable contribution to its Harveian literature in the publication of a memoir to recall the seventeenth century friendship of Finch and Baines, written by Dr. Malloch, a captain in the Canadian Army Medical Corps. These two graduates of Cambridge in the seventeenth century went from Cambridge to France and thence to Padua, where the professor who lectured to them on anatomy was Antonio Molinetto. Finch was a brother of Lord Nottingham, whose niece was the wife of Harvey, for whom he entertained the greatest veneration. From Padua they went to Pisa, where Finch was appointed professor of anatomy, his course of lectures including both morbid and comparative anatomy. While there he examined a live torpedo (*T. narce*) sent him by the Grand Duke of Tuscany. He describes a "pricking sensation like that which comes when you suddenly put cold fingers to the fire," on touching the fish. Later when it died he dissected it, and his report is extant; it is to be issued shortly by the Historical MSS. Commission edited by Mrs. Lomas. The friends returned to England soon after the Restoration, Baines being appointed professor of music at Gresham College, and both were unanimously elected Fellows of this College, partly no doubt on the ground of their relationship by marriage and friendship with the illustrious Harvey. On June 20th they received their degrees as Doctors of Physics at Cambridge, and in the same month the King knighted Finch, the like honour being conferred on Baines eleven years later. Finch returned to Italy and again taught anatomy at Pisa. In 1665 he was appointed the King's resident at the Court of Tuscany, and stayed there with Baines until the death of the Grand Duke in 1670. Finch was next sent to the Porte as English Ambassador, and remained in Turkey till 1681, when Sir Thomas Baines died, and Finch brought the body home; he died shortly after, according to his epitaph—"Of sorrow at the loss of Sir Thomas Baines." They were both buried in the chapel at Christ's College, Cambridge, where in memory of their friendship Finch founded two fellowships and two scholarships.

BENEFACTORS OF THE COLLEGE.

Among the great benefactors of this College whose names cannot be passed over in silence are the two Hameys, father and son; Theodore Goulston, founder of the Goulston lectures; Sir Theodore Mayerne; Dr. Richard Caldwell, who with John Lord Lumley founded the Lumleian lectureship; Lady Sadler, founder of the Croonian lectureship in memory of her first husband, Dr. William Croone; Dr. William Wood Bradshaw, founder of the Bradshaw lecture; Mrs. FitzPatrick, who founded the FitzPatrick lecture on the history of medicine in memory of her husband, Dr. Thomas FitzPatrick; and Dr. Gaviu Milroy, one of the pioneers in the subject of public health, who left £2,000 to endow a lectureship on State medicine and public health and subjects connected therewith. Further, as announced by Sir Thomas Barlow last year, there is the foundation of the Streatfeild Research Fund, endowed with £10,000 in 2½ per cent. annuities given by Mrs. Eliza Streatfeild for the purpose of the endowment of research, the fund being vested in the joint names of the two Royal Colleges, who act as its administrators.

On December 16th, 1916, the College received through our Fellow, Dr. Malins, of Birmingham, a gift of £500 from Mr. F. W. Mitchell, to be devoted to the object of the research, investigation, and treatment of tuberculosis.

On October 26th, 1916, under the will of Mrs. Fanny Hertz, of 40, Lansdowne Crescent, W., the College became possessed of a fine portrait of the late Dr. J. E. Bridges, which has been hung in the hall.

In addition valuable donations of books have been made to the library.

A CRITICISM OF HARVEY'S VIEW.

An instructive criticism of Harvey's opinions was published two years ago by the late Professor Curtis, of Columbia University.¹ In Harvey's lifetime he was often asked by his opponents to explain the purpose of the circulation, and he was never able to give a satisfactory reply. Why should the blood traverse the lungs, return to the heart, be distributed to the whole of the body, and then be brought back again to the heart in order to be transmitted again through the lungs? What did the blood gain by its passage through the lungs? Harvey taught that it was ventilated or cooled there, deriving heat from the heart, which was the centre of bodily heat. We may wonder why Harvey, following Aristotle, should regard air as cooling fire. Surely the effect of air on fire must have been known to him, and it certainly seems strange that Aristotle should have said that air keeps fire from consuming the fuel too fast. Was he not familiar with a smith's furnace, and with the manufacture of charcoal by limiting the access of air? Harvey knew that air was necessary to a candle and to fire, but did not know why. He accepted the doctrine of "spirits," an expression used by Aristotle, Erasistratus, and Galen as something derived from the air and introduced into the circulation with the blood (Erasistratus) or by itself (Aristotle).

Nearly a hundred years before Harvey's time Realdus Columbus (1559) taught that air was mixed with the blood in the lungs, where the transfer took place from the right to the left side of the heart. But this great fact that the blood in its passage through the lungs took up air was rejected by Harvey. He heads the passage: "Spirits not from Air," and he quotes an experiment to show that air does not pass into the blood, as he evidently expected to see the blood frothy if this were so.

Harvey maintained these views all his life and never understood the function of respiration, which is not surprising, as he was ignorant of the nature of combustion, of oxidation, of the corpuscular structure of the blood, and of the function of haemoglobin. He was unable to explain the difference in colour of arterial and venous blood, but he sought to minimize the importance of this by pointing out that both when drawn and allowed to stand become nearly the same colour and not of any great difference of either consistency or bulk. He knew that during life the arterial blood in the lungs was redder and that the lungs were florid. He could never explain why the fetus could live without air and yet after birth be readily suffocated by air being excluded. He always followed Aristotle in the doctrine that the heart was the primordial centre of life, and Curtis thought that Aristotle was familiar with the pulse from observing the incubating egg, where the heart makes its appearance early, and to which he consequently attributed all the chief functions of the body, including the affections, feelings, senses, and the like. Hence we still speak of the heart as the seat of emotion, of "a change of heart," "Unto Thee all hearts are opened," "Cleanse our hearts," etc. It never occurred to Harvey to inquire into the nature of the fumes given off during expiration. In Harvey's time the view was generally held that the blood is distributed to the tissues from the liver in spite of the existence of the pulmonary artery and the lungs in life being full of blood, but it is probable that medical men were blinded by the fact that after death the lungs are usually bloodless.

Harvey, moreover, was not constant in his allegiance to the heart as the centre and source of the motive power of the circulation, for as early as his lecture notes of 1616, and even in his latest utterances, he regards the blood as endowed with movement, and in his treatise on generation he asserted the primacy of the blood—"the leaping point"—the pulsating vesicle which he regarded as the first beginnings of the embryo. The blood, he says, is prior to its receptacle, the contained to its container. He maintained that the order is first the blood, second the pulsation, and third the vesicle. The blood is the "first to live and the last to die." Here, as Curtis says, Harvey was misled by his confidence in what we call naked-eye appearances and his want of better appliances. It would have been logical of Harvey had he attributed the pulse and the heart beat to the "leaping blood," but in his letter to Riolanus he says it was due to the boiling or bubbling of fermentation. He thought the swelling of the blood caused by its innate heat stimulated the auricle to contract, and he located this effect just between the openings of the

superior and inferior cavae, where we now place the bundle of His. The contraction of the auricles is, then, the cause of the contraction of the ventricles.

Curtis points out the difficulty Harvey was in owing to the backward state of physics. He was fourteen years younger than Galileo, who was unable to explain the common pump, and Harvey's discovery was made public thirteen years before Torricelli's momentous work on the movement of liquids. We must therefore recognize that many of the questions which by us are readily answered were in the days of Harvey quite insoluble, but we owe him our gratitude for the enormous advances he made with the means at his disposal.

CAMBRIDGE UNIVERSITY IN THE SIXTEENTH AND SEVENTEENTH CENTURIES.

It is of interest to inquire what were the opportunities afforded by Cambridge to the student who desired to study medicine, and how far it was possible for him to set out on the path of such learning as in those days would be regarded as at least preliminary to his studies.

The sixteenth century was not favourable to the English universities. They suffered greatly from the religious convulsions of the period. Not only were the abolition and disendowment of the religious houses causes of financial embarrassment, but sectarian considerations rather than those of character and learning were paramount in the choice of the heads of houses and professors. Religious differences could not but influence the willingness of parents to send their sons to the universities, and the resulting decline in numbers with the consequent loss of pupils' fees, impoverished the university exchequer, and such was the lowering of the standard of scholarship that the libraries were spoiled by the selling of so-called "useless" books.

The University in the Reign of Edward VI.

On the other hand, in the reign of Edward VI (1547-53) were founded the five Regius professorships in Divinity, Civil Law, Physic, Hebrew, and Greek, each being endowed with a stipend of £40, and so far as it goes we may take the professorship of physic as some evidence that the study of medicine was not altogether ignored. The first incumbent of the chair was Dr. John Blythe, of King's College, an M.D. of Ferrara, for at this time and perhaps for a century later Cambridge men had to go abroad for instruction in strictly professional subjects. John Caius left Cambridge in 1539 for Padua, where he lectured on Aristotle, in return studying "Medicine and Anatomy," which is some evidence that at Cambridge these subjects were less cultivated than Greek.

In the reign of Edward VI the university attracted many students, of whom too many were absorbed in theological controversy (Ascham); moreover, it was complained that the majority were mere boys, the sons of wealthy parents, who never became serious students, but by their presence interfered with the attendance of a poorer class who would give up their whole time to study. The prevailing spirit of the university was indolence. In 1558 Caius had spoken of the disappearance of "the poor, modest, diligent student who rose early, lived on scanty fare, and respectfully capped his seniors." Gone, too, were the dignified elders of former times, of sedate countenance and stately mien, punctilious in wearing academic dress, and punctual in attendance at the disputations in the schools. The undergraduates had discarded long gowns and caps, their garments were gaudy, they gambled and drank, and discipline was so much relaxed that those whose misconduct led to their expulsion from one college had no difficulty in obtaining admission to another.

The offices of the university became sinecures; for example, there seemed to be no objection to Ascham, the public orator of the university, living abroad, while Ridley retained his Mastership of Pembroke when Bishop, at first of Rochester, and afterwards of London. The doctor's degree was taken in scarcely any faculty, and as there were no examinations, and disputations had become neglected, such as were given could scarcely be regarded as evidence of learning or ability. If Cambridge had not sunk as low as certain German universities which Bucer condemns for giving degrees for money, yet there was much indolence among the resident Fellows, who lived like drone bees on the fat of the colleges.

In the new code of Edward VI, introduced in 1549, the textbooks of the professor of medicine were to be Hippocrates and Galen.

Foundation of Caius College.

In the reign of Mary (1553-1558) there was little in the state of the university to give satisfaction to any lover of learning, and the only fact which at this time can be regarded as conferring a real and permanent benefit upon the university was the foundation of the college that bears the name of Dr. Caius, who was private physician to the Queen, was nine times elected president of this College, and bore a professional reputation inferior to none of his contemporaries in this country.

Dr. Caius was a staunch Catholic, but he had travelled and seen much of men and things, so that he possessed an open and tolerant mind. He had studied anatomy under Vesalius at Padua, had visited other Italian universities, and had formed the acquaintance of the chief scholars of France and Germany. Being unmarried and wealthy and somewhat of a recluse, he retired to Cambridge, where he became a Fellow of Gonville Hall. In 1557 he obtained a licence from Philip and Mary to refound the college as co-founder with Edmund Gonville and Bishop Bateman, endowing it with the manor of Croxley and Snellshall and several other properties. When the college was reconstructed in 1572 it was to consist of a Master, thirteen Fellows, and twenty one scholars, the Master being a Bachelor or Doctor of one of the three faculties.

It is noteworthy as bearing upon the question of the state of medical education in Cambridge that the holders of medical Fellowships and those only were permitted to repair for the prosecution of their studies to the Continent, for, says the statute: "Theology and Civil Law may be studied just as well here as there," and it is fair to infer that medical science could not. These travelling Fellows were required to go to a "good school," preference being given to "Padua, Bologna, Monte Pulciano, and Paris."

Neglect of Learning.

On the accession of Elizabeth the fresh instructions to the Commission for the Reorganization and Reformation of the Universities followed closely those (1549) in the reign of Edward VI, but with the notable omission of the clause for the foundation of a Chair of Medicine and one of Civil Law. It is not necessary to recount the troubles and differences which occurred at Caius College owing to the personal unpopularity of Caius, who was disliked by the majority of the Fellows, and who retaliated by showing his contempt for their indifference to learning and their lax conduct, the manners of the students of this period leaving much to be desired.

We have seen that a generation before the study of Greek was pursued with much success at Cambridge, but it had become so neglected that eminent scions of the university, like Whitgift and Walter Haddon, were ignorant of it, and Giordano Bruno, who visited England and Oxford in 1582, complains that the Oxford undergraduate "drank too much beer," while his seniors were "pedantic and stupid"; but perhaps it is unfair to assume that these faults extended to the sister university. Companionable behaviour, the capacity to sit long at table after dinner and supper, were more helpful to a degree than reputation acquired in the schools, or any display of ability there evoked.

The attendance upon the lectures of the university professors fell off, no doubt in part in consequence of the development of the college system, undergraduates preferring to get such instruction as they desired in the classrooms of their college tutors; but if to the college system may be not unfairly attributed the decay of professorial teaching at Oxford and Cambridge, it may, on the other hand, be credited with having preserved these institutions from such stains on morals and manners as still mar the reputation of the chief German universities.

When Caius was in Italy he was a zealous disciple of Giovanni di Monte (1508-1552), who was the first modern to teach medicine at the bedside, which he did at the hospital of St. Francis. Unfortunately, Caius did nothing to transplant this method to his native country, and it was at least two centuries before clinical teaching was practised, even in a rudimentary fashion, in British hospitals.

Francis Glisson, Regius Professor of Physic at Cambridge.

The career of Francis Glisson, a former president of this College, illustrates to some extent the state of medical education at Cambridge, where he was Regius Professor of Physic from 1636 until his death in 1677. He entered Caius College in 1617, graduated B.A. in 1621, M.A. in 1624, and M.D. in 1634. He lectured at first on normal, morbid, and comparative anatomy, and in 1640 gave the Goulstonian lectures of this College. Up to this date—that is, four years after being appointed Regius professor—he lived in Cambridge, but in 1640 he took a house in Colchester, where he "soon obtained much practice" and where he continued to live until after the siege of that city, when he became much impoverished and moved to London. Here he took a house in New Street, in the parish of St. Bride's, and resided there up to his death in 1677. He was president of this College in 1667-8-9. In 1675 the university obliged him to appoint Dr. Brady as his deputy at Cambridge, but the fact that he was non-resident for over forty years of his incumbency of the professorship may not unfairly be taken to indicate the little interest felt in medical education at Cambridge.

As is well known, Glisson was an energetic student of his profession and published many valuable monographs, especially that on rickets and on the anatomy of the liver; by the latter his name has been preserved and is familiar to all medical students from "Glisson's capsule," applied to its external fibrous sheath. His portrait, painted at the age of 75, is in the possession of this College.

WEBSTER'S "EXAMINATION OF ACADEMIES."

One looks to Webster's book, the *Examination of Academies*,² for a criticism of the work of the university at or about Harvey's time, but it is disappointing. Webster was evidently a fanatical puritan who found fault with the universities because they professed to train men for the ministry, whereby they are said to fill them with vain knowledge. He expressed doubt whether the knowledge of Greek and Hebrew could in any way aid the right understanding of the Gospel, and thought that only the Spirit of Christ could convey this information. He praised such mystics as Jacob Boehme; he believed in the existence of a heavenly dialect, which was what John heard and God used in speaking to Adam; that animals probably communicated with one another by it.

He objected to the Aristotelian philosophy and preferred to it the teaching of the Rosicrucians, and that of our "learned countryman" Dr. Fludde. He condemned the medical profession for adhering to what he calls "ignorant, wicked and blind Pagans," for neglecting magic and cabalistic science and that "great book" the *Macrocosm* of Paracelsus. He quoted with approval the saying, "For the Lord hath created the physician, not the schools," and he condemned the neglect of that "laudable, excellent, and profitable science" of physiognomy, the neglect of the science of celestial signatures, and the study of natural dreams.

Coming to more reasonable criticism, he found fault with the uniformity of method followed in teaching by the slothful performance of the Acts, there being only four in the year, to these being conducted in Latin, which tended to obscurity and to the neglect of our mother tongue. He says that the "Romans used Latin and prohibited Greek" (?), while the Greeks wrote in their native language. He thinks too much importance is assigned to the opinions of the ancients, and that Lord Bacon has indicated a better method than that of the scholastic philosophy, that physics and chemistry should be taught by laboratories as well as libraries.

While there is much in this with which a modern would agree, the criticism on the whole is peevish and unreasonable, and suggests nothing that has any direct bearing upon the improvement of medical education.

Webster seems to have had small right to pose as the critic of the universities, for it is at least doubtful whether he was at any time a member of either of them. He speaks of himself as educated at Cambridge, but no trace of him can be found in the university registers according to the *Dictionary of National Biography*. He was ordained in 1632, was curate of Kildwick in Craven in 1634, and master of the grammar school at Clitheroe in 1643. In the civil war he seems to have taken the Parliamentary side, and

was surgeon and chaplain to a regiment in the Parliamentary army, becoming a Nonconformist and being "intruded" as vicar of Mitton in Yorkshire and also at All Hallows in Lombard Street. He acquired some fame as a preacher, but later on he fell into discredit, for his books were seized in 1657 and he gave up the ministry. Later in life he studied metallurgy and practised medicine. He died at Clitheroe in 1682.

"THE VINDICATION OF ACADEMIES."

Webster's book was answered by John Wilkins and Seth Ward in the *Vindication of Academies*.³ In this defence of the universities the authors complained that Webster, and even Hobbes, were ignorant of the present state of the universities and of the grounds of those arts and sciences which they pretended to improve. Surprise is expressed that the universities should be condemned as rigidly bound to Aristotle and accused of ignoring the modern advances in knowledge which have modified his teaching. On the contrary, all modern ideas were freely discussed—the anatomical and magnetical philosophy and the Copernican astronomy. It is said that both in the public lectures and private classes of the universities those things which they are accused of neglecting are taught and are well learnt. Particular exception is taken to the criticism which maintained that university teaching is not only useless but harmful to candidates for the ministry, for such academic knowledge "added to the gifts of grace must be only helpful and not injurious."

On the other hand, Webster's praise of the Rosicrucians, of Jacob Boehme and of judicial astrology show him to be a credulous fanatic. Further, Webster is accused of plagiarism, of stealing whole sheets of Gassendi's book, and of being wholly dependent upon those translations to which he had access for his knowledge of foreign writers. The accusation that the study of chemistry was neglected was denied, and with some reason it was pointed out that, the practice of medicine being an art which is based on observation and experience, new discoveries in anatomy do not always involve alterations in practice equal to that in theory, but have often confirmed and established practical rules.

Webster's objection to the use of the term "divines" as blasphemous is treated as ridiculous, but it is conceded that "theologian" is better, and the complaint of the use of the Scriptures in scholastic exercises is inconsistent with the desire expressed that Christian principles should be introduced into the schools of physical learning. Moderns may agree with the contention that students should be taught to use their hands in laboratory work, but there is force in the objection that the wishes of parents must be respected, and that in the sixteenth and seventeenth centuries it was not thought desirable to teach young gentlemen natural philosophy, chemistry, agriculture, or mechanics, but they should be trained to be rational and graceful speakers and fitted to move in polite society.

Webster's critic, John Wilkins, the Bishop of Chester, was one of the most learned and estimable men of that age. He adhered to the Parliamentary side in the civil war, and was Warden of Wadham College in 1648. He had the reputation of being a wise, beneficent, and tolerant head of the college, and he may be justly called the founder of the Royal Society. The weekly meetings of the London philosophers, when held in Oxford, took place in the Warden's lodgings. Although siding with the Commonwealth, he preserved the university from the ignorant commanders and soldiers who, unrestrained, would have demolished all places and persons that pretended to learning. He was afterwards appointed Master of Trinity College, Cambridge, where he was greatly honoured and loved, but at the Restoration he was deprived of this post, as it had been long promised to Henry Ferne. He was made Prebend of York and Dean of Ripon. He procured the incorporation of the Royal Society in 1662, becoming its first secretary. He lost his library and valuable MSS. in the great fire of London. He was made Bishop of Chester in 1668 and died in 1672. He is generally supposed to have written the preface to Seth Ward's *Vindiciæ Academicarum*.

"AN ARK FOR SUBMARINE NAVIGATION."

Bishop Wilkins was interested in many things, and Professor Joly, of Trinity College, Dublin, has recently

drawn attention⁴ to his little volume, entitled *Mathematical Magic*, in which one chapter is headed "Concerning the possibility of framing an ark for submarine navigation, the difficulties and conveniences of such a contrivance."

This invention seems to have been produced by a Dutchman named Cornelius Drebbel, who was born in Alkmaar in Holland in 1572, and came to England in 1604, where he secured the favour of James I, and was given lodgings in Eltham Palace. He left England at the invitation of the Emperor of Germany, but was involved in the misfortunes of the Thirty Years' War, when he was thrown into prison. Through the intermeditation of James I his release was procured, and he returned to England, where he remained until his death in 1634. He appears to have enjoyed the esteem of his contemporaries, especially of the Hon. Robert Boyle, who refers to him as a "deservedly famous mechanician and chymist."

The great interest to us of Drebbel's work is that he appears to have been much ahead of his contemporaries in appreciating the function of respiration. It is said that he built a ship in which a man could navigate under water from Westminster to Greenwich. In the boat "a person could see under the surface of the water, and without candlelight, as much as he needed to read in the Bible or any other book." This remarkable ship was in 1645 yet to be seen lying in the Thames or London river (C. van der Ooude). Boyle accepted the testimony of what he called "a few credible persons" that Drebbel could enable men to continue under water without suffocation or even inconvenience, for, as he says, it is "not the whole body of the air, but a certain quintessence or spirituous part of it that makes it fit for respiration, which, being spent, the remaining grosser body of the air is unable to cherish the vital frame." So that, besides the mechanical contrivance of his vessel, he had—

a chemical liquor which he accounted the chief secret of his submarine invention, for when from time to time he perceived that the finer and purer part of the air was consumed or over-clogged by the respirations and steams of those who went in his ship he would, by unstopping the vessel full of his liquor, speedily restore to the troubled air such a proportion of vital parts as would make it again for a good while fit for respiration, whether by dissipating or precipitating the grosser exhalations, or by some other intelligible way.

According to Boyle, Drebbel kept the nature of the liquor a close secret, and justified his own inquiry because the man and his invention were so extraordinary, all the more so as it was 150 years before the discovery of oxygen by Priestley and Lavoisier, and of the part played by it in respiration. It was not until 1681 that John Mayow published his conclusion that respiration and combustion are analogous phenomena. Drebbel must have discovered some means for removing from respired air its poisonous properties, as by drawing it through lime water to absorb the carbon dioxide, by which it would be possible to prolong the voyage, and the ventilation of the boat may have been assisted by pipes going to the surface, the air being drawn in by fans or pumps. It is certain that the bishop realized the difficulty presented by respiration in the problem of submarine navigation, and that he fully appreciated the work of Drebbel in overcoming this part of the problem.

While Harvey failed to grasp the function of respiration and set aside the suggestions that had been made by others under the crude form of the action of "spirits" on the blood, it is quite plain that these contemporaries of Harvey allowed their minds to run farther than his on the chemical side of these questions, and were closer than he to understanding the nature of the physiological questions involved. His failure in this respect was probably due to his ignorance of chemistry, which Aubrey says he was wont to undervalue, and speak against those who practised its doctrines.

BISHOP WARD.—OTHER CRITICISMS OF THE UNIVERSITIES.

Seth Ward, successively Bishop of Exeter and Salisbury, was a distinguished mathematician, mathematical lecturer at the University of Oxford, and afterwards Savilian professor of astronomy in 1649. He entered as a Fellow Commoner at Wadham when John Wilkins was warden, and when the fame of the college attracted many men of eminence. These gatherings probably constituted the nucleus of the Royal Society. After the Restoration he was made successively Prebend, Dean and Bishop of Exeter. He was subsequently translated to Salisbury,

and became Chancellor of the Order of the Garter. His controversies with Hobbes and Webster caused him some trouble. He is the reputed author of the *Vindiciæ Academicarum*, in which he replied to the criticisms of the universities which Webster and Hobbes had published in the *Academicarum Examen*.

Hobbes, the author of *The Leviathan* (1588-1679), was a somewhat bitter critic of the universities in his day, particularly on the ground of their adherence to the Aristotelian philosophy and physics. He says: "The philosophy schools through all the universities of Christendom grounded upon certain texts of Aristotle," and these institutions were merely useful as a handmaid to the Roman religion; they rendered no knowledge of the subordinate and secondary causes of natural events or "physiques," but merely empty words. Thus they said that bodies sank because they are heavy or because they desire to be at rest. He also criticized their teaching of the civil law, but although there was doubtless much with which to find fault, he says nothing about the art of medicine or the way in which it was taught.

Dr. C. A. Mercier⁵ is of opinion that Paracelsus and van Helmont had much to do with preparing the ground for the reception of Harvey's new doctrine. He thinks that by their bold challenge to the Aristotelian doctrines they rendered it possible for Harvey to state his novel opinions without being regarded as uttering blasphemy, but he is almost as severe a critic of Oxford and Cambridge as was Hobbes two hundred years earlier. He quotes a statement of Averroes that Aristotle is "the perfection of truth, that his understanding attained the utmost limit of human ability," and that "it may truly be said of him that he was created and given to the world by Divine Providence, in order that we might see in him how much it is possible for a man to know." This tribute may seem exaggerated to the non-academic mind, but "it would not be considered at all exaggerated in the University of Oxford even to-day." He gives no facts whatever in support of this charge. However, there may be something in what he says, for had not Paracelsus and van Helmont shown that Aristotle could be contradicted without calling down fire from heaven, Vesalius might not have had the courage to publish his discovery of the non-porosity of the cardiac septum.

TEACHING OF MEDICINE AT CAMBRIDGE IN HARVEY'S TIME.

It is not easy to trace any evidence of the teaching of medicine at Cambridge in the time of Harvey. In vol. iii of Venn's *Biographical History of Gonville and Caius College* (p. 253) we find the following:

It will be observed that no reference has been made in the above sketch to any such officer as a medical lecturer. The fact is that though the College had for centuries enjoyed a medical reputation, no trace of any systematic instruction in the subject can be discovered until very recent times. Indeed, the earliest lecturer recorded by tradition is the late Sir George Paget, who is known to have held the office from about 1848 until he ceased to be a Fellow in 1852. Since that date such lecturers have been regularly appointed. The increased scope of the work, owing to the great addition to the number of students, was recognized in 1851, when the title was changed from Medical Lecturer to Lecturer in Natural Sciences and Director of Medical Studies. That some instruction, however, in the shape of what we should now call anatomical demonstration was occasionally given in the College can be proved by one or two interesting facts. In the first place, in the register of the parish of St. Michael—the College lies in the parish—there is an entry of burial under the date April 6th, 1601, of "Mr. Hutton, the anatomyr of Key's College."

Venn took it for granted at first that this gentleman's connexion with anatomy was of the active kind, and that we had here evidence of a very early demonstrator in the college. But it now seems certain that he played the part of the subject, for it is recorded that Dr. Grimston, "one of our Fellows," made a dissection in the college just four days before. That similar instruction was carried on twenty-five years later seems plain from the statement of Dr. Joseph Mede, that he attended anatomy lectures in "our College." In the register of Great St. Mary's, the parish in which the schools, now absorbed into the public library, were situated, several such entries are found. The earliest of these is in 1566, when it is recorded that "John Figgen mad anatomy at the scholes and buried here, the 12th March." This was during the residence of Dr. Caius, seven years before his death.

Professor A. Macalister informed Dr. Venn that this is the earliest contemporary record known to him of the actual performance of human anatomy in England. Again, in 1628, there is an entry that "John Smith, a prisoner at the castle that was anatomised, was buried." In a note, Dr. Venn says that it perhaps accounts for the prefix "Mr." to Hutton's name, a title at that time confined by university usage to Masters of Arts and Fellow Commoners, in the direction of Dr. Caius that the burial of such anatomized bodies should be "orderly and reverential."

In the same volume (p. 47) we find the following:

On the same day (Patent Roll, August 1st, 1564) is added the Royal License, for the purchase of the houses from Trinity. A new and very important concession was included in this license. It was a formal grant from the Queen (Elizabeth) of bodies for dissection to the effect that "they and their successors shall have for ever, at their free discretion and will, without the contradiction of anyone, two human bodies for anatomy, condemned by law for theft or homicide and dying in the town castle or county of Cambridge. And that they may freely dissect them at their will, with the reverence due to the human body, for the increase of medical knowledge: and this without any payment." Dr. Caius gave careful directions in his statutes concerning these dissections, desiring that "every year during the winter there shall be spent by the students of our College, on anatomy and on the worthy burial of the dissected bodies at St. Michael's 26/8. The president and everyone residing in College to attend the burial of the remains with as much respect and ceremony as if it were the body of some more dignified person; and this on account of the advantage they have thus received. And the Master shall see that the students of medicine do not treat the body with any lack of respect or humanity." It is to be feared that very inadequate use was made of this privilege.

In his *Advancement of Learning* Bacon mentions that the study of medicine was based upon the use of dead bodies for dissection.

It is further evidence that dissection was practised in Cambridge in the seventeenth century that Sir Charles Scarborough (1616-94), who was a Fellow of Caius College, published a manual on dissection (*Syllabus Musculorum*), but there appears to have been no dissecting room, public or private, until after the passing of the Anatomy Act, 1832. Science and its votaries, indeed, found no permanent home at Cambridge in the time of Harvey. Gilbert of Colchester, who, as Bacon says, had made a philosophy out of a loadstone, had been long removed to London, where as royal physician he enjoyed favour and good fame, and died in 1603. Physiology as a subject did not exist, and the knowledge of the functions of the organs, apart from their structure, was elementary and very often fundamentally erroneous. In spite of Bacon's commendation, morbid anatomy was entirely neglected, perhaps because, as he pointed out, this study was much more difficult than that of normal anatomy, the latter being presumably uniform in all healthy subjects, while the former presented endless variety. Its difficulty undoubtedly hindered any advancement, for it is not until the second half of the nineteenth century, when fairly complete *post-mortem* examinations were made on the bodies of all persons dying in hospitals, that the subject became familiar, and morbid appearances grew to be generally known to hospital physicians, and were expected to a less extent from students.

IMPULSE GIVEN BY HARVEY TO BRITISH PHYSIOLOGY.

There can be no doubt that in the sixteenth and seventeenth centuries those Cambridge men who desired to study scientific medicine could not do so at home, and resorted to the Italian universities to study under such great masters as Vesalius, Fallopius, and Eustachius, whose success was rather in descriptive anatomy than in physiology. Harvey's work was of great importance because, although he added no new facts, he placed a new interpretation on what had been more or less common knowledge for 2,000 years, and stimulated an advance in medicine which has continued up to the present time. This advance was mainly due to his employment of vivisection, by which method he laid the foundations of physiology and thereby of the progress of medicine. Physiology has been rightly called the Institutes of Medicine, which must march hand in hand with pathology and be its guide. Its progress depends upon the advance of many sciences, especially of chemistry, in that department which we call organic or physiological. This was a new science forty

years ago, and has been built up within the lives of many of us. It has opened out a wide prospect and gives promise of revolutionizing medical study.

The impulse that the work of Harvey gave to British physiology is shown by naming those who followed him in the next one hundred years.

Thomas Wharton (1614-73), physician to St. Thomas's Hospital, studied at Cambridge and Oxford, discoverer of the sub-maxillary gland, and author of *Adenographia* (1656).

George Joyliffe (1627-58), M.D.Cantab., F.R.C.P., discoverer of the lymph ducts.

Francis Glisson (1597-1677), M.D.Cantab., Fellow and President of this College, author of famous monographs on rickets and the anatomy of the liver.

Thomas Willis (1621-95), M.D.Oxon., F.R.S., F.R.C.P., recognized saccharine diabetes and described the anatomy of the brain (the circle of Willis).

Richard Lower (1631-91), M.D.Oxon., F.R.S., F.R.C.P., performed transfusion.

Edward Tyson (1650-1708) and Samuel Collins (1618-1710) were comparative anatomists.

Clopton Havers described the Haversian canals.

William Cowper or Cooper (1666-1755) described "Cowper's" glands.

ADVANCE OF MEDICINE IN SECOND HALF OF NINETEENTH CENTURY.

But it cannot be claimed that at Cambridge or elsewhere there was any real progress in medical education. Here and there men of genius made discoveries, but they were not aided by any organization either inside or outside the university or medical school. Men like the Hunters did their work at their own expense, and for many years to come even the teaching of anatomy owed most to what was done in private schools.

The best that can be said for British medical education is that it was based upon some genuine knowledge of practical anatomy and bedside acquaintance with diseases. But it was not until the second half of the nineteenth century that a true spirit of reform entered into the schools. In no place was this more manifest than at Cambridge. Although it is still necessary, and probably always will be, for the Cambridge student to seek clinical experience elsewhere, he may find at Cambridge all that he desires in laboratory opportunities, and, within due limitations, for clinical research.

If Cambridge has proved itself worthy of its association with the illustrious Harvey, this is equally true of the great hospital of St. Bartholomew's, with which perhaps his professional connexion is more generally recognized. Harvey left Cambridge apparently as soon as he had completed his arts curriculum, taking no part of his medical education there, and, although he returned there for his degree, he owes to Italy the instruction that opened the way for his great discoveries.

HARVEY AS PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

Of his labours as a physician at St. Bartholomew's we know little, and what records remain do not impress us very favourably with the work done in those days by those who held such appointments as that of Harvey. When he was originally appointed he was only obliged to attend once a week, and he was never formally required to visit the wards. The number of patients seen in the hospital must have been very small, for as late as 1749 the numbers are given as—in-patients, male 16, female 15; out-patients, male 50, female 50 each week; and there is no reason to believe that a hundred years earlier they were more numerous.

Apparently the patients were obliged to come to the doctor and not the doctor to the patients, as one of the rules says:

It is the duty of the matrons and sisters to complain to the doctor if any poor lurk in the house and do not come to him at his sittings or take the medicine he prescribes, but cast it away and abuse it.

It is difficult for us to understand the position of such a man as Harvey holding a post which, to us, seems scarcely likely to afford him any return in the way of useful experience. The salary was inconsiderable, some £20 a year with an allowance for fuel and "livery," but it is possible that the appointment indirectly led to a certain amount of practice, for undoubtedly he made money by his profession, although Willis suggests that his brother Eliab employed the "small capital" accumulated

by him during his active years of practice and before the breaking out of the civil war to such good account that he actually died a rich man. The period during which he may have earned a considerable professional income must have been from about 1607 to 1630.

HARVEY'S LATER YEARS: HIS GIFT TO THE COLLEGE.

After the latter date, when he went abroad with the Duke of Lenox, it is doubtful whether he ever had much opportunity for practice. In 1633 he went with Charles to Scotland, whence he followed him to Oxford (1642), and in 1646, on returning to London, he resigned all his appointments, and as his wife was dead he took up his residence with his brothers Eliab and Daniel. It was then that Harvey felt himself fully justified in making over his paternal estate, then worth £56 per annum, to this College as a free gift during his life and as a provision for the objects of which this annual oration forms part.

He died at the advanced age of 80 on June 3rd, 1657, and I cannot do better than repeat the words of Willis:

So lived, so died one of the great men whom God in virtue of His eternal laws bids to appear on earth from time to time, to enlighten and to ennoble mankind.

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THE CURE OF INGUINAL HERNIA.

BY

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The high percentage of men who suffer from inguinal hernia has made the problem of their treatment a serious one during the present war. Trusses appear to be most unsatisfactory when used by soldiers. In my personal experience I have rarely seen a truss controlling a hernia. The truss appears to be worn for choice with the hernia unreduced. It may be stated that we regard an inguinal hernia as a congenital deformity due to the presence of an abnormal process of peritoneum. This defect is combined with a lesser acquired defect—namely, an abnormally long process of omentum, or more rarely mesentery. The treatment indicated appears to be abolition of the abnormal process of peritoneum and removal of the redundant omentum. The choice of an operation which will cure the hernia and render a man fit for service in the shortest possible time becomes desirable. Having had charge of a special department for the cure of hernia, dealing with cases at the rate of about 500 a year, the need for a simple operation giving adequate relief and followed by a rapid convalescence has been impressed upon me.

It occurred to me that much of the trouble following the operation for radical cure of hernia, and many of the recurrences, were due to the well-intentioned but ill-advised efforts of the surgeon to effect repair. Bearing in mind that the success of an operation lies in the simplicity thereof, I evolved the procedure described below. The majority of herniae occurring in men of military age are amenable to cure by a small operation. The operation described below has been performed as a routine method in all cases. The advantages of this operation as a treatment in the hernia of children will be apparent. The principles borne in mind are to remove the sac at the highest possible level with the minimum disturbance of tissue. The cutting and interference with tissues has been reduced to such a degree that very rapid convalescence follows, and the reaction associated with hernia operation is obviated. The advantages of an operation which reduces the cutting of tissues down to an inch incision in the skin and superficial fascia, and a small incision in the spermatic fascia, will be apparent. No dissection of tissues is undertaken; just as Matas in his operation for aneurysm avoided injury and disturbance of surrounding structures by attacking an aneurysm from within the sac, we avoid dissecting, cutting, or injuring the delicate or important structures which surround a hernial sac by attacking the hernia from within the sac.



FIG. 1.

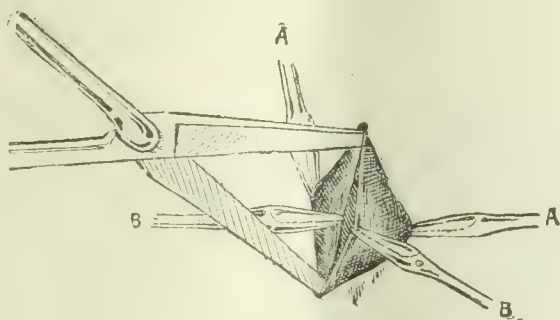


FIG. 2.

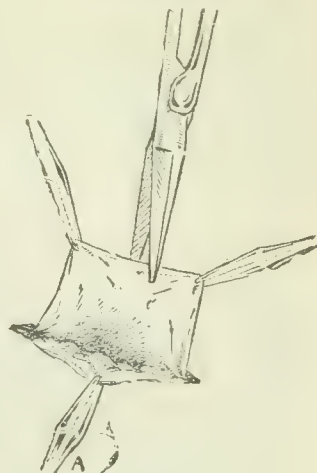


FIG. 3.



FIG. 4.

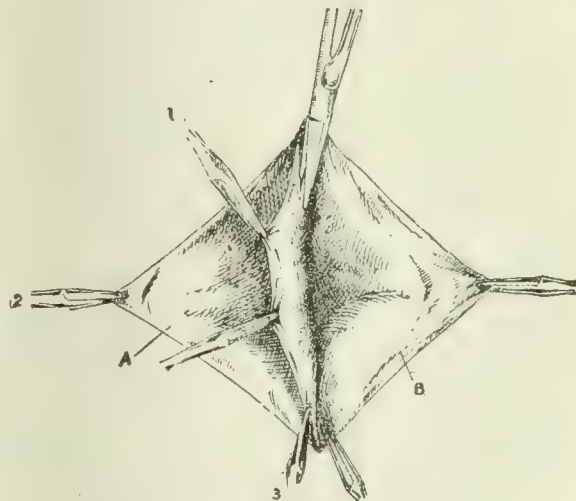


FIG. 5.



FIG. 6.



FIG. 7.

FIG. 1.—An incision about an inch in length has been made, half an inch above Poupart's ligament, over the femoral point. The fibres of the external oblique aponeurosis have been split for a short distance.

FIG. 2.—The edges of the aperture in the external oblique have been retracted by the forceps, A, exposing the coverings of the spermatic cord. The forceps, B, have been placed upon the aperture in the cremaster, which has been made by inserting the closed points of Mayo's scissors and opening the blades. The spermatic fascia is exposed in the depth of the wound.

FIG. 3.—After incising the spermatic fascia the sac has been found and drawn out of the wound. The forceps, A, remain on the external oblique during the whole operation.

FIG. 4.—The sac has been opened and its aperture retracted by forceps, after having been enlarged by snipping the edges between the forceps. Two apertures are displayed divided by a process of peritoneum. The aperture A leads into the abdomen.

FIG. 5.—Forceps have been placed on the crista; a layer of peritoneum has been picked up on its mesial side and this layer is being cut with scissors. By lifting the forceps 1, 2, 3 the clean neck of the sac will be held ready for ligature, isolated from the remainder of the sac B by this incision.

FIG. 6.—The forceps 1, 2, 3 have been raised. The neck of the sac is isolated from the remainder, which has shrunk within the coverings of the cord.

FIG. 7.—Suture of the neck of the sac.

Without entering on the debatable ground of statistics, I am prepared to state definitely that fewer recurrences take place after this operation than after any other method of which I have experience. In hernia, as in other operations, the results depend largely on the selection of cases, and probably any experienced surgeon could operate upon a number of hernia cases by any method with only a small percentage of failures if allowed to choose his cases.

The Operation.

We perform this operation under local anaesthesia as a routine measure. Local anaesthesia possesses great advantages over general anaesthesia for hernia operations. A half per cent. solution of novocain, to which a small quantity of adrenalin is added, is used. The needle of the analgesia syringe is entered at a point midway between the anterior superior iliac spine and the spine of the pubes half an inch above Poupart's ligament. The whole anaesthesia is conducted through this puncture without withdrawing the needle. An incision from half an inch to an inch in length is made over the needle puncture and carried down to the aponeurosis of the external oblique. The fibres of the external oblique are split for a distance of half an inch. The opening in the external oblique should lie directly over the spermatic cord. The cremasteric and spermatic fascial coverings of the cord are drawn through the aperture of the external oblique. The cremasteric fibres are separated and the spermatic fascia incised; the sac is then found lying inside these coverings. Two pairs of fine haemostatic forceps (Halstead's mosquito forceps) are placed upon the edge of the sac, and an incision, half an inch in extent, made between them by a snip of a pair of scissors. The two layers of the sac forming the lips of the aperture are now clipped with haemostatic forceps. The aperture can now be held open by four pairs of forceps, and four incisions are made, one between each pair of forceps, enlarging the aperture sufficiently to display the interior. If omentum lies in the sac it is drawn out, ligatured, and cut off. The interior of the sac presents for examination two apertures, one the internal ring passing into the abdomen, the other passing down the inguinal canal. These apertures are separated from one another by a process of peritoneum, the "crista," and in a well-marked case the apertures resemble the muzzle of a double-barrel shotgun.

The process of peritoneum called the crista corresponds to the internal margin of the internal ring. Forceps are clipped on to the crista in one or two places. It is now necessary to separate the important tube of peritoneum leading into the abdomen (the neck of the sac) from the unimportant tube leading down the inguinal canal. This is done by cutting along the crista to the mesial side of the forceps, and dividing one layer of peritoneum with scissors. As the result of this incision the neck of the sac now lies clear, held by the forceps on the crista on its mesial side, and the forceps on the outer side of the sac. The neck of the sac has in this way been completely exposed and freed without dissection. A gauze swab is gently passed down the outer and inner side of the sac. A gentle pull is made upon the neck of the sac whilst it is ligatured as high up as possible. It will be remembered that the crista corresponds to the internal ring, and by separating the crista forming the neck of the sac in the manner described above, and pulling upon the sac, it has become possible to ligature the peritoneum, forming the neck of the sac, about two inches above the internal ring. It is unnecessary and undesirable to perform any displacing manoeuvre to the neck of the sac. When the sac is cut off distal to the ligature, the elasticity of the peritoneum will displace the ligatured sac well behind the rectus muscle. In 90 per cent. of cases this is all that it is necessary to do, and the skin incision is sutured with silkworm gut passing down to, and taking up the edge of, the external oblique. In cases in which a large internal ring or very thin peritoneum renders a recurrence more possible, the conjoined tendon is drawn over the cord and sutured to Poupart's ligament without enlarging the wound. In exceptional cases it may be considered desirable for similar reasons to convert the operation into a typical Bassini operation. This can be done with ease by enlarging the split in the external oblique for another inch or more, lifting the cord, and suturing the compound tendon of the internal oblique and

transversalis beneath it to Poupart's ligament. Experience has shown that when a recurrence takes place it is usually an immediate recurrence. The recurrence occurring immediately the patient gets up is due to faulty ligature of the neck of the sac. The elastic peritoneum, released after ligature of the aperture, is very liable to slip the ligature. This cannot occur if the aperture formed by the neck of the sac is sewn in addition to simply tying the ligature.

The majority of herniae occurring in men of military age are small bubonocoeles or congenital herniae containing omentum.

I attach considerable importance to the removal of the prolapsed omentum, which is always of abnormal length, with a view to preventing recurrence.

Several sequelae follow hernia operations which are of more significance than recurrence. I refer to such conditions as hydrocele, retraction of testicle, thickening of the spermatic cord, painful scars, neuralgia, and enlargement of the testicle. These unpleasant and almost incurable results are due to damage to the spermatic cord, the delicate structures of which are adversely affected by much less disturbance than is usually supposed. In the operation described the only content of the cord which is either seen or touched is the sac.

I have found this operation of particular value when dealing with cases of recurrent hernia. The new operation is performed above the matted scar tissue of the old operation and completed by Bassini's method almost with as much ease as a primary operation.

MODERN ARTIFICIAL LIMBS AND THEIR INFLUENCE UPON METHODS OF AMPUTATION.*

GENERAL CONSIDERATIONS.

BY

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It may seem at first sight that the title of this paper implies a putting of the cart before the horse; that the artificial limb should be influenced by the amputation which calls it into being, and that the converse should not occur. But unfortunately we have to cut our coat according to our cloth, and the cloth in this case is limited by the mechanical possibilities at our disposal.

Artificial limbs have been used for many centuries, for a Roman artificial leg has been unearthed at Pompeii. The artificial hand of Götz von Berlichingen, made in 1509, is still in existence and in working order and has lately been described in detail in the *Zeitschrift des Vereines Deutscher Ingenieure*, December, 1916. With this hand it is said that Götz was able to strike a harder sword stroke than with his former natural hand. (*Credat Judaeus.*)

In order to produce good results the surgeon and the limb-maker must have some knowledge of each other's limitations.

On the one hand, it is undesirable for the surgeon to design and carry out an amputation, however successful surgically, if the resulting stump is one to which an artificial limb cannot conveniently be attached. On the other hand, it would be useless for a limb-maker to devise a limb, however perfect in theory, if it could not be borne by the patient's stump.

In this country of late years the questions connected with amputations have been of diminishing importance, thanks to Lister and the Employer's Liability Acts, etc. So that, as I learn from my friend Mr. Edred M. Corner, in 1913—the year before the war—out of 5,483 major operations at St. Thomas's Hospital there were only 34 amputations; a proportion of 1 in 161. The Royal Surgical Aid Society, which supplies appliances not only in London but also in the provinces, in 1913 supplied 529 artificial and peg legs and arms out of 41,483 appliances supplied in that year.

* Papers read at the meeting of the Medical Society of London, October 22nd, 1917.

In the United States of America it would appear that amputation was a much commoner operation, not because of any lack of conservative surgery, but because accidents were relatively and absolutely much commoner in that country. The large number of cases of amputation in survivors of the War of Secession gave an impetus to the design and manufacture of artificial limbs, which was sustained by the steady demand caused by accidents in civil life, and a large number of limb-makers get their living in the United States.

The Best Forms of Stumps.

The conditions of the problem differ in the upper and lower extremities.

In the lower extremity the functions of the lost part are crude compared with the delicate and nicely adjusted and co-ordinated movements of the upper extremity. Its chief duties are to support the weight of the body at rest and in motion and to act as the propellant force in the process of locomotion. End pressure and leverage are the strains to which it is most exposed.

The upper extremity is mostly employed in prehension and traction—functions to which the foot of boot-wearing man is a stranger, and end pressure, therefore, is not one of the most important strains to which it is exposed, while leverage is all-important. As the movements of the hand and fingers are highly co-ordinated and often very delicate, it follows that the problem here is a very difficult one. In fact the best artificial arm and hand is but a poor substitute for the living member, while the artificial leg can be made to do nearly everything that is required of its living predecessor—to do it, that is to say, more or less well, though not so well as the latter.

In both the upper and lower extremities provision has to be made to maintain the appliance in place when in action, and also when at rest, against the action of gravity.

Weight is borne in two ways, often or generally combined—

(a) By direct pressure of a part of the body downwards, such as the end of the stump, or of a convenient bony process such as the tuberosity of the ischium, or

(b) By oblique pressure, when the artificial socket forms a more or less conical cavity into which a conical portion of the body fits.

Leverage is exerted by the lateral surface of the stump pressing against the side of the surrounding socket.

It is necessary to state so much in order to understand what a stump should be, but I do not propose to go into the question of mechanics, because my colleague, Major Elmslie, may be trusted adequately to deal with that side of the question.

An ideal amputation stump would be as long as possible, it would be covered by sound movable soft parts, and the scar would be placed in a position where it would not be exposed to pressure, and it also would not be adherent to the bone. It would have enough muscles attached to it to move it with adequate force, and no inflamed or hypersensitive nerve ends would be palpable in it.

The end or ends of the bone or bones would be rounded so as not to hurt the soft parts under them, and the blood supply would be free and the skin well nourished.

Objections to Exarticulation.

At first sight it would appear that this ideal is most nearly approached by an exarticulation, which preserves the full length of the limb segment and does not involve any section of bone, with its possibilities of infection and necrosis. Further consideration and experience of modern artificial limbs lead to the conclusion that, except in the cases of the hip and shoulder, exarticulations are to be avoided, and that amputation through the limb segment above the joint is to be preferred.

The following weighty objections to amputations through joints have been made and, as I think, may be accepted as valid:

1. The articular enlargement, which is a prominent feature of all long bones, makes the resulting stump bulbous in form; a form which becomes more marked as atrophy of muscles goes on, leaving the dimensions of the bone unaltered. Such a bulbous stump, larger in girth at its lower extremity than at its middle, cannot be

closely fitted with a rigid socket, such as forms the best support. Also the artificial limb must be wider than the natural one by the thickness of the walls of the socket.

2. The artificial joint must either be fitted below its proper level or else it must be placed on the sides of the bone end and the limb must be still wider than its fellow and consequently unsightly.

3. To cover the articular enlargement extensive flaps are needed, and these must sometimes be of thin skin. Such flaps are often deficient in vitality and likely to slough.

Weight-bearing Stumps.

Before the war osteoplastic operations designed to produce stumps capable of bearing weight on their ends were getting more and more into favour. In this category must be included the Stokes-Gritti operation above the femoral condyles. The stumps so produced are excellent, but conditions favourable for their production are so rare in this war that we may put aside the consideration of these operations at present. I am sure that I am within the mark in saying that among some 5,000 amputations which have passed through my hands at Roehampton there have not been a dozen cases of the Stokes-Gritti.

In the lower extremity a stump capable of bearing some at least of the body weight on its end should be aimed at. Every pound of pressure here means less pressure on other parts, which in some cases do not bear it well.

There appears to be a diversity of experience and consequent opinion on this point. At the extraordinary meeting of the German Orthopaedic Society in February, 1916 (as reported in the *Zeitschrift für Orthopädische Chirurgie*, Band xxxvi, Heft 23), both Gocht and Dollinger stated as their experience that in this war hardly any stumps were fit to bear weight on their ends; but Ferdinand Seidler, of Vienna, at the same meeting, said that out of 500 stumps, 297, or nearly three-fifths, were fit to bear weight. Perhaps the discrepancy may be explained by supposing that Gocht and Dollinger meant "nearly all the weight," and Seidler meant "some of the weight" only.

I should premise that, in speaking of upper, middle, and lower thirds, reference is made to measurements of the bone and not of the length of stump available for application of a bucket. Limb-makers, however, generally refer to measurements taken from the fold of the axilla or elbow, the pubes, or the ham, which are obviously very different. It is the custom at Roehampton to measure the remaining bone as accurately as possible with a simple form of callipers, and not to trust to the eye to estimate length in thirds. The average length of a long bone being known, a simple division sum gives the correct result.

My own experience tallies with Seidler's. Thus—

An analysis of the records of 549 cases of amputation of the lower extremity seen recently at Roehampton shows that in 275 of these—almost exactly half—it was found advisable to fit an end-bearing pad. As might be expected, the proportion varied widely in the different regions. In the upper third of the thigh only 9 per cent. were thus fitted, in the middle third 32 per cent., in the lower third 77 per cent.

Cases fitted with End-bearing Pad.

Upper third of thigh	...	2 out of 22	=	9 per cent.
Middle third of thigh	...	75 " 235	=	32 "
Lower third of thigh	...	63 " 81	=	77 "
Through the knee-joint	...	5 " 6	=	83 "
Upper third of leg	...	42 " 74	=	56 "
Middle third of leg	...	64 " 98	=	65 "
Lower third of leg	...	6 " 14	=	43 "
Syme's amputation	...	12 " 14	=	86 "

Three Stokes-Gritti and two Pirogoff's amputations were all capable of bearing weight on the end of the stump.

The number of cases in some of these categories is too small for the formation of very definite conclusions, but the main facts which come out are that the stumps in the lower third of the thigh are much more sound than those in the upper and middle thirds, which latter region is the seat of nearly half of the total number (43 per cent.).

The surgeon who has to deal with many of these end results cannot fail to be struck by the prevalence of wide adherent scars in the upper two-thirds of the thigh. Some of these, not many, are unmodified guillotine operations; the majority are not, and many are, the results of later operations in which attempts have been made in vain to produce a stump covered by sound skin. Some of these

unfortunate persons have suffered as many as seven amputations on the same limb.

In the upper extremity the question of end pressure does not arise, and here the condition of the lower part of the anterior and external surfaces of the stump is of most importance, because these surfaces have to take much of the pressure of the leverage action on the bucket. Many arm stumps with large adherent guillotine scars covering the end of the bone have been found to be quite satisfactory in practice.

The presence of osteophytes is rarely any hindrance. These are seldom large, except in the thigh, and then they are usually situated about the femoral insertions of the adductor muscles, which are not exposed to much pressure.

DIFFERENT SITES OF AMPUTATIONS.

The Upper Extremity.

A forequarter amputation gives no choice of flaps. The resulting scars will generally bear a properly moulded shoulder-cap and an artificial arm with some movements.

In exarticulation at the shoulder the lines of scar should avoid the clavicle and the prominent bony ridges of the acromion, etc., for on these the shoulder-cap must press.

Amputations in the upper third of the arm offer very little hold for the socket of an artificial limb. Owing to the arrangement of the muscular attachments around the joint the upper three inches of humerus, or even more, are unavailable, and as in the arm of average length the upper third is only a little over four inches long, very little is available even in an amputation at the junction of the upper and middle thirds. A good deal can be gained by removing wholly or in part the folds of the axilla, that is, the pectoralis major and the teres major. This has been done with good result and seems to be an operation worth doing in suitable cases. The latissimus dorsi has not been interfered with so far as I know. It is less in the way than the other two muscles.

A gain of one inch of stump here is of the very greatest value, and as large adherent scars covering the end of the bone are comparatively unobjectionable in the arm, the surgeon in amputating above the middle of the shaft of the humerus should save as much bone as possible, even though there may not be skin enough to cover it completely.

The drag upon the adherent scar, which gives trouble in the lower extremity, is seldom complained of in the upper, owing to the absence of much upward thrust.

The objections to amputations through joints in general apply to the elbow in particular force, owing to the shape of the bones. If it is impossible to get a forearm stump extending at least an inch and a half below the insertion of the tendon of the biceps, amputation above the condyles of the humerus is to be preferred.

Similar considerations are of weight here to those mentioned in discussing the shoulder region. The action of the biceps tendon, which tends to throw off the bucket when it contracts in flexion, is one of the chief difficulties in these short forearm stumps. Unfortunately, this tendon cannot be spared, and its removal is out of the question. The remains of the bellies of the flexor muscles, however, are of no use, and have been removed in some cases with more or less advantage, enabling a better grip on the stump to be obtained.

The middle third of the forearm gives good stumps, but the lower third is not a favourable site. Many stumps here are cold and cyanotic and the skin tightly stretched and adherent. Moreover, the ends of the bones are often tightly soldered together by fibrous tissue or even bone, and the movements of pronation and supination are lost.

It is true that the most directly acting pronator, the quadratus, is sacrificed if the lower third is removed, but experience leads to the conclusion that good voluntary movement is possible without it, if the ends of the radius and ulna are free. It takes some time and practice, however, to enable the patient to carry out these movements, even when fitted with a suitable arm. The tendency is to use the shoulder-joint instead of the radio-ulnar.

Below the wrist, if the carpus and base of the metacarpus can be saved, it is worth while, provided movement is preserved. The short stump thus formed can be used to actuate a movable thumb with considerable force by means of a simple appliance. It is a commonplace of

surgery that any part of a finger or thumb is worth saving. If one active finger or a thumb is left it is easy to fit a stump to which it can be opposed and thus to give the picking-up action and the power of holding a pen.

The Lower Extremity.

I do not hesitate to affirm emphatically that in the lower extremity exarticulation or amputation between the trochanters is better than amputation in the upper third of the thigh. I refer to the upper third anatomically speaking, which in the average limb includes a little more than six inches of femur, which gives only three or four inches of stump below the pubes. Such a short stump is unable to move the lever formed by the thigh bucket with sufficient force, no matter how light the limb may be.

Such improvements have been made in fitting what is rather inaptly called a "tilting table," that patients who have tried both the ordinary thigh bucket and this appliance usually declare that the latter is much the best. Certainly they walk better in it. This form of prosthesis (shown and described to you by Major Elmslie) forms to my mind one of the greatest improvements in artificial limb-making during the war. Although known and used for some years before, it has been developed and perfected in details during the last two or three years.

In the middle and lower thirds of the thigh the general considerations apply, which I have already outlined. The middle third is the site of nearly half the amputations of the lower extremity treated recently at Roehampton. The exact figure is 42.8 per cent. No other region approaches this in frequency, the next being the lower third of the thigh and the middle third of the leg, each with 11.6 per cent. only.

In this region the objects aimed at should be a non-adherent scar behind the bone, and a good disposition of the muscular masses on the inner side. If the great adductor muscles are allowed to retract too much a too conical stump results, and the bunch of soft parts at the top of the thigh just below the pubes forms a serious obstacle to the fitting of a socket. The tendons and fasciae should therefore be sutured if possible over, but at least near to the end of the bone.

In this connexion it may be worth while to recall that the femur on a thigh stump is eccentrically placed. It is almost subcutaneous along the outer side of the thigh and most of the lateral pressure of the artificial limb is borne on this outer surface. This position is very obvious on x-ray plates. Therefore in making incisions preliminary to or during amputation this surface should be spared if possible.

Although in injuries about the hip in civil life adduction is the common resulting deformity, after amputations of the thigh adduction is a frequent result, and adduction is hardly ever seen.

One of the greatest troubles of the orthopaedic surgeon and the limb-maker is the prevalence of flexion contraction of the hip in cases of thigh amputation. In treating such serious injuries it is natural that the primary consideration should be the early and complete healing of the wound. To secure this and for the comfort of the patient the stump is often propped up upon a pillow, thus favouring shortening of the flexors of the hip. This contraction, unless very severe, is masked by a compensatory lordosis and often unsuspected by those concerned, but when the patient is examined with the sound thigh well flexed upon the abdomen, the true state of affairs is revealed.

Practically every case of amputation of the thigh which is admitted to Queen Mary's Hospitals at Roehampton is found to have some flexion contraction, or diminution of the normal range of hyper-extension, and has to undergo a course of massage and passive motion, or the operation of tenotomy and fasciotomy, before a leg can be satisfactorily fitted. The structures most concerned are the tensor fasciae femoris, the long adductors, the ilio-psoas, and sometimes even the capsule of the hip-joint.

It is much to be wished that, in every case in which the general conditions are favourable, the stump should be fully extended while the opposite thigh is fully flexed upon the abdomen at least once daily during treatment of amputations in this region.

The lower third of the thigh, just above the condyles, offers the best thigh stump for fitting with an artificial limb. If a long anterior flap is made, even though there

may be an adherent scar behind the bone, a good end-bearing stump often results. If the patella can be securely fixed to the end of the bone so much the better.

The general objections to exarticulations apply to the knee-joint. Not many such stumps are satisfactory.

In the leg below the knee the most favourable site is the lower part of the middle third. The old seat of election about four inches below the joint was intended for kneeling legs. Nowadays kneeling legs are avoided and only used when a stump below the knee is too short to work a socket. With skilled fitting, however, even very short stumps are useful. A good gait has been obtained with as little as two and a half inches of tibia, but this was an exceptional case. Rarely is a good result obtained with less than three inches, and then generally the stump should be capable of end-bearing. Much depends on the bulk of the soft parts. When these are voluminous, the difficulty is increased.

These short leg stumps give a better gait than is got with a kneeling leg, and the artificial limb is less unsightly. Amputation in the lower third of the leg seldom gives a satisfactory stump. The bone surface at the end is too small for good weight-bearing, and the skin is often badly nourished, cold and cyanotic.

No one can deal with many below-knee stumps without being struck by the frequency with which the fibula is cut longer than the tibia. This constitutes an obstacle to successful fitting. The fibula bears pressure on its end very ill, and often it wobbles about and is insecure.

Although many patients with Syme's amputation ask to have one performed higher up, it is deserving of its great reputation. If properly done it gives a painless weight-bearing stump. The bones should be sawn through well above the internal malleolus so as to avoid too bulbous a stump, and care should be taken to make the section at right angles to the long axis of the whole leg and not at right angles to the often incurved lower fourth. Otherwise a varus stump is likely to result. Too low a section leaves no room for a strong transverse ankle-joint, and a too voluminous heel-flap means an unsightly artificial foot and boot.

Of Pirogoff's amputation our experience at Roehampton is small and unfavourable. If the os calcis is not united to the tibia by bone it will sooner or later tilt over, and cause pain, and in any case the stump is too long for the fitting of the best type of foot.

Chopart's amputation gives a good bearing surface, but generally the calf muscles pull up the heel and tilt the lower end downwards, and painful pressure on the scar results. The stump is too short to give a spring to the gait, and it is wellnigh impossible to fix any prolongation on to it. It has no advantage over a Syme, and I would submit that if the metatarsus cannot be saved nothing below a Syme is worth doing.

In conclusion, let me disclaim all intention of laying down the law on this subject. I offer the foregoing opinions for what they are worth as the result of the impressions made upon my mind by what I have observed at Queen Mary's Convalescent Auxiliary Hospitals.

During the past two years, and particularly during the past eight months, I have had exceptional opportunities of studying the results of other men's labours, and I have the greatest admiration for the excellent results achieved, often in most unfavourable circumstances.

DEMONSTRATION.

BY

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WHEN the hospital for fitting limbs at Roehampton was started in the summer of 1915, not only was the supply of artificial limbs from limb-makers in this country totally inadequate for the requirements brought about by the war, but the types of limbs available were by no means perfect, so that a very great deal of experimental work had to be done, more particularly upon artificial arms. The limbs demonstrated were all provided at Roehampton, and, without attempting to illustrate every type of limb in use, represented a series of typical examples of the work there.

As far as the arms were concerned, they showed an immense mechanical advance upon the very elementary types alone available in London at the beginning of the war.

The function of an artificial leg is to give good stability in standing and walking and a natural gait. Hence the important points are: The way in which weight is borne upon the leg; the way in which the leg is built to secure stability; and the way in which the knee and ankle are controlled. A stump may take its bearing either upon its termination (end-bearing) or upon the bony prominences around the proximal joint. End-bearing is a quantity varying not only between stumps at different levels but also in individual stumps at the same level. In general, end-bearing, either complete or partial, may be expected when the bone section is through cancellous bone, when the bone is covered with thick skin and muscle or fascia, and when the skin over the stump is itself naturally adapted to weight-bearing. The type of end-bearing stump is that given by Syme's amputation. The other bearings used should be those upon the tuberosity of the ischium and upon the head of the tibia. Although a certain amount of bearing may be taken by fitting the stump tightly and so getting circumferential pressure upon it, yet this must not be trusted to any great extent, as by this method the skin is apt to be stretched tightly over the end of the stump, and if the scar is terminal or the skin thin this may result in ulceration.

POINTS IN THE FITTING OF A LIMB FOR AMPUTATION: LOWER LIMB.

Thigh.

For amputation through the thigh the limb is generally suspended by a sling over the shoulders, the lower end of which is attached to the leg below the knee either directly or by passing over a pulley. In this way it acts as a knee-extending mechanism. In short stumps, however, this is insufficient to enable the stump to remain securely in the bucket and to control the limb; therefore a pelvic band is added. The mechanism used to extend the knee is of two sorts. The older one is by the use of a spring, either of rubber or of steel; it should act in such a way that the knee is only extended by it from the right angled position; if it acts from a position of greater flexion than this it will prevent the man from sitting comfortably with a flexed knee. The second method is by the use of the sling from the shoulders, which pulls upon the front of the leg piece when the shoulders are raised or when the weight of the swinging limb comes upon it, thus extending the knee. The stops which limit the movement of the knee in both directions must be so strong as to be unbreakable even when the whole weight of the body exerts its maximum leverage upon them. The ankle mechanism is a point in which the present limbs almost all show a difference from the Anglesey leg, which used to be practically the standard pattern of artificial leg in England. In the Anglesey leg a considerable amount of movement was allowed at the ankle, this movement being co-ordinated with that of the knee by an artificial tendo Achillis. In the present types of legs the movement allowed at the ankle-joint is small in range (only about 20 to 30 degrees), and this movement is stopped by the compression of springs, usually of rubber, but sometimes of steel. The smallness of the range of movement is not found to interfere with walking—in fact, the walk is quite good if there is no movement at all.

Correct building of the limb is important if stability is to be secured. Two points are essential: first, the axis of the knee-joint must be behind the line which represents the centre of gravity of the body when it is erect, and, secondly, the foot must be mounted in slight equinus (20 degrees), and must be prevented from reaching the right-angled position.

The routine material for the construction of artificial leg is still willow, and as a rule the thigh and leg pieces are constructed of single pieces of wood, appropriately hollowed out, the joints being made of steel. It is not an advantage to have very lax joints in an artificial leg; as a rule the joints are lined with a bushing of leather, by adjusting which they can be made stiffer.

Hip-joint.

Hip-joint amputations are fitted with a leather cup, which entirely encloses the stump, fitting it very accurately. It is attached to the trunk by a steel pelvic band,

to it is attached the limb by a hinge joint on the outer side, and by a steel piece which runs around on a quadrant situated upon the under surface of the leather cup on the inner side. It is possible, by placing the hip-joint far forward and the knee-joint far back, to fit a limb which is stable with both hip and knee joints free; but it is customary to fit locks to both these joints, so that the man may walk with one or other free.

Knee and Leg.

In amputations through the knee the lower end of the stump is larger than the part higher up, therefore the front of the bucket must be cut away and filled in by a lacing piece of leather or else an entire leather thigh piece must be used. In either case the leg piece is attached by outside steel joints. For amputations below the knee a wooden bucket is accurately fitted to the head of the tibia, and below the patella; the weight should be borne upon these points, although in exceptional cases it may be necessary to fit a leather thigh bucket reaching right up to the tuberosity of the ischium and taking a bearing there. In short stumps a partial end-bearing can often be taken by stretching a shelf across the bucket at the right level; in some cases it is difficult to stop the stump rubbing up and down in the bucket when the knee flexes and extends, this can be got over by fitting a leather socket closely to the stump and inserting this into the bucket. As a rule, the leg is suspended by a lacing leather corset around the thigh, with lateral steels hinged at the knee. When a man has worn a leg for some time, however, he can often dispense with this, having the leg attached only by a narrow band of leather fastening above the knee to which the leg is hung by lateral straps. If this is done the foot must not be adjusted with too much equinus, as the equinus position of the foot tends to force the knee into a hyperextended position.

Ankle.

A Syme stump is fitted into a leather bucket strengthened with steels on either side and in front, and preferably lacing behind. The ankle-joint works against two rubber buffers as in the other types of leg. It is possible, however, to replace this mechanism by a tendon stop at the back and an anterior accumulator, and this method must be used in Pirogoff and Chopart stumps.

The Best Materials for Artificial Legs.

Two outstanding problems remain in the construction of artificial legs. First, the question of material, important both for strength and lightness, and also because the present method of hollowing a bucket out of a piece of willow requires a workman with very special skill and experience. Many other materials are now being tried—leather, plied wood, wood shavings and glue, celluloid and duralumin. The Geller leg shown at this meeting is an example of an attempt to use duralumin and to work out an easy method of fitting. The second problem is that of making a leg for a thigh amputation which will not give way under the man when his weight comes on the leg with the knee flexed. Such a leg has been recently invented but is still on its trial.

UPPER LIMB.

Artificial arms are a much more difficult problem. In general an artificial arm should be designed to take the place of the left arm in work. It is obvious that it must be adapted to the particular needs of the man, and we must either have a large series of arms at our disposal, or else we must be able to build the arm out of stock parts in a variety of ways. An artificial arm need not be an entirely passive appliance; movements can be transmitted to it by tension put upon cords. In this way three pulls can be exerted: (1) by expansion of the chest, (2) by rounding the shoulders, (3) by elevation of the shoulder. These cords can be used to activate the elbow-joint, to lock and unlock this joint, and to work a mechanical hand or appliance used in its place.

Above Elbow.

An arm for amputation above the elbow must be attached by a harness which passes over the shoulder; this should

limit the shoulder movements as little as possible, so that any considerable enclosure of the shoulder is bad. The arm and forearm parts must be connected at the elbow by a hinge joint with a lock which fixes it securely and prevents movement in either direction. The alignment of the elbow-joint need not be the true one; often if the true direction of the elbow is kept the forearm will only flex straight out in front of the patient; it is more useful for it to flex more across the chest. In the mechanical arm the elbow is flexed by a cord usually activated by the pull given by rounding the shoulders. In this arm the forearm piece has the shape of the natural arm and ends in a wrist plate, to which the hand or other appliance can be attached. It is, however, often not desirable to have the cumbersome forearm thus attached; a worker's arm is made for this reason; in this the forearm is represented by a skeleton of steel, usually a rod, to which appliances can be attached. If a man who has such an arm for work wishes to have a nice-looking forearm and hand, he can adjust a show piece representing these over the skeleton. These two types of arm—the mechanical and the worker's—can be combined by making the elbow mechanical but using a skeleton forearm.

Below Elbow.

For amputations below the elbow a simple socket is used connected to an arm corset by lateral steel joints, or, in the case of longstumps, by lateral leather straps. In a new arm made by Williams of Swansea a very simple method of fitting is adopted, the elbow is kept permanently slightly flexed, the socket is fitted to the forearm stump and held on by a continuation upwards of firm leather which laces around the condyles of the humerus; this gives a very secure hold for a working arm.

Shoulder.

In amputations through the shoulder a close fitting over the shoulder is necessary; there may be a shoulder-joint inserted, but this is usually omitted. In order to allow the arm to point in various directions a movement of rotation around a vertical axis is allowed in the arm above the elbow.

Wrist.

In wrist amputations and other amputations low down in the forearm it is important to preserve the movements of pronation and supination. It may be possible to do this by omitting the steel joints at the elbow, but if this is not possible the movement can be secured by the pronation arm made by Hobbs, in which ball-and-socket joints allow the forearm socket to rotate upon the elbow.

For working men appliances fitted to the wrist plate are generally more useful than a hand. The number of appliances made is very large; they may be divided into the following classes: (1) Simple hooks, rings, and grips, without movement. (2) Similar appliances in which there is mobility in one or more directions representing wrist movements. (3) Grips opened or closed by the pull of a cord from the shoulder. Many of the appliances invented by Adams, Hobbs, and Anderson will be seen on the arms worn by the men present.

The hand is not so useful in mechanical work as the appliance, but for men in professional work a good hand is essential. In most cases the hand supplied is a simple one with a spring grip to the thumb and often with the ring and little fingers curved into a hook and reinforced for carrying. But mechanical hands are possible and useful for certain men. The first essential in a mechanical hand is that the grip should not be a simple spring grip, which will always be forced by a very slight leverage from without; the mechanism should be such as cannot be forced except by breaking the hand. Such a mechanism has been invented in a very simple and light form by Hobbs, and adapted to a number of different shaped hands. In order that the hands or appliances may be removed at will, and replaced by others, it is essential that they should all be detachable. For long at Rochampton, whilst insisting upon detachability, we obtained it by screwing in the appliances, using a screw of standard size. But it is evident that quick detachability will be desirable; for this reason the screw method is being replaced by others. Simple methods giving quick detachability will be seen in Hobbs arms.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

GOLD-CROWNED TEETH AS A SOURCE OF DANGER.

It appears to me that the indiscriminate crowning of teeth with gold, as is frequently done by dentists nowadays, is often attended with a considerable amount of risk. I have seen many cases where the patient's health has been seriously affected by teeth being crowned which ought to have been extracted, and I have no doubt that other general practitioners have had a similar experience. A case which I have recently had illustrates this.

In April last I was consulted by a man, aged 87, who was extraordinarily strong and active for his years, and walked regularly from four to six miles a day. He told me that he had a general feeling of malaise, and that he had frequent pain in a left lower molar which was crowned last year, and that five other teeth which had been crowned within the last few years had broken off or been extracted. I found the mouth in a septic condition, with pyorrhoea affecting the seven remaining front teeth in the lower jaw. He had had all the upper teeth removed and wore a plate. I advised his having all the teeth extracted at once. He rather demurred at this, and I tried hydrogen peroxide and mouth-washes, but soon the submaxillary gland became swollen and painful, so on May 13th I called in a consulting surgeon, who at once said that all the teeth must be taken out. This was done, and an abscess with very offensive pus was found under the crowned molar. It was hoped that with suitable treatment of the mouth improvement would take place, but the pain and swelling increased, and in June, under local anaesthesia, the gland was incised, scraped, and plugged with gauze, and a quantity of pus and broken-down glandular substance evacuated. The patient did not improve and the swelling increased and became very hard, so much so that it was a question whether the disease was not malignant. A superficial cervical gland which had become affected was removed and examined, but showed only inflammatory changes. He became slowly weaker and died on September 21st. Up to within three weeks of his death he had been able to go about, but after that took to his bed. The temperature chart for the last three weeks was typically septicaemic. The whole growth was removed after death and examined with the same result as before.

I think there is no doubt that had those teeth been removed at first, instead of crowned, the patient might have been alive to-day.

Portmadoc, Wales.

G. R. GREEN.

Reports of Societies.

MODERN ARTIFICIAL LIMBS AND THEIR INFLUENCE UPON METHODS OF AMPUTATION.

A DISCUSSION on this subject, at a meeting of the Medical Society of London on October 22nd, when the President, Sir ST. CLAIR THOMSON, was in the chair, was opened by Mr. MURHEAD LITTLE and Major R. C. ELMSLIE, R.A.M.C., whose remarks are reported in full at pages 550 and 553.

Major JOCELYN SWAN, speaking of operation cases sent over from France, asked whether the speakers considered that the secondary amputation should be performed at once, while the limb was still in a septic condition, or whether it should be postponed till healing had taken place.

In reply to the question how long artificial limbs would last, and whether the parts of a limb which were worn out could be renewed by any one except a skilled maker, Mr. LITTLE, after observing that the secondary amputation should be done as late as possible, said that an artificial leg would last about seven years, but probably something would require to be done in about a year and a half. Experience was not yet sufficiently long to enable it to be said how long an artificial arm would last. Many of the men who came back to Roehampton after six months were those who had used them for very hard work. Centres for repair were being started in other towns, which would save the journey to London.

Major ELMSLIE said that the longest time an arm had been in use was one year. He considered that the fitting of an arm was only the first part of the business. The man should then be trained to use it in a general way, and later in a special way, according to his particular trade or occupation.

In addition to the makers named by Major Elmslie the following had examples of their limbs at the demonstration: Messrs. Rowley, Hanger, and the Essential Limb Co. for lower limbs, and Messrs. Blatchford for arms.

WORK FOR MEDICAL WOMEN.

At the annual meeting of the London Association of Medical Women on October 9th, Lady BARRETT, in her presidential address, said that the Association of Registered Medical Women had originally been formed to give medical women an opportunity for discussing medical subjects when the doors of other societies were closed to them. Though this was no longer the case, and though the best work in the future would be done by men and women together, there was definite work which might with advantage be done in a society for women only: (a) to discuss and express considered opinion on suggested legislation likely to affect the health of women, and (b) to work systematically at those subjects in which women had unique or sole facilities for obtaining data hitherto not available. Lady Barrett instanced as an example of the first group the proposed Ministry of Health as one of those subjects of vital interest in matters particularly affecting women, but the greater part of her address was taken up in discussing three of the subjects in which women had special facilities for obtaining experience: (1) The supervision of the health of industrial women; (2) venereal disease in women and children; (3) the care of maternity. At the present time a very large number of medical women were being employed to look after the health of industrial workers. The women's army behind the lines in France and the women replacing soldiers in England were now examined as recruits and their health watched over by a corps of army medical women. The munition workers throughout Britain, as well as the thousands of factory workers of all kinds doing war work, had medical women in charge so far as they were obtainable, and for some time past the girls in public and private schools had more and more come under constant medical supervision by medical women. Up to the present time we had no large statistics or careful records showing the effects of industrial employment of various kinds on the general health of women, or on such special functions as menstruation, pregnancy, parturition, lactation, etc. Lady Barrett said that medical women ought to feel gravely responsible for the success of the present efforts to control venereal diseases; but to approach this subject with any hope of success meant far more than the isolated work of different members in conducting out-patient clinics or helping in educational work; concerted thought, free discussion, and co-operation were needed. The care of maternity demanded the special consideration of women, although it was not to the same extent directly in their hands. The nation required both work and babies, and women had to supply both. The two popular ideas, that pregnancy was not compatible with health and that "in sorrow shalt thou bring forth children," should be abolished. Research should produce anaesthetics suitable for all cases of labour; more hospital accommodation was needed both for pre-maternal cases of illness and for administering anaesthetics during labour, so that in time it might be possible to secure painless labour for every woman. Various non-medical bodies were expressing very decided opinions as to how the needs for maternity should be met. It was surely more than fitting that medical associations, and perhaps particularly a women's medical association, should express the considered opinion of the majority of its members on this important subject.

Reviews.

TUMOURS, INNOCENT AND MALIGNANT.

A NEW edition of BLAND-SUTTON's masterly book *Tumours, Innocent and Malignant*,¹ serves as a useful reminder of some fundamental truths of the cancer problem which are apt to be forgotten. The preoccupation of specialists, as well as the lay public, with the more

¹ *Tumours, Innocent and Malignant: Their Clinical Characters and Appropriate Treatment.* By Sir John Bland-Sutton, F.R.C.S. Sixth edition. London, New York, Toronto, and Melbourne: Cassell and Co., Ltd. 1917. (Demy 8vo, pp. 799; 383 figures 21s. net.)

menacing forms of new growth tends to relegate the benign tumours to a position of insignificance which obscures their relation to the malignant forms, a relation which it is essential to bear in mind if the problems of new growths are to be envisaged as a whole. The impossibility of effecting a hard and fast separation of benign from malignant tumours still remains at the present time, and this useful work of reference is valuable in that it supplies a connected summary of clinical characters, naked-eye appearances, and microscopical structure, all of which together are still essential to the definition and diagnosis of new growths, whether innocent or malignant. The new edition has been enlarged and many new figures added. The only serious defect in an otherwise excellent book is the absence of low-power histological illustrations, such as form so valuable a feature of Borst's atlas.

Difficulties of definition and diagnosis do not trouble the authors of two other volumes dealing with the subject of cancer. In *Cancer: Its Cause and Treatment*,² Dr. L. D. BULKLEY puts forward the conception of cancer as a disease of metabolism, to be cured by a rigid vegetarian regimen and increased elimination. In the other book, *The Cancer Problem*,³ Mr. GREEN by a statistical study seeks to defend his theory, to which we have called attention on previous occasions, as to the relation of sulphur and smoke in the atmosphere to the incidence of cancer in the inhabitants of various districts.

PSYCHO-ANALYSIS.

A SECOND edition of the English translation of Dr. C. G. JUNG'S *Collected Papers on Analytical Psychology* has been published.⁴ A review of the first edition appeared in the JOURNAL of June 24th, 1916. The editor, Dr. CONSTANCE E. LONG, in a preface to this edition, states that from this work and from another work by Dr. Jung, a translation of which was published in America in 1916, with the title *Psychology of the Unconscious*, a reader will obtain a fairly complete picture of the scientific and philosophic standpoint of the leader of what she calls the "Zürich school" as contrasted with the Vienna school (Freud). To many students of the unconscious it will, she thinks, be a relief to find another aspect than that of "a wild beast crouched, waiting its hour to spring," which has been used as a succinct summary of the Freudian theory. The new edition contains two new chapters in which Dr. Jung develops his ideas on introversion and extroversion. He agrees with Freud in regarding the neuroses as the result of repression, but differs as to the origin of repression. He finds it to lie not in sexuality *per se*, but rather in man's natural tendency to adapt himself to the demands of life one-sidedly, according to his type of mentality. "The born extrovert adapts by means of feeling, thought being under repression and relatively infantile. The introvert's natural adaptation is by means of thought; feeling being more or less repressed remains undeveloped. In either type the neglected co-function is behind the adapted function. This inequality, operating in the unconscious, brings about a conflict, which in certain subjects amounts to a neurosis, and in others produces a limitation of individual development. This view shifts the interpretation of repression on to a much more comprehensive basis than that of sexuality, although there can scarcely be a repression that does not include this instinct on account of its deep and far-reaching importance in man." We have given this rather long quotation as the fairest way of conveying the impression the editor has herself obtained of Jung's theories.

THE FUNDUS IN BIRDS.

DR. CASEY ALBERT WOOD, professor of ophthalmology in the University of Illinois, has produced a fine monograph on *The Fundus Oculi of Birds*,⁵ with many beautiful coloured plates from drawings by Mr. Arthur W. Head.

² *Cancer: Its Cause and Treatment*. By L. Duncan Bulkley, A.M., M.D. New York: P. B. Hoeber. 1917. (Cr. 8vo, pp. 282. 1.50 dollars.)

³ *The Cancer Problem: A Statistical Study*. By C. E. Green, F.R.S.E. New edition. Edinburgh and London: W. Green and Son, Ltd. 1917. (Imp. 8vo, pp. 149; 1 plate, 29 figures.)

⁴ *Collected Papers on Analytical Psychology*. By C. G. Jung, M.D., J.L.D. Authorized translation, edited by Dr. Constance E. Long. Second edition. London: Baillière, Tindall, and Cox. (8vo, pp. 492. 15s.)

⁵ *The Fundus Oculi of Birds, especially as Viewed by the Ophthalmoscope: A Study in Comparative Anatomy and Physiology*. By Casey Albert Wood, M.D., F.Z.S. Illustrated by 145 black and white drawings and 60 coloured plates from paintings by Arthur W. Head, F.Z.S. Chicago: The Lakeside Press. 1917. (Dble. sup. roy. 8vo, pp. 200. 3 guineas net.)

The main purpose of the work is to give such a description of the intraocular appearances and the methods employed in viewing them as will enable ophthalmologists and zoologists to further this study by examining for themselves the fundi of birds. The text and atlas are on a very comprehensive scale, and together form a volume of unusual merit.

The author justifies the elaborate nature of the work by his statement that "the examination of the eyes of birds is a study of the most advanced and most varied apparatus for the highest expression of vision known to any vertebrate class," and claims that ophthalmoscopic examination of the avian eye gives valuable information as to the function of sight in general and the eyesight of birds in particular. He maintains, further, that the appearances of the organs and tissues thus made visible are so characteristic that it is often possible to recognize a species by viewing its fundus oculi. In healthy wild birds these appearances are so constant for each species that they may well furnish independent data for classification. The author believes that the coloured drawings made by the artist faithfully represent not only the varied and beautiful tints but also the complex tissue formations revealed by the ophthalmoscope.

The volume represents the work of ten years in a field of research hitherto scarcely explored, and we believe that the drawings, taken from life by the direct ophthalmoscopic method, are the only series published in book form.

MEDICAL AND SURGICAL APPLIANCES.

Glazed Radium Applicators.

IN the April number of a periodical called *Radium*, published at Pittsburg, Pennsylvania, one of the editors, Mr. Charles H. Viol, Ph.D., gives a description of a glazed radium applicator devised in the Radium Research Laboratory of the Standard Chemical Company. As is well known, the Radium Institute in London, and also French institutions, have used applicators, constructed by mixing the radium salt in a suitable varnish spread on a metal support and allowed to harden. It was found by the company mentioned that such varnish applicators were liable to deteriorate rather rapidly, whereas glass tubes could be used to hold radium without any such effect being observed. Applicators have now been prepared using a lead-free glass, and it is found that the absorption of the softer rays is not much greater than in varnish applicators. The absorption is reduced to a minimum by the use of as little glaze as possible. The glazed applicators are prepared by fusing on to a pure silver metal back, approximately 3 mm. thick, a layer of glaze approximately 0.3 mm. thick, containing radium sulphate, the salt being distributed throughout the glazed layer. Examination with a zinc sulphide screen shows that with this method of preparation a slight alpha ray is produced, but the applicator gives a beta radiation of greater intensity than is generally obtained from a varnish applicator having the same amount of radium in the unit area. The glaze is sufficiently resistant to prevent the likelihood of the loss of radium unless the applicator is subjected to extremely rough mechanical treatment, but in order to avoid cleaning as much as possible the makers recommend the use of a thin sheet of rubber tissue over the applicator when it is in use. Glazed applicators can only be made with a flat surface, and those at present manufactured have a surface of 2 by 2 cm. The amount of radium can be varied; when it is contained to the extent of 5 milligrams the square centimetre the applicator is called "full strength," when half this amount "half strength," when double the amount "2 x full strength." Glazed applicators have been prepared containing up to ten times full strength, but it is considered that five times full strength is as high as should ordinarily be used; a quarter strength is the lowest recommended for practical use. Inquiries as to these applicators may be addressed to Messrs. Watson and Sons, 196, Great Portland Street, W.1, who are acting as agents for the Radium Chemical Company, of Pittsburg, Pennsylvania.

Income Tax for Investors for Year 1917-1918 (London: Mathieson and Sons; 1917, 1s. net) deals with rates of payment, relief, and repayment. It contains an account of the difficulties the private individual meets in consequence of last February's War Loan, which has introduced the principle of payment of income tax on Government securities by assessment at the rate to which an income is liable instead of payment by deduction at the normal rate before the interest reaches the holder of the stock.

British Medical Journal.

SATURDAY, OCTOBER 27TH, 1917.

THE CONFERENCE OF LOCAL MEDICAL AND PANEL COMMITTEES.

SINCE last year's Conference of Local Medical and Panel Committees some matters of great importance to panel practitioners have arisen; especially has there been a growing dissatisfaction with the amount and method of calculating their remuneration. It has unfortunately become almost a habit of a section of the profession to visit its displeasure not only on the Commissioners but on the Council of the British Medical Association, or particularly on any committee concerned in negotiations, and judging from a number of motions sent in for last week's Conference it was fully expected that the Insurance Acts Committee would have an exciting time. After hearing the explanations of the Committee, however, many of the representatives who came to curse remained to bless, and once more has the Association vindicated its position as the official and generally-trusted mouth-piece of the profession in insurance matters. If the Conference were to have no other effect it should show to Government departments that the profession, guided by the Association, is still a fighting force that must be reckoned with in any legislation, and not, as recent events might seem to indicate, a disunited collection of private individuals each fighting for his own hand.

Unusual interest gathered round the motion for a vote of confidence in the Insurance Acts Committee, because with it was a suggestion coming from several quarters, and at first sight plausibly democratic in character, that in all negotiations panel practitioners would better be represented by some separate organization directly appointed by Panel Committees. An amendment to this effect was, however, lost by 113 votes to 16. On the other hand, an amendment deprecating the creation of new bodies as tending to weaken the forces of the profession was carried, and with this addition, which, in fact, strengthened the original motion, the vote of confidence was carried by a very large majority. The Committee will therefore continue to act with enhanced authority as the spokesman, in consultation with Local Medical and Panel Committees, of panel practitioners in central negotiations. The scheme of nomination of fifteen members of the Committee proposed by the chairman was also carried. This means that the Committee will consist of four *ex officio* members with twelve elected by the grouped representatives of the Representative Meeting, and these sixteen will then elect eighteen other members, fifteen of whom will be nominated by the grouped representatives of Local Medical and Panel Committees, and one from each of the following bodies: the Medical Women's Federation, the Society of Medical Officers of Health, and the Poor Law Medical Officers' Association. The Committee thus formed will then have power to co-opt such a number of non-panel practitioners as will secure that four such practitioners shall be members of the Committee. It was explained that at present, out of thirty-three members on the Committee, twenty-nine are actually on the panel or doing insurance administrative work.

On the report as to action taken by the Insurance Acts Committee since the last Conference its chairman, Dr. Brackenbury, referred at length to two matters: (1) The question of discriminating between munition areas and other areas in the payment of practitioners which the Committee had not found it possible or advisable to carry further, and (2) the treatment of discharged disabled soldiers and sailors. His explanation of the Committee's action in the second matter was evidently regarded as satisfactory. He showed that the arrangements were in accord with the decisions of the last Conference, which definitely resolved that the arrangements for the treatment of these men should be separate from those for the ordinary insured, that the present rate for insured persons is inadequate to meet the needs of this class, that additional money should be set aside for the purpose, and that they should be allowed to go to non-panel practitioners if they choose. The Committee had simply carried out the instructions of the last Conference in all these points. He stated further that notice of the proposed arrangements was given as early as June, and up to September 1st not a single Panel Committee or practitioner had intimated to the Committee any objection to the arrangement. Several amendments were on the agenda paper disagreeing with the arrangement, but an amendment from the London Panel Committee, which called for a withdrawal of the regulations and a return to the ordinary capitation payment pending further negotiations, only obtained 20 votes with 133 against it, and other similar amendments accordingly fell through. Dr. Brackenbury undertook to take steps to secure improvement of the arrangement for mileage under the scheme, and it was finally resolved that, in the opinion of the Conference, the Committee had, in view of the decisions of last year's Conference, made as good an experimental arrangement as was possible; though the Conference was of opinion that the method would be detrimental to the financial interest of the profession unless a careful account be kept and rendered by each practitioner for all services rendered, and that this should be fully explained at meetings in every area.

As to the complicated arrangements for making up the medical pool, Dr. Brackenbury confessed that only an expert could follow them. At the present insurance rate the unit of payment would be about 2s. 4½d. per visit with corresponding rates for other items. The idea which led the last Conference to demand a special method of payment per attendance was that these men would require much more attendance than the ordinary insured. Therefore, under the new arrangement, if a disabled soldier were visited twenty times in the year the practitioner would receive twenty times 2s. 4½d., that is, several times more than he would receive at the ordinary capitation rate. The Committee had received a letter containing a guarantee, which it was considered could hardly have been embodied in the regulations, that the Treasury would make up the pool to allow of the insurance unit being paid in full without any deductions. If by any chance it should be found, which is extremely unlikely, that, owing to various disturbing factors to which the Insurance Acts Committee drew attention in its letter accepting the new arrangement, these men require less attendance than the ordinary insured, the arrangement could be revoked. The outcome of the discussion is, then, that the advice of the Insurance Acts Committee that the profession should accept the arrangement still stands good, it being understood that it is only experimental. At a later stage of the meeting it was resolved that as a

number of disabled soldiers and sailors would undoubtedly be referred to voluntary hospitals for special treatment, the medical staffs of such hospitals ought to be paid at an agreed schedule rate for their services apart from any charges made for maintenance by the governing bodies—a policy which had already been strongly urged on hospital staffs and governing bodies by the Association.

Considerable attention was paid to the claims of rural practitioners. It was recognized that they ought to be properly represented on all official committees, and the Insurance Acts Committee was requested to see that in all negotiations their status should be considered as distinct from that of practitioners in industrial and city areas.

The scheme for collective bargaining came in for some criticism similar to that directed against the constitution of the Insurance Acts Committee, but the scheme was carried with only a few dissentients, with a slight amendment which makes it necessary for the Committee to consult Panel Committees before agreeing to any alteration of the regulations. The resolution which was passed pledges the Panel Committee representatives at the Conference to adhere to the scheme, and instructs the Insurance Acts Committee to endeavour to get all Panel and Local Medical Committees loyally to support the Committee if it should be necessary to put the scheme in operation. There is no doubt that if loyally observed the scheme will place a most potent weapon in the hands of the profession in all negotiations with the Commissioners or the Government.

Before the Conference it was evident that there is now all over the country a feeling that the capitation fee must be raised to at least 10s. for the doctors apart from the chemists. For a time after the war began there was a disinclination to demand this, but the uncertainty as to the war's duration, the increased cost of living, and other reasons have made it practically imperative that there should be an early and substantial rise in the rate of payment. The Conference accordingly resolved, with only one dissentient, to demand that the rate should be raised to 10s. from January 1st, 1918, this sum to cover domiciliary treatment of tuberculosis and the increased liabilities with regard to disabled soldiers and sailors, and the Insurance Acts Committee was instructed to negotiate these terms with the Government, and to organize the profession with this object. The suggestion of a war bonus instead of an all-round rise of the capitation rate received but slight support, and was withdrawn. It follows from this that if the 10s. fee be granted, the new special arrangements for disabled soldiers and sailors will no longer be necessary, as these men will be included as ordinary insured persons.

The greatest dissatisfaction was expressed as to the amount actually paid to panel practitioners for the year 1916 compared with what it was considered they ought to have received. The explanatory memoranda of the Commissioners give only a rough outline of the procedure adopted to make up the central pool, and the profession is unable to satisfy itself that the procedure is really a fair one. It has only the Commissioners' statement, relying on the Government actuary, that it is as fair as they can devise, but, after all, even experts are not infallible. The Conference, therefore, while protesting against the unfair payments for 1916, instructed the Insurance Acts Committee to ask the Commissioners to allow a small committee appointed by it, with an actuary appointed by the president of the Institute of Actuaries, to see all the figures and particulars of the process of calculation of the central pool, and report on the

whole situation to the profession. The Committee was also instructed to press for an increased mileage grant for rural practitioners.

A number of other matters dealing with details of panel work were referred to the Insurance Acts Committee for consideration, and it was also instructed to consider the question of holding more frequent conferences of Panel Committees.

ACUTE POLIOMYELITIS AND CEREBRO-SPINAL FEVER.

SOME curious points of resemblance in the recent history of acute poliomyelitis and cerebro-spinal fever are brought out by even a superficial survey of the extensive epidemiological and laboratory investigations consequent on the recent epidemics in America and in Europe. In both the comparatively low infectivity of the virus has become recognized. In America discussion has taken place about the nature of the virus of acute poliomyelitis, and the globoid organism described by Flexner and Noguchi has met with rivals in the form of Rosenow's streptococcus¹ and of a pleomorphic bacillus of the distemper group obtained by Horace Greeley² by means of a new culture medium containing lime water. This bacillus caused paralysis in cats, dogs, rabbits, guinea-pigs, and abortive symptoms in the investigator as the result of accidental infection. It forms spores, is a filter passer, and is saprophytic. As it grows well in milk the startling suggestion is made that the great majority of epidemic cases are due to milk-borne infection. During the epidemic of 1916 this possibility was tested and discarded by the Department of Health of New York City, which did not accept either the globoid bodies or the streptococcus as the proved causal organism.³ This divergence of opinion as to the nature of the virus is paralleled in the case of cerebro-spinal fever by the revolt against the orthodox view of the meningococcus and by the substitution of a pleomorphic organism which Hort has so persistently led and Adami has pleaded for. The clinical symptoms of the meningitic form of acute poliomyelitis are so like those of cerebro-spinal fever that confusion has occurred, and it may be remembered that in 1911 Dr. R. J. Reece, assistant medical officer to the Local Government Board, went down to the West of England to investigate a supposed epidemic of cerebro-spinal fever and showed that it was one of acute poliomyelitis.

In 1914-15 the serum treatment of cerebro-spinal fever was disappointing in this country owing to the inertness of the serum then available, and, not unnaturally, it was argued that lumbar puncture alone was the proper treatment, but with the advent of Flexner's and other new serums this conclusion has since been reversed.

The difference of opinion as to the nature of the virus of poliomyelitis is accompanied, though it is not suggested that there is any logical sequence, by opposition to the treatment of the disease in its acute stage by immune serum obtained from a convalescent donor. Neal, Abramson, and others⁴ state that the immune serum was not used much in the great New York epidemic of 1916, as the early experience of its use was disappointing and the reactions induced so severe that it was felt harm might result from

¹ BRITISH MEDICAL JOURNAL, 1917, vol. ii, p. 367.

² Horace Greeley, *The Journal of Laboratory and Clinical Medicine*, 1917, July, vol. ii, No. 10.

³ BRITISH MEDICAL JOURNAL, 1917, vol. ii, p. 51.

⁴ B. Neal, H. L. Abramson, and associates, *Arch. Int. Med.*, Chicago, 1917, vol. xx, p. 341.

increasing the amount of meningeal irritation. In animals infected with poliomyelitic virus the intrathecal injection of serum aggravated the comparatively slight inflammation of the meninges, and certainly did not do any good. Thus, while intrathecal injection of serum sets up a chemical aseptic meningitis in healthy membranes and in those slightly inflamed, the injection of antimeningococcic serum in cerebro-spinal fever allays the acute meningitis, as shown by the clearing of the fluid.

A MINISTRY OF HEALTH.

THE plain inference from the remarks of the Premier to a deputation from the Joint Committee of Approved Societies and the Conference of the Amalgamated Society of Industrial Assurance on October 11th is that the Government does not intend to give facilities during the present session of Parliament for any measure to establish a Ministry of Health, and this appears to be confirmed by Mr. Bonar Law's statement on October 18th. He said that at present the various difficulties needing to be provided for in the establishment of such a Ministry have not reached any widely agreed solution, and so long as this was the case it was not possible to undertake to introduce a bill. He added that steps were being taken which it was hoped would secure substantial agreement among those actively engaged in the work of national health, and hinted that he might be able to make a further statement towards the end of the present session. The country will sympathize with the Premier's statement that the Government needs all its energies for war work, and cannot turn aside to consider contentious measures. There is, however, a general impression that the mere suggestion to establish a Ministry of Health has aroused so much departmental jealousy that whatever form any bill may take it will meet with strenuous opposition from one department or another. We are forced to the conclusion that the petty fears of this or that department that it may lose some of its prerogatives are standing in the way of what the public, as well as the medical profession, regards as of the most pressing importance. With the best will on the part of all the departments, the transfer of functions will be no easy task; but without that goodwill the transfer, which we are convinced is inevitable, can only be done by a strong Government determined to set aside departmental jealousies.

The National Insurance organizations of the country have put forward a bill which has the merit that it recognizes the difficulty in the immediate transfer of all the functions of the numerous departments concerned. This bill, which only deals with England and Wales, leaving Ireland and Scotland to separate legislation, provides that there shall be a Minister of Health of Cabinet rank with a salary not exceeding £5,000 a year, and that his duties shall be "to co-ordinate the medical and other services for the preservation and improvement of the health of the people, and to direct, assist, and further investigation and research for that object, to exercise the powers conferred by this Act or by Order in Council made under this Act, and to provide for the distribution of such sums as may be voted by Parliament to assist the local health services." The Minister is to be assisted by two salaried Boards of Health—one for England and the other for Wales—consisting of persons experienced in the working of Local Government Board or Insurance services, or chosen on the ground that they represent labour or the medical profession. As to the transfer of functions from

present departments, it is proposed that while certain health functions shall be immediately handed over to the new Ministry, powers shall be taken to transfer other functions more gradually as found expedient by Orders in Council. It is proposed, for example, that there shall be immediate transfer to the new Ministry of all the functions of the Insurance Commissioners except those of judicial or quasi-judicial character, including those mentioned in Sections 66 and 67 of the Act of 1911, which would be transferred to a special body to be appointed for the purpose by Order in Council. The Commissioners with their staff would thus become officials of the new Ministry, which would also have constantly the advice and guidance of a special body appointed by Order in Council and comprising persons having practical experience of National Insurance work. Authority would be taken to make any necessary change in the Joint Committee. It appears to be recognized that the problem of the Local Government Board is more difficult; it is proposed to transfer immediately all the directly medical functions of the Board under the various Public Health Acts, including the power to sanction loans for these purposes, but to leave other functions, particularly those relating to housing, to be transferred later by Order in Council when found expedient. The functions of the Board under the Poor Laws are considered to offer special difficulty. In the first place, the promoters desire that the new Ministry should not commence by being associated with the odium at present connected in the public mind with the very name of Poor Law. Moreover, the medical services of the Poor Law are said to be inseparably connected with other forms of poor relief. It is proposed, therefore, that the Local Government Board should continue to exercise its Poor Law functions until the long overdue reform of the Poor Law has been carried out, as then only will it be possible to bring the whole of the medical services of the community under one co-ordinated local jurisdiction under the supervision of the Minister of Health. The functions of the Board of Education as regards maternity and infant welfare are to be transferred at once and those in respect to crèches later on. It is proposed that the duties of the Privy Council in respect of midwives should be transferred at once and its other medical and analogous functions later on. It is proposed also to postpone until found expedient the transfer of the functions of the Registrar-General, certain duties of the Home Office as to factory inspection, those of the Board of Control as to the care of the insane, and those of the Minister of Pensions as regards the treatment of discharged disabled soldiers and sailors. It is considered that for all these cases of postponed transfer Orders in Council would be sufficient without special fresh legislation. The bill, it is held, should be accompanied by substantial Exchequer grants to be disbursed by the Minister of Health in the promotion of properly co-ordinated local schemes of health development.

An important part of the bill deals with the hospital question, for it would authorize the new Minister to hold inquiries and make orders with a view to constituting hospital authorities for suitable areas, and for placing under a single management hospitals, dispensaries, pathological and other laboratories, and the special medical services. Private hospitals, it is suggested, might be dealt with by voluntary agreement, while other hospitals might be compulsorily included after inquiry. As regards "excessive sickness," it is admitted that Sect. 63 of the Insurance Act has been a dead-letter. It is proposed to repeal it, and in its place to empower the Minister of Health to hold

inquiries as to cases of excessive sickness in any district, and to order the county or district council to perform its duty; if such authority failed, the Minister could authorize the Insurance Committees to perform the duty at the cost of the defaulting authority.

It is specially to be noted that the bill, with few exceptions, is only concerned with the central organization. The difficulty of the problem presented by the powers of local bodies is enhanced by the present unorganized condition of the central departments, and the idea of the promoters is that the central organization must first be put in order before the needed adjustments and developments of local powers can either properly or safely be entered upon. On this account the bill fails to include many of the suggestions made for local organization by the British Medical Association, and in several other respects it does not recognize sufficiently the importance of securing from the outset the sympathy and co-operation of the medical profession. Far too much of the suggested reforms is left permissive, to be carried out or not by Orders in Council at the discretion of the new Minister. For example, competent opinion holds that the medical functions of the Local Government Board under the Poor Laws could be transferred from the outset. It is a matter of the first importance, and if it is to be postponed, as suggested, until the general reform of the Poor Law is undertaken, and even then left permissive, a most important part of the whole subject, affecting the poorer classes of the community, will have been indefinitely and, we believe, unnecessarily delayed. Again, the provisions for the health of expectant mothers are far too loose and indefinite; provision should be made from the outset for the setting up of local statutory bodies for areas of suitable size and containing a proper medical representation. The suggestions as to the compulsory acquisition of hospitals at the discretion of the new Minister are too drastic, and the least that should be done is to allow any hospital the right of appeal, say, to the Charity Commissioners or some other authority having the interests of voluntary hospitals in its care. Provision, too, might well be made that no hospital shall in future be established in any area without full investigation by the advisory committee to satisfy the Minister that the hospital is needed in the area. The proposals with regard to hospitals are incomplete and will not, we anticipate, be supported by the British Medical Association unless they include amendments in accordance with Recommendation G of the Council's annual report for 1917 with further additions put forward by the Association.

It is difficult to avoid the impression that the promoters of the bill have been frightened by the immensity of their task, and to escape difficulties raised by departmental jealousies have avoided dealing by legislation with some of the most important and urgent branches of health reform, trusting that they may at some time be dealt with by the new Ministry. This seems to have resulted in proposals which would make the new Minister an absolute autocrat in all health matters. No hint is given in the bill as to the fate of the general medical profession under the new conditions. Apparently the Minister of Health is to have it in his power to set up any form of medical service he may choose. The promoters of the bill may reply that they did not feel competent to deal with this part of the subject; this is true, but the medical profession will certainly not consent to any bill which does not better define its future position, and especially will refuse to be left to the caprice of any Minister of Health who by an Order of Council may perpetuate the worst form of bureaucracy. The position of the

approved societies is fully and amply safeguarded in the bill, and if the medical profession is not to be more at the caprice of a new department with enormously extended powers than it is now under a multiplicity of departments, it must equally be safeguarded from the very outset. To expect the profession to accept the bill as it stands, even as only the commencement of a much needed reform, is simply to ask it to take a leap in the dark, and while we welcome many of the proposals of the bill as a statesmanlike contribution to a great subject, its shortcomings are so evident that, without very great changes, there is a fear that it may delay rather than hasten the desired reforms.

"WAR OEDEMA."

UNDER the name *Das Kriegsödēm* (war oedema) great attention is being paid at present in the German medical journals to a peculiar disease which seems to have become widespread throughout Germany during the present year. The disease has broken out not only in numbers of the camps occupied by prisoners of war, but also in the large towns. Maase and Zondek¹ give an account of the disease as they have seen it in Berlin. The first cases occurred in January, 1917; males above the age of 40 years have been almost exclusively the sufferers. No noteworthy premonitory symptoms were observed, but suddenly great oedema developed, especially of the lower limbs. The face and scrotum were often affected also, and in a small number of instances ascites and haemothorax occurred. There were no cardiac symptoms, and the urine never contained any albumin. As soon as the patient was put to bed a very marked diuresis at once began, and the oedema quickly disappeared. Remissions and recurrences were fairly common. The composition of the oedema fluid in these cases had been compared chemically with the fluid effusions in renal disease and obstructive conditions such as hepatic cirrhosis. The chief difference found was the high ammonia figures in the *Kriegsödēm*, as contrasted with the two other conditions. The pulse-rate was markedly slowed during the disease, and examination of the blood gave, as a rule, a red count of three to four millions. This condition of anaemia it was thought might probably be ascribed to hydraemia. The occurrence of diarrhoea was fairly common. The authors, in agreement with others, consider the cause of the disease to be underfeeding, especially the diminished quantity of fat. They suggest that toxic products of albuminoid metabolism may cause damage of the endothelial lining of the blood vessels, and so lead to oedema. The high residual nitrogen and ammonia values found in the blood, urine, and oedema fluids were considered to be evidence in favour of this hypothesis. By giving three patients 100 grams of fat daily for a week the authors were able to cure the disease completely without rest in bed or any other remedial measure. Another factor suggested as of etiological influence is the amount of fluid ingested. Owing to the changed food conditions most of the sufferers had been taking a more watery diet than normally in the shape of soups, turnips, and so on. The regulation treatment of the condition consists of rest in bed until all swelling has disappeared, diminution of the daily fluid intake, and bettering as far as possible of the diet. Schiff² states that the disease appeared in Vienna with great suddenness. He gives the usual pulse-rate as from 42 to 56, and states that the amount of urine passed daily during the stage of recovery was commonly 3 to 4 litres. He suggests that this purely war disease has obvious similarities with beri-beri and other diseases depending on failure of vitamins. Numerous authors have described the same disease as it occurs in the camps of prisoners of war, pointing out clearly its cause and the means that may be taken to remedy it when there is the will to do so.

¹ *Bert. Klin. Woch.*, No. 36, September 3rd, 1917.

² *Muench. med. Woch.*, No. 22.

THE ADRENALS IN WAR INFECTIONS.

DURING the last twenty years the ductless or, as they are now called, the endocrine glands have been the subject of much valuable work, followed, it must be admitted, by some fireside speculation, and this year has seen the appearance of a journal entitled *Endocrinology*. The adrenals have had their fair share of elucidation, and an extremely interesting chapter has been provided by the observations and writings of T. R. Elliott, Cannon, and Crile, on the relation of the adrenals to emotion. As the result of anxiety or stress the adrenin is turned out into the blood stream to lend assistance in the struggle for existence, and the adrenal medulla is exhausted of adrenin. The reaction of the gland to infection has also attracted attention, and Elliott showed that in acute infections the lipoids rapidly disappear from the cortex. The war has not entirely arrested work on these lines, for Goormaghtigh¹ has published a preliminary account, from the hospital at Hoegaarde, of the macroscopic and microscopic appearances of the adrenals of seventy cases fatal from infective complications of wounds, in order to throw light on the functional activity of the glands in the presence of infections. In these cases shock and mental distress admittedly played a part so that the changes in the glands, which were removed from the body within an hour of death, cannot be ascribed solely to infection. Relying on the histological appearances Goormaghtigh considers that early in acute infections the adrenal cortex shows degenerative changes, which, it may be pointed out, resemble those figured in Crile's various books, and that the lipoids are removed; in more prolonged infection the cortex exhibits some degeneration and also evidence of considerably increased functional activity, presumably to provide an increased output of lipoids possessing an antitoxic action. The medulla also shows signs of heightened functional activity in acute infections, and from the examination of the adrenals of patients given adrenin hypodermically during life it appears that the activity of the medulla is thus stimulated.

THE ROCKEFELLER HEALTH RESEARCHES.

THE third annual report of the Rockefeller Foundation, the International Health Board (known previously as the International Health Commission), deals with the year 1916. The general summary, which precedes the details of different States and countries, shows that in addition to ankylostomiasis, malaria and yellow fever have been dealt with, and this would seem to indicate that the board is prepared to tackle all tropical disease where the necessity arises. As regards the first of these scourges, ankylostomiasis, it is stated that active measures to control and prevent the disease are now in operation in Kentucky, Louisiana, Mississippi, North and South Carolina, Tennessee, Texas, and Virginia in the United States; in certain West Indian islands—Antigua, Grenada, St. Lucia, St. Vincent, and Trinidad; in British and Dutch Guiana, Costa Rica, Guatemala, Nicaragua, Panama, Salvador, in South America; and in Ceylon and Siam in the East. Such widespread work, properly controlled as this is, and with no lack of funds to support it, is bound to do good, and, though remarkable results cannot be looked for in a few years, nevertheless results will come, all in due time. To ensure this, permanency of the work is essential, as otherwise matters would quickly drift back. The sanitation of many of the small tropical towns and villages at the present day is very similar to that which existed in England a hundred years ago, and only time and much labour will bring them into line with modern sanitary ideas. As many tropical maladies are insect-borne, study of the habits of the insects concerned is essential, and engineering works, large and small, may be required to abolish their different breeding grounds. The importance of collective investigation and organized campaigns in such

a task is manifest, and it is here that the great value of the efforts of the International Health Board lies. The report describes fully the means adopted in the fight against ankylostomiasis. Of great interest also is the work of the Commission appointed by the board to inquire into the problem of yellow fever centres in South America. The report states that the only endemic centre of the disease in South America at present is Guayaquil, Ecuador, though certain sections of Colombia, Venezuela, and the adjacent West Indian Islands are also under suspicion and require close observation. The eradication of the disease, with this knowledge as a guide, is feasible. The report suggests that Mexico and West Africa should similarly be examined. Experiments upon the control of malaria have also been commenced, and these will be extended in due course. Further, a new school of hygiene and public health has been established in Baltimore by the Rockefeller Foundation in connexion with the Johns Hopkins University, and is to be opened this month with Dr. William H. Welch as director. Three main purposes will be served by the new school: first, to furnish trained men on whom the board may draw; secondly, to serve as a training centre to which students from other countries may be sent for instruction; and, thirdly, to provide a laboratory for solving scientific problems which arise. This Rockefeller Foundation is a splendid conception. Untrammelled by questions of expense, its activities are unlimited, and the benefits it can and will bestow upon mankind in the tropics are inestimable. It is a dream the original workers in tropical medicine often dreamt, and it has come true. Finally, a word of congratulation is due to Dr. Wickliffe Rose, its able Director-General, for the work he has already accomplished. Long may he continue to direct its energies.

WOUNDED AND DISABLED MEN IN VOLUNTARY HOSPITALS.

AT a conference summoned by the British Hospitals Association at Westminster Hospital on October 19th, it was resolved, in view of the abnormal advance in the price of provisions and other articles since the rate of payment for the treatment of soldiers was fixed, to make representations to the authorities with a view of obtaining an increase in the payment for the treatment of soldiers in hospitals. An amendment moved by Mr. Bishop Harman to the effect that the accommodation provided for the treatment of soldiers and sailors should not be at the expense of the civilian sick poor was not seconded. Major McAdam Eccles suggested that in reckoning the cost of maintenance the committee should take into account payment for the services of the physicians, surgeons, and special officers on the medical side. The medical profession had come to the conclusion that payment should be made for their services, such payment not to be made directly to the medical staffs but to the lay administration, which would hand to the medical staff a sum over and above the cost of maintenance to deal with as it considered advisable. The meeting expressed the opinion that the scale of charges for the treatment of disabled sailors and soldiers in civilian military hospitals as proposed by the Ministry of Pensions was inadequate to meet the cost, and strongly affirmed the view that the scale of charges should be such as would cover the whole cost of maintenance and include remuneration in respect of professional medical services. The resolutions were referred to the chairman and the council of the British Hospitals Association, to take such action as may be necessary. Mr. Hoare, who attended the meeting on behalf of the Ministry of Pensions, said that the Ministry had taken as a basis of payments what it had ascertained were the ordinary charges made by hospitals to various Government departments and other bodies in the habit of sending patients to general and special hospitals. Possibly, owing to the increased cost of everything, they might

¹ N. Goormaghtigh, *Arch. méd. Belges*, Paris, 1917, tome lxx, p. 697.

be too low, but it was important to get a uniform charge. The Ministry had not hesitated to sanction a higher payment when it could be shown that the sum allowed was insufficient. The Ministry had no intention of setting up institutions in all parts of the country to compete with the large voluntary hospitals, but in the case of institutions for epilepsy, neurasthenia, and tuberculosis, of which there had been a deficiency, it had taken means to increase the accommodation. In estimating the payment to be made to hospitals the Ministry had aimed at defraying the amount of out-of-pocket expenses incurred by the hospital, but the question of the inclusion of every single item in the amount, including remuneration for the doctor, would have to be settled as a matter of the general policy in dealing with hospital management. When a rate of State payment was settled the hospital would, as a corollary, have to satisfy certain conditions if it was to charge for the medical services of the staff as well as for everything else. A large number of discharged men would possibly within a year no longer require hospital treatment, so that in about three years the present problem would cease to be a problem at all. The Ministry of Pensions therefore believed that the question raised was of a temporary nature only.

THE FOOD POSITION IN GERMANY.

We are now able to give some additional and more precise details with regard to rations of bread and potatoes in Germany. The imperial bread ration in Germany is 2,000 grams a week, that is to say, 285 grams a day. The amount actually allowed varies locally. In Berlin it is 1,950 grams a week (278 grams per day), in Hamburg 1,600 grams a week, in Essen 2,000 grams a week. Bread grain is milled up to 94 per cent. The imperial potato ration is 3,500 grams a week, or 500 grams a day. The amount actually allowed varies locally, but is, generally speaking, about the same as the imperial ration.

We have received from Dr. Neil Macleod of Shanghai a cablegram, dated October 21st, stating that he has detected khaki and other material previous to rays by injecting wounds with thin bismuth emulsion. He is sending an account of his observations by mail.

THE Bradshaw Lecture on "The causes of disease" will be given before the Royal College of Physicians on Thursday, November 8th, by Professor Ernest S. Reynolds, Physician to the Manchester Royal Infirmary. The FitzPatrick Lectures will be delivered on November 13th to 15th by Dr. Arnold Chaplin, well known for his studies of the Napoleonic period. The subject he has chosen is "Medicine in England during the reign of George III." The lectures will be given at the college at 5 o'clock each day.

THE MORTALITIES OF BIRTH, INFANCY, AND CHILDHOOD.

A SPECIAL report on the *Mortalities of Birth, Infancy, and Childhood*, just issued by the Medical Research Committee,¹ contains three studies of the mortality in early life by writers whose methods and points of view are similar but not identical.

Relative Importance of Pre-natal and Post natal Conditions.

Dr. Brend's contribution, the substance of which has already appeared in his recent treatise on questions of public health, is devoted to a comparison of the rates of mortality in infancy and childhood obtaining in different types of community. His method is to ascertain whether an alleged causative factor of infant mortality can be found

in operation with at least equal efficiency in districts the rates of mortality within which are strikingly different. Thus, if the sanitary conditions of two towns are equally good (or bad), but the death-rates of children are different, he concludes that sanitation is not an efficient cause. This process leads him to conclude that the "excess (of mortality) is due to some factor or factors in industrial towns, the centres of large cities, and mining areas, of which possibly the most important is a polluted state of the atmosphere."

Causes of Infantile Mortality.

Dr. Leonard Findlay's paper is largely concerned with the effect upon infantile mortality rates of welfare schemes, and he provides statistical charts which do not bear out the opinion that such schemes can be proved to have influenced appreciably the movement of the death-rates. On the other hand, like Dr. Brend, he attaches much importance to housing conditions, and remarks that "it hardly seems likely that any number of visits to infant clinics will ameliorate the health of the infant so long as it has to spend its time in unhygienic surroundings. This is well exemplified in hospital practice. Not infrequently children are admitted to hospital suffering from marasmus, enteritis, or bronchopneumonia, and recuperate, and are given back to the parents almost normal children, only to return with a relapse in a matter of a month or even less."

Changes in the Physiological Processes of the Developing Child.

The third paper is by Dr. Brownlee, the Director of the Medical Research Committee's Statistical Department. Dr. Brownlee mainly employs the statistical method, but he emphasizes the necessity of statistical analysis being utilized by those who are something more than statisticians, and have a first-hand knowledge of the objective phenomena. In the first place, Dr. Brownlee discusses the use of graduation formulae and illustrates his argument by the application of such a formula to the study of changes in weight with age. He then applies the method to various diseases or associated morbid phenomena. The results lead him to various interesting and novel conclusions. Thus the death-rates at ages from "convulsions" are effectively graduated by a continuous curve, the decline with age being quite regular. Dr. Brownlee notes that "convulsions" are usually considered to be a symptom rather than a disease, but while concurring with other physicians in this opinion he suggests that the interpretation does not sufficiently emphasize the fact that an essential factor is the nervous instability of the child. In other words, there is an important common factor which gives a unity to the group "convulsions" as distinct from its etiological heterogeneity. Somewhat similar considerations apply to the group of diarrhoeal diseases.

These results support a plea for the more systematic study of the changing physiological characters of the infant and child, since in such changes must be sought the basis of the resemblances noted. Dr. Brownlee's reasoning would lead us to expect that exposure to a bad environment should not operate uniformly at different ages, and, from a comparison of Salford's death-rates at ages with those of other towns and of the Healthy Districts Life Table, it seems that it is at the age of 2 years that children are most affected by an unhealthy environment. "Death rates," Dr. Brownlee remarks, "must therefore be considered in relation to the physiology of development, and not as independent numbers which can be used for comparison without giving consideration to the physiological stability of the growing child."

Dr. Brownlee is, of course, too accomplished a statistician to suppose that the feasibility of graduating accurately certain data by a particular formula proves that the formula describes the real law of development. It is indeed well known that statistics can often be graduated with great accuracy by formulae which cannot be supposed to summarize any such general law. But very often, as Dr. Brownlee observes, extrapolation will reveal the failure. Dr. Brownlee's results are, to say the least, very suggestive.

History.

The three studies are preceded by a short historical note in which Dr. A. K. Chalmers deals with some of the earlier records of mortality (in this connexion Wernicke's mono-

¹ H.M. Stationery Office, Medical Research Committee, Special Report Series No. 10. (1s. 6d.)

graph, *Das Verhältnis z. Geborenen u. Gestorbenen in Hist. Entwicklung*, might be mentioned), and also by a general introduction written in the name of the Medical Research Committee. The Committee points out that the work under notice throws some doubt upon the correctness of popular opinions and proves the necessity of further research, but the following view is emphatically expressed: "In the meantime it would be altogether erroneous to suppose that the plain need for further research and the present partial delay in its prosecution give any ground for postponing practical measures for diminishing the avoidable death-rate. Existing knowledge based upon research work is already almost a generation ahead of effective administration action. We have no need for further inquiry to show that improvements in an admittedly imperfect midwifery service would certainly diminish blindness and death among babies, or that bad housing conditions are a causal condition of much disease in infants, or again that a purer milk supply in cities and districts where it is known to contain habitually the germs of tuberculosis would lessen or abolish an important group of the diseases of children."

Medical Notes in Parliament.

The Medical Service in Mesopotamia.—Sir John Jardine inquired whether as regards the troops at all stations at the Shatt-el-Arab, the Tigris and Euphrates, sufficient provision had been made for medical and surgical treatment, including medicines and appliances, fresh vegetables and fruit. Mr. Macpherson said the General Officer Commanding-in-Chief was responsible that sufficient provision was made for the medical and surgical treatment, including medicines and appliances, for the troops at all stations in any particular theatre of war, and there was no reason to suppose that provision in Mesopotamia was not merely sufficient but ample in every respect. All demands for medical stores were promptly met, and, in addition to the medical stores dépôts in Mesopotamia, a special dépôt had been established at Bombay to facilitate supplies. The supply of fresh vegetables was good and amounted to 67 per cent. of the total vegetable ration. Fruit and dates were also available locally and issued to the troops.

Promotion of Territorial Medical Officers.—Colonel Gretton asked the Under Secretary for War if he was aware that a number of medical men joined the Territorial Forces as medical officers *à la suite* with the rank of captain, that an undertaking was given that such officers should be promoted to the rank of major after eight and a half years' service; if he was aware that this term expired in the case of a number of officers *à la suite* last June, and that no promotions had taken place; and if it was intended to carry out the undertaking. Mr. Macpherson replied that the answer to the first part of the question was in the negative. Officers appointed to the *à la suite* staffs of general hospitals served under different conditions to other officers of the Royal Army Medical Corps, and promotion was not based on any qualifying period. Mr. Keating inquired if the recommendations of the Churchill Commission for the promotion of officers who had served eighteen months, unless adversely reported on, was being acted upon. Mr. Macpherson replied that the promotions were being made as rapidly as possible, and approximately 9,000 officers had already been gazetted. Delay was inevitable in some cases, owing to the reports as to officers' efficiency not having been received from their commanding officers.

Commission on Medical Services in France.—Colonel Gretton asked if the Commission recently sent to examine into the Medical Service of the Expeditionary Force in France had yet reported; if not, when the report might be expected, and if it would be laid on the table. Mr. Macpherson: No report has been received, nor can I say when one will be in the possession of the Army Council. I am afraid that no promise to make the report public can be given in advance.

Royal Army Medical Corps Pay.—Mr. Joynson Hicks asked what was the pay at home and abroad of a captain in the Territorial Royal Army Medical Corps and of a temporary

lieutenant in the Royal Army Medical Corps. Mr. Macpherson replied: The pay and allowances of a captain in the Territorial Force, Royal Army Medical Corps, vary from 19s. to 23s. 2d. a day. The pay of a temporary lieutenant engaged on a contract basis is 24s. a day, inclusive. The captain is entitled to a larger gratuity on cessation, and to other advantages, but the question of the comparative emoluments is under the consideration of the Army Council.

The Education Bill.—The House of Commons has heard with great regret from Mr. Bonar Law that there is now no hope that the Education Bill can be passed this session, which means that it will have to be reintroduced next session. The measure has had a good reception amongst educationalists, but it is understood that opposition has been manifested amongst local authorities to the increased control by the Treasury which is made to condition the intended larger grants by the Treasury.

Officers' Uniform and Equipment.—In answer to Colonel Yate, Mr. Forster announced that a scheme has been prepared for cheapening the cost of officers' uniforms, and it will shortly be published.

Invalid Soldiers' Uniforms.—Mr. Forster has informed Mr. Ferens that soldiers invalided and convalescent could not be allowed to wear their uniform with a band instead of the special invalid uniform, but it was intended that the invalid uniform should be improved in cut and style.

Dental Treatment for Soldiers.—Replying to Mr. Pennefather, Mr. Macpherson stated that before soldiers were sent on foreign service they were examined to see if they required dental treatment, and when it was necessary it was carried out by specially appointed dental officers. Mr. Pennefather asked (1) how many dental surgeons with experience in the treatment of jaw injuries have been sent to the various fronts, and are available for special first-aid treatment of such injuries; and (2) what percentage of dental surgeons not in the army are employed in connexion with dental surgery; and what percentage are engaged in combatant and other duties in which their dental surgical training is of no value. Mr. Macpherson said that the information was unavailable, but the total number of commissioned dental officers was 517. In reply to a further question by Colonel Yate, Mr. Macpherson said that there were no dentists on the war establishment of divisions; such officers were allotted to duties in the field by the General Officer Commanding-in-Chief, with whose discretion it was not proposed to interfere.

War Service Badges for Nurses.—Major Chapple asked whether the War Office in issuing badges of honour to those soldiers who entered the theatre of war in 1914 would consider the claims to a similar distinction of military nurses, whose heroism and devotion to duty were no less conspicuous. Mr. Macpherson replied that all officers and others serving in a theatre of war on the establishment of a unit which fulfilled the prescribed conditions would be entitled to a badge, but he asked those desiring information as to details to await the publication of the regulations on the subject.

Hospital Treatment for Ophthalmia Neonatorum.—In reply to Sir William Collins, Mr. Hayes Fisher said it had been the policy of the Local Government Board to press upon the authorities the great importance of arranging for hospital beds for infants suffering from ophthalmia neonatorum, to be admitted along with their mothers, and he was glad to say that several of the larger local authorities had made such arrangements. He had asked the Metropolitan Asylums Board to provide the accommodation necessary, and he understood that they were prepared to provide two hospitals—one to serve the North of London and the other the South. He added that 50 per cent. of approved expenditure was repaid to local authorities by the Local Government Board out of the Maternity and Child Welfare Grant, and this grant was also available for home nursing.

Exportation of Morphine.—Lord Robert Cecil has informed Sir William Collins that licences to export morphine or cocaine from this country to Japan are not granted except on certificates obtained from the Japanese authorities to the effect that the morphine and cocaine are for actual consumption in Japan or in Dairen and its vicinity, and are for medical purposes only. The Japanese Government has issued the necessary instructions for the prevention of smuggling of these drugs and for the exercise of due control in all places.

Indian Opium for Morphine Preparation.—Replying to Sir William Collins, Mr. Waddle (Secretary to the Board of Trade) said that for the last eighteen months Indian opium had been practically the only description of opium available for morphine manufacture in this country, Persian supplies being relatively insignificant. He gave the following statement showing the total net quantity of opium retained for use and manufacture in the United Kingdom in 1913 and 1916, and the countries from which it was originally consigned.

	1913.	1916.
India	4,824 lb.	437,237 lb.
Persia	35,020 "	82,562 "
Turkey	270,123 "	25,843 "
Other countries ...	45,393 "	15,237 "
	285,320 "	560,679 "

* Exports in excess of imports.

THE WAR.

LOW TEMPERATURES AND SHOCK IN WOUNDED MEN.

THE occurrence of very low body temperatures after gunshot wounds is at present the subject of many investigations in connexion with the study of the causes and treatment of shock; some facts recorded by S. Weil¹ on the subnormal temperatures frequently met with in wounded men are therefore worthy of note.

His observations relate chiefly to the period from December, 1915, to March, 1916, but they were continued during the summer months. In the region in which his experience was gained, owing to heavy artillery fire and bad roads, the wounded did not arrive at the main collecting station (*Hauptbandplatz*) until five to eight hours after injury. The arrangements were so defective that only the last part of the journey, about an hour in duration, was made in covered ambulances, in which the patients were well protected by clothing.

During the months mentioned he found that, whereas only slightly subnormal temperatures occurred in lightly wounded men in the first few hours, in many severely wounded cases the temperature on admission was well below 37° C. (98.6° F.), and in some instances ranged down to as low as 31° C. (87.8° F.). No details are given of the method of recording these temperatures, whether axillary, sublingual, or rectal. His observations led him to believe that the low temperatures depended partly on weather conditions, but not so much on actual cold as on rain and long-continued wetting through of the soldiers' clothes. In February, for instance, the subnormal temperatures were not so extreme as in the rainy periods of December and March. Even in summer prolonged wetting produced a similar result. This observation has been made by others.

Weil states that, as was to be expected, the situation and severity of the wound also have considerable influence on the temperature. He observed very subnormal temperatures occur in any case which had suffered great loss of blood, especially wounds of the chest and compound fractures of extremities. He saw numerous cases of chest wounds, associated with haemothorax, in which the temperature on admission was 33°, 34°, or 35° C. (91.4° to 95° F.). The two lowest temperatures recorded were 31° C. (87.8° F.) in a very severe grenade wound of the foot, and 31.6° C. (88.8° F.) in a man whose foot had been blown off, and who had lost a great deal of blood. Weil had the opportunity of studying the temperature in only two head cases; such injuries, apparently, went to some other hospital. The temperature on admission was in both 37.2° C. (98.9° F.).

Abdominal injuries, even when the patient was much collapsed and in bad condition, did not cause very subnormal temperatures, and no record below 36° C. (96.8° F.) was observed. He did not find the relation between subnormal temperatures and surgical shock absolute. In abdominal cases with severe shock the temperature might be little below normal, while very low temperature readings might be observed in men whose pulse and respiration were little changed.

As regards prognosis, Weil confirms the opinion that a very subnormal temperature is not of itself of bad import if operation be delayed until warmth is fully restored.

Cases of wounds of the spinal cord in the cervical region form a class apart. The temperature in such cases may fall so low that it is difficult to understand how life can exist. Other observers, especially Volkmann, have fully confirmed this statement. Volkmann described a case in which a man, wounded in the cervical spinal cord, lived for twelve hours with a temperature of 24.5° C. (76.1° F.) as recorded by the thermometer he used. In four other cases of wounds of the cervical spinal cord, temperatures of 26°, 27°, 26°, and 26° C., were recorded, but there is no proof that the thermometer was correct. In another instance of cervical injury the man lived for five days with a temperature which, it is believed, never exceeded 28.3° C. (82.9° F.). The association of very low temperatures with wounds of this kind is so characteristic that a diagnosis of spinal cord

injury may, it is thought, at times be made almost from this symptom alone. Weil records one such case, sent down as "hysterical paresis," in which the small entrance wound of a machine gun bullet had been missed by the surgeon in the forward area. In one case of injury to the spinal cord Weil was able by intensive warming to bring up the temperature, within twenty-four hours, from 26° C. to 39° C., a change of 13° Centigrade, or 23.4° Fahrenheit, or so he believes!

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Missing.

SURGEON PROBATIONER W. C. HOLDSWORTH, R.N.V.R.

Surgeon Probationer W. C. Holdsworth, R.N.V.R., was reported as missing, feared killed, in the casualty list published on October 17th. He was lost in H.M.S. *Begonia*, a mine-sweeping sloop.

ARMY.

Killed in Action.

LIEUT.-COLONEL J. J. NICHOLAS, A.A.M.C.

Lieut.-Colonel James Joachim Nicholas was born in the Riverina district of New South Wales in 1890. After graduating M.B., B.S. with high honours at Melbourne University in 1911 he served as house-surgeon and registrar at the Melbourne Hospital. He was an enthusiastic member of the Commonwealth Military Forces before the outbreak of war, and early in August, 1914, was gazetted as captain to No. 1 Australian Light Horse Field Ambulance. He proceeded overseas with this unit and saw service with them at Anzac. On January 4th, 1916, he was promoted major and transferred to the 3rd Australian Field Ambulance with whom he saw service in France. In December of the same year he was appointed D.A.D.M.S. to the 1st Australian Division. Some two months before his death he was promoted to the rank of lieutenant-colonel and was the youngest ambulance commander in the A.I.F. On September 20th, when making an inspection of a dressing station, he was struck by a shell and killed instantly. He possessed a strong personality and throughout his life showed keenness, initiative, and enthusiasm. His death is deeply regretted by all who knew him.

CAPTAIN G. S. ELLIOTT, A.A.M.C.

Captain G. S. Elliott, Australian Army Medical Corps, was reported as killed in action, in the casualty list published on October 18th.

CAPTAIN E. T. GAUNT, R.A.M.C.

Captain Eric Thomas Gaunt, R.A.M.C., was killed in action on October 9th, aged 33. He was the second son of Dr. J. P. Gaunt, late of Alveschurch, Worcestershire, and was educated at King Edward's School, Birmingham, and at the university of that city, where he graduated M.B. and Ch.B. in 1908. After filling the posts of resident obstetric assistant at Queen's Hospital, Birmingham, and of house-physician, assistant house-surgeon, and house-surgeon of the General Hospital, Birmingham, he entered the army as lieutenant on January 28th, 1910, and was promoted to captain on July 28th, 1913. When the war began he was stationed at Malta, and went to the front in 1915.

CAPTAIN O. HOPKINS, A.A.M.C.

Captain Odo Hopkins, Australian Army Medical Corps, was recently killed in action by a shell. He was the son of Dr. George Herbert Hopkins of Brisbane, Queensland.

CAPTAIN R. H. SPITAL, R.A.M.C.

Captain Robert Haig Spital, R.A.M.C., was reported as killed in action, in the casualty list published on October 20th. He was educated at Aberdeen University, where he graduated M.B. and Ch.B. in 1905, and acted as junior demonstrator of anatomy. After trying practice at Whaley Bridge, and at Gorton, Manchester, he settled at South Bank, Yorkshire. He took a temporary commission as lieutenant in the R.A.M.C. on October 10th, 1914, and was promoted to captain on completion of a year's service. He received the Serbian Order of St. Sava. 5th Class, in May, 1916.

¹ *Muench. med. Woch.*, No. 37, September 11th, 1917.

CAPTAIN A. G. WHITEHORNE-COLE, R.A.M.C.

Captain Arthur George Whitehorne-Cole, R.A.M.C., was reported killed in action, in the casualty list published on October 17th. He was educated at St. Mary's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1906, after which he acted as clinical assistant at St. Mark's Hospital for cancer and other diseases of the rectum and at the London Cancer Hospital successively. Early in the war he went to France as senior surgeon of an allied forces base hospital, and subsequently took a temporary commission in the R.A.M.C.

LIEUTENANT R. G. HILL, M.C., R.A.M.C.

Lieutenant Reginald Gordon Hill, M.C., R.A.M.C., attached Coldstream Guards, was killed in action on October 11th. He was the son of Mr. G. W. Hill of Highgate, and was educated at St. Bartholomew's Hospital, where he gained the junior entrance scholarship in 1906, the junior scholarship in 1907, and the Treasurer's prize for anatomy in 1907, and was president of the Abernethy Society. He took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1911, and graduated M.B. and B.S. Lond. in 1913. After acting as senior house-physician at Bart's and as house-surgeon of the Great Northern Central Hospital, and serving as first surgeon of the British Red Crescent Hospital in the Turco-Italian war of 1912, he recently took a temporary commission in the R.A.M.C. He was awarded the Military Cross so recently as September 26th, 1917.

LIEUTENANT D. S. E. MILLIGAN, R.A.M.C.

Lieutenant Donald Samuel Eccles Milligan, R.A.M.C., was killed in action on October 11th, aged 25. He was the second son of Dr. Milligan of Lytham, near Blackpool, and was educated at St. Thomas's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1915. After acting as casualty officer at St. Thomas's he took a temporary commission in the R.A.M.C., and went to France last February. He was attached to the Worcestershire Regiment, and had just dressed a wounded man on a stretcher in a trench when he stood up, and was instantaneously killed by a shell.

Died of Wounds.

LIEUT. COLONEL A. W. F. SAYRES, R.A.M.C.(T.F.).

Lieut.-Colonel Alexander Ward Fortescue Sayres, R.A.M.C.(T.F.), of Hartley, Plymouth, died on October 10th of wounds received on July 17th. He was born in 1867, the son of the Rev. Edward Sayres, rector of Cold Ashton, near Bath, and was educated at Sherborne and at St. Thomas's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1890, the degree of M.D.Brux. in 1896, and the D.P.H. of the London colleges in 1902. After acting as clinical assistant in the ear department at St. Thomas's, as resident clinical assistant at Bethlem Royal Hospital, and as assistant house-surgeon of the South Devon and East Cornwall Hospital at Plymouth, he practised successively at Wincanton, at Woodford, Essex, and at Exeter, finally becoming tuberculosis officer for Stonehouse district under the Devon County Council. For many years he had held a commission in the 1st Wessex (Exeter) Field Ambulance, R.A.M.C.(T.F.), in which he attained the rank of major on March 22nd, 1912.

CAPTAIN G. A. MACFARLAND, R.A.M.C.

Captain George Adams Macfarland, R.A.M.C., died in hospital in London, on October 17th, of septic pneumonia, following wounds received on August 20th. He was the only son of the late Rev. George Macfarland of Belfast, and was educated at Belfast, Dublin, and Edinburgh, taking the Scottish triple qualification in 1903. In the early part of the war he was resident surgeon of the County of London War Hospital, Epsom.

CAPTAIN R. SHERMAN, R.A.M.C.

Captain Reginald Sherman, R.A.M.C., died of wounds on October 10th, aged 30, while serving with a field ambulance. He was the eldest son of the late Arthur Sherman of Greenwich, and was educated at Merchant Taylor's, St. Bartholomew's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912; and at Caius College, Cambridge, where he graduated M.B. and B.C. in 1914. After acting as extern midwifery assistant, as house-physician, and as resident anaesthetist at Bart's, he took a temporary commission as lieutenant in the R.A.M.C. on December 7th, 1914, and was promoted to captain after a year's service.

Died on Service.

MAJOR H. E. DALBY, R.A.M.C.

Major Herbert Ernest Dalby, R.A.M.C., died at Basra in Mesopotamia on October 15th, aged 49, while serving in command of the hospital ship *Assaye*. He was the son of the late Dr. Dalby of Torquay, and was educated at Charing Cross Hospital, taking the diplomas of L.S.A. in 1899, and the L.M.S.S.A. in 1907. He was in practice at St. Mary Church, Torquay, where he was honorary physician to the Children's Hospital. He had for several years past held a commission in the Special Reserve of the R.A.M.C., in which he attained the rank of major on March 28th, 1912.

CAPTAIN R. STERLING, R.A.M.C.

Captain Robert Sterling, R.A.M.C., died in a nursing home on October 16th, aged 58. He was educated at Durham University, where he graduated B.A. in 1887, M.B. and B.S. in 1892, and M.A. in 1902; he had served for twenty-four years as a missionary, under the Church Missionary Society, at Gaza, in Palestine, and was an honorary canon of the Collegiate Church of St. George in Jerusalem. When his work in Palestine was brought to an end by the war, he took a temporary commission as lieutenant in the R.A.M.C., and became captain after a year's service.

Wounded.

Major W. E. Crowther, Australian A.M.C.

Captain T. B. Brandon, R.A.M.C. (temporary).

Captain M. R. Finlayson, Australian A.M.C.

Captain H. L. Flint, R.A.M.C. (temporary).

Captain W. E. Graham, R.A.M.C.(T.F.).

Captain E. H. Griffin, R.A.M.C. (temporary).

Captain F. P. Grove, R.A.M.C. (temporary).

Captain W. A. R. Haddon, R.A.M.C. (temporary).

Captain W. E. Hallinan, R.A.M.C. (temporary).

Captain F. E. Johnson, R.A.M.C. (temporary).

Captain J. H. Morris-Jones, R.A.M.C. (temporary).

Captain A. Nelson, New Zealand Medical Corps.

Captain J. Tate, R.A.M.C. (temporary).

Captain R. F. Walker, R.A.M.C. (temporary).

Staff Nurse C. A. Davidson, T.F.N.S.

Staff Nurse F. E. McKellar, T.F.N.S.

Prisoner of War.

Lieut.-Colonel G. S. Williamson, R.A.M.C.(T.F.).

DEATHS AMONG SONS OF MEDICAL MEN.

Adams, Robert, Captain Royal Field Artillery, only son of Dr. Adams of Wellington, New Zealand, killed October 6th, aged 29. He was educated at Wellington College, and at Trinity Hall, Cambridge, where he graduated B.A. He was reading for the final Bar examination when he joined the army. He had twice been mentioned in dispatches.

Blake, John Morgan, Second Lieutenant Devonshire Regiment, son of the late Dr. Morgan Dix Blake, killed October 4th, aged 19. He was educated at Blundell's School, and gained a history exhibition at Balliol College, Oxford, 1916, and also a prize cadetship at Sandhurst.

De Lacey, Second Lieutenant West Yorkshire Regiment, attached Royal Flying Corps, only son of Dr. De Lacey, of Newcastle-on-Tyne, killed September 23rd, aged 21.

Hargreaves, James Peter, Second Lieutenant Royal Field Artillery, elder son of Dr. J. A. Hargreaves of Wetherby, Yorkshire, killed on October 9th, aged 19. He was educated at the Leys School, Cambridge, and after matriculating at Emmanuel College, Cambridge, in December, 1916, he went to Exeter as a cadet and obtained his commission in April, 1917. After a short period in Ireland he went to France last July. In the early morning of October 9th he was doing duty as forward observation officer for his battery, and while signalling with a hand lamp was shot by a German sniper and died immediately. His uncle, Captain Herbert Hargreaves, who holds a temporary commission in the R.A.M.C., is serving in France.

Heaton, Ivon, Captain Royal West Kent Regiment, son of Captain C. J. Heaton, R.A.M.C., of Westgate-on-Sea, Kent, died of wounds, October 15th, aged 21. He got his first commission on November 5th, 1914.

Lawrenson, Raymond Fitzmaurice, Captain Cheshire Regiment, only son of Dr. Harman Fitzmaurice Lawrenson, late of Muswell Hill, N. He was severely wounded on August 16th and died on September 5th, aged 27 years. He was educated at Tollington School, Muswell Hill, where he distinguished himself as an organizer of sports. Afterwards he was a popular member of the Saracens Rugby Football Club. After passing the matriculation and intermediate science examinations of London University he studied naval construction, and subsequently joined the staff of Messrs. J. Pollock and Co., shipping engineers. At the outbreak of war he joined the Royal

Engineers, but soon received his commission in the Cheshires. He served for nearly two years in France, part of the time as temporary staff captain.

Locke, William Grace, aged 26, Corporal Rifle Brigade, attached to Trench Mortar Battery, killed October 4th, son of Dr. George Locke, J.P., of Hastings, President of Sussex Branch of the British Medical Association. He was born March 31st, 1891, and was a member of London University and Middle Temple. He joined the army on October 6th, 1914, and gained the Military Medal last summer.

Longhurst, Harold George Fairfax, Lieut.-Colonel Royal Berkshire Regiment, youngest son of Surgeon-Major A. E. T. Longhurst, R.A.M.C. (retired), late King's Royal Rifle Corps, of Chandlersford, Hampshire, killed October 12th, aged 29. He became captain on November 6th, 1914, and major in May, 1917.

Moore, Raymond Cecil Devereux, Second Lieutenant Honourable Artillery Company, killed in action on October 9th, aged 20. He was the elder son of Captain R. Devereux Moore, R.A.M.C.T., of Churchdown, Gloucester, who is also in France. He was educated at Glynarth, Cheltenham, and Cheltenham College. After gaining a scholarship at St. John's College, Oxford, he joined the Honourable Artillery Company as a private. He was recommended for a commission, and was gazetted to his old regiment. He went to the front in July last.

Thomson, Adam Tinning, Lance-Corporal, Cameron Highlanders, the youngest son of Dr. A. Tinning Thomson, of Clachan, Kintyre, and Rowanlea, Greenfaulds, Cumbernauld, reported missing on August 22nd, and now believed to have been killed between August 20th and 24th. He began his career as a lawyer, but relinquished that to enter the medical profession. When the war broke out, he joined the Camerons, and was amongst the first draft of Lord Kitchener's men sent to France, where he saw much service. He was wounded at Loos, and after recovery returned to the front and went through all the Somme battle, but towards its close contracted trench fever and nephritis, and was sent home. He recovered, and returned to the front at the beginning of this year, and was engaged in many of the recent pushes. Although offered he did not accept a commission.

MEDICAL STUDENTS.

Bickley, George Howard, Captain Machine Gun Corps, late Devonshire Regiment, killed October 4th, aged 25. He was the youngest son of Mr. Bickley, of Lyme Regis, and was educated at St. Edward's School, Oxford, and at Pembroke College, Cambridge, where he was studying medicine. He joined the Devon as second lieutenant on October 8th, 1914; went to France in October, 1915; was invalided in the spring of 1916; joined the Machine Gun Corps and went to the front again in February, 1917, becoming captain in September, 1917. He was a noted Rugby football player, having played for Cambridge, the Harlequins, Exeter, and Devon County.

Howe, Frederick William Duncan, son of Dr. J. Duncan Howe (Preston), died on September 8th from wounds received on the previous day. He had intended to enter the medical profession, and passed the College of Preceptors examination in December, 1915, with a junior honours certificate. He then joined as a private in the Loyal North Lancashire Regiment, and at the time of his death was about to apply for a commission. His brother, Lieutenant J. C. C. Howe, R.A.M.C., is in Salonica.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on October 18th contained a list of rewards for gallantry and distinguished service in the field. The list contains the following medical officers, who have received the decorations indicated; they belong to the R.A.M.C. unless otherwise shown:

Bar to the Military Cross.

Temporary Captain Oswald John Day, M.C., M.B., R.A.M.C. (M.C. gazetted June 18th, 1917).

Temporary Captain Archibald Fullerton, M.C., M.B., R.A.M.C. (M.C. gazetted January 1st, 1917).

Temporary Captain Noel John Hay Gavin, M.C., R.A.M.C. (M.C. gazetted June 4th, 1917).

Temporary Captain Arthur John Rushton O'Brien, M.C., M.B., African Medical Service (M.C. gazetted February 13th, 1917).

Temporary Captain David James Sheiress Stephen, M.C., M.B., R.A.M.C. (M.C. gazetted July 24th, 1915).

Military Cross.

Captains John Alston (S.R.), Robert Ringrove Gelston Atkins (S.R.), Thomas Herbert Bell, C.A.M.C., William Somerset Birch (S.R.), Arthur Bloom, M.D., John Philip Selby Catcart, C.A.M.C., Franklin Fletcher Dunham, C.A.M.C., David Alexander Ross Haddon, M.B., John Livingston Hamilton,

Charles Llewellyn Lander, Harold Dunmore Lane, Peter MacCallum, M.B. (S.R.), Albert Edward Peel McConnell, Emmet Andrew McCusker, C.A.M.C., Arthur Allan Parker, C.A.M.C., William Barry Postlewaite M.B. (S.R.), James Wilfred George Hewat Riddell, Stanley Graham Ross, C.A.M.C., James Bethune Scott, M.B. (S.R.), William Henry Scott, C.A.M.C., James Walter Woodley, C.A.M.C.

Temporary Captains Philippe Bernard Belanger, Archibald Grainger Bisset, M.B., Oswald Vincent Burrows, M.B., Charles Kingsley Carroll, John Percival Charles, M.B., Andrew Tocher Cunningham, M.B., Lionel Montrose Dawson, M.D., Harold John de Brent, Carl Keating Graeme Dick, James Dickson, Henry Hawes Elliot, M.B., Henry Vincent Forster, M.B., Cosmo William Fowler, M.B., James Harcourt Cecil Gatchell, David Cochrane Hanson, M.B., Arthur Randell Jackson, M.B., Donald John Macdougall, M.B., Douglas Charles Murray Page, William Russell, M.B., Edward Sequier Sowerby, M.B., William Turner, John Alexander Vlasto.

Lieutenants Louis du Vergé, Samuel Vidot (S.R.)

Temporary Lieutenant John Alan Campbell Greene.

The Military Medal has also been conferred upon twenty-two non-commissioned officers and seventy privates in the R.A.M.C., and two privates in the Australian A.M.C.

[Obituary notices of temporary Captains J. P. Charles and J. H. C. Gatchell, who were killed before their awards were gazetted, appeared in our issue of October 20th.]

NOTES.

DISCHARGED NEURASTHENIC SOLDIERS.

THE Local Government Board has issued the following memorandum to boards of guardians at the request of the Minister of Pensions. The President of the Board adds that he feels sure that the guardians and their officers will be anxious to co-operate with the Minister of Pensions in the manner suggested.

Memorandum.

The attention of the Minister of Pensions has been called to certain cases of discharged soldiers suffering from neurasthenia or epilepsy and that symptom of these conditions which is described as "automatic wandering," and is often accompanied by loss of memory. In these cases soldiers have found their way to Poor Law institutions and have there been detained for observation in the mental ward, and in some instances eventually sent to a lunatic asylum.

In cases of this type it is suggested that where any such men are received in a Poor Law institution an inquiry might be addressed to the Special Medical Board for Neurasthenics, at 78, Lancaster Gate, W., to ascertain whether neurasthenia was the cause of discharge from the army, and that that board's reply may be awaited before arriving at a definite conclusion as to the class of case to which any particular man may belong, and especially before any steps are taken to send the cases to a lunatic asylum.

Ministry of Pensions, October, 1917.

DISCHARGED DISABLED FRENCH SOLDIERS.

A congress, to be attended by delegates of provincial associations, is to be held in Paris on November 11th-12th, when a proposal will be made to form a federation of all old soldiers' societies. The scope of the work the congress proposes to undertake is very wide. It will concern itself with all matters relating to the restitution of discharged men to civil life, including immediate assistance for them, the provision and choice of apparatus for them, and their re-education and employment. It will also consider questions concerning pensions, and, in fact, any matter affecting men discharged from the army. Any resolutions adopted by the congress will be referred to the proposed federation for investigation and action. Men discharged from the French army as permanently unfit for any service have already formed a *Fédération des Réformés No. 1 de France*, which recently held a congress at Toulouse. It first resolved that the federation should be administered entirely by men rendered permanently unfit for service by wounds, and then decided that only those who had actually been under fire ought to have the right to wear the chevron of the wounded and the military medal. Afterwards it heard certain explanations from a representative of the Ministry of War.

SURGEON-GENERAL GORGAS has established a board to collect material for a medical and surgical history of the American forces in the war. The board consists of Colonel C. C. McCulloch, head of the Army Medical Library at Washington; Major F. H. Garrison, assistant librarian, who will have direct charge of work on the history, and Captain J. S. Fulton, secretary of the Maryland State Board of Health, who will have charge of the statistical work.

England and Wales.

CURATIVE WORKSHOPS AT CARDIFF.

A SERIES of curative workshops erected by Cardiff ship-owners and coal exporters in connexion with the orthopaedic section of the Welsh Metropolitan War Hospital, at Whitchurch, was opened on October 20th by King Manuel. The new buildings are about 260 ft. long and contain departments for workers in wood, metal and leather, tailoring and cloth working, upholstering and printing. There is also a spacious gymnasium, office, store, and the necessary sanitary accommodation. Captain Alderman Morgan Thomas, who presided, welcomed King Manuel on behalf of the committee and spoke of the keen interest he was showing in the orthopaedic treatment of men maimed at the front. King Manuel, in declaring the buildings open, said that the curative workshops had two distinct aims, one military and the other civil. The country had to think not only of giving back the soldiers to the army, but also of giving back to the nation men who, although they might be crippled or limbless, would still be able to take an active part in the battle of life and become good and useful members of the community. When the war was over, the task of training these men in different occupations would still be huge, and the reconstruction must begin now. In this Cardiff had made a good start, and he appealed for continued support. A vote of thanks to King Manuel was proposed by the Marquis of Bute, and seconded by Mr. J. Herbert Cory, M.P., who said that the least that could be done for the men who were fighting our battles was to provide them with artificial limbs and other devices to enable them to earn their own livelihood in the future. Colonel Lynn Thomas, in proposing a vote of thanks to the donors, said that the sum of £5,500 needed for the erection and equipment of the buildings had been so quickly raised that it had been unnecessary to call together a committee formed at Cardiff Docks under the guidance of Mr. John Cory. The motion was seconded by Colonel Goodall, and, like the previous motion, carried by acclamation.

MATERNITY AND INFANT WELFARE.

On October 18th Mr. Hayes Fisher, president of the Local Government Board, received a deputation from the Urban District Councils Association and the Rural District Councils Association which waited upon him to urge that wider powers should be given to local authorities in England and Wales in regard to maternity and infant welfare, thus bringing them in line with local authorities in Scotland and Ireland. The deputation asked for the establishment of day nurseries for children up to 5 years of age, the provision of maternity and rest homes for mothers, and financial aid for local authorities to provide trained home workers. Mr. Hayes Fisher, in reply, expressed deep sympathy with the objects of the deputation and undertook to ask the War Cabinet to allow him to introduce without delay the bill prepared in 1915 by one of his predecessors at the Local Government Board, Mr. Walter Long. If he received permission, all the powers which they asked would be obtained. He recommended the members of the deputation to devote their energies to getting the bill through, and then to see how far the powers granted were exercised. In this way they might establish a strong case to put before the Treasury for increased grants to necessitous districts.

BIRMINGHAM AND DISTRICT GENERAL MEDICAL PRACTITIONERS' UNION.

The annual meeting of this union was held at the Medical Institute, Birmingham, on October 23rd, when Dr. H. G. Dain gave an interesting address. The report of council for 1916-17 states that the union through its ward meetings has rendered considerable service to the Birmingham Panel Committee and the Birmingham Local Medical War Committee in their difficult task of making satisfactory arrangements for the working of practices of general practitioners who have joined the R.A.M.C. The work of the union in this and in many other matters has been of value to all doctors in Birmingham and district.

Ireland.

LIFE SAVING IN WAR TIME.

MR. ARTHUR DEANE, curator of the Belfast Art Gallery and Museum, has added to an interesting war-time economy exhibition, which has been open during the summer, a room containing exhibits illustrating various phases of welfare schemes. Sir John Byers has written an introduction to the guide, in which he makes some cogent remarks on the waste of life of infants and mothers. It has, he said, been calculated that every hour, on an average, about nine men belonging to the British forces are dying in the war. Twelve babies under one year are in the same time perishing in the United Kingdom, while losses during the antenatal period are responsible for a similar reduction in population. Of the children who enter school, one-sixth show, on medical examination, defects of body or brain. Moreover, one mother, it is calculated, dies to every 259 births in England, one to every 191 in Ireland, and one to every 175 in Scotland. The exhibits illustrate such subjects as the constitution of milk and artificial foods for infants, good and bad feeding bottles, the india-rubber sucking teats which Sir William Jenner used to call "baby killers," house flies and parasites, and many other subjects of interest and importance to mothers. During the time the exhibition is open lectures will be given by various authorities; the first by Sir John Byers, on the problem of maternal and child welfare, and the second, on the mouth, nose, throat, and ears, of the infant and young child, by Professor Symington, who has contributed an interesting set of specimens and diagrams to the exhibition. It comprises also exhibits of clothing, including a set of infant's clothing, lent by the Committee of the Babies' Club, of which Lady Byers is chairman.

"OUR DAY" IN DUBLIN.

"Our Day" in Dublin last week was a marked success. In addition to the 1,000 collectors in the streets, a house-to-house collection was made in the city. The great event of the day was the passing of the pageant through the principal streets of the city. It was not only an education in the progress that has been made during the past three-quarters of a century in the treatment of wounds and disease due to war, but a direct stimulus to take at least a financial share in the care of those who have offered far more than money in the defence of civilization.

An effort is being made by the three southern provinces in rivalry with Ulster to collect £50,000 for the Red Cross.

IMPRISONMENT FOR MILK ADULTERATION.

Last week the Recorder of Dublin heard appeals brought by milk vendors convicted in the police courts for milk adulteration. A milk vendor was sentenced to two months' imprisonment with hard labour for having sold milk adulterated with 14 per cent., 18 per cent., and 49 per cent. of water. The Recorder confirmed the decision but reduced the period of imprisonment to one month with hard labour, as he had some doubt whether in the case of the 49 per cent. adulteration the milk was intended for sale. He approved of imposing terms of imprisonment for this class of offence. It was the only way of dealing with it, for it was nothing less than murder to sell adulterated milk for consumption by children. The appellant had been convicted five times, and fined in sums varying from £1 to £10.

THE Joint Disablement Committee for the South-Eastern District of Scotland has been authorized to erect an orthopaedic centre in Edinburgh, near the School Board technical workshops at Tynecastle. The building will be of a temporary character, and is designed for the benefit of disabled soldiers and sailors who, having been discharged from the army, come under the care of the Pensions Ministry while still needing further treatment and training. The building, it is estimated, will cost between £2,500 and £3,000.

Correspondence.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

SIR,—At the end of the excellent account of the meeting held on October 10th, which was published in your issue of October 13th, p. 494, it was stated that the Executive Committee at present is identical with that of the Committee of the Royal Medical Benevolent Fund.

The Managing Committee of the Royal Medical Benevolent Fund, however, felt that the special work of the War Emergency Fund required a committee which should be more fully representative and more competent to deal with the professional questions which would arise. It therefore delegated these duties to a special Executive Committee consisting of the President, Treasurer, Honorary Secretary, two other members of the Royal Medical Benevolent Fund Committee, Dr. G. Haslip and Dr. Leonard Guthrie, to whom have been added Lieut.-Colonel D'Arcy Power, Colonel James Galloway, and Lieut.-Colonel Sir Alfred Pearce Gould, with power to add to their number.—I am, etc.,

G. NEWTON PITT,
Honorary Secretary.

11, Chandos Street, Cavendish Square, W.1.,
October 17th.

THE ETIOLOGY OF TRENCH FEVER.

SIR,—In the BRITISH MEDICAL JOURNAL of October 13th there appeared a paper on the "Etiology of trench fever: a preliminary communication," by Pappenheimer, Vermilye, and Mueller. There was described an organism found in blood films from cases of trench fever, and believed to have been obtained in sections and cultures of excised periosteal tissue and from the circulating blood. Although at the time when the paper was sent in for publication the evidence in favour of the bodies described being living organisms, and possibly related to the production of trench fever, seemed convincing, more extended studies have proved to us that we were mistaken, and that the bodies are in all probability not living organisms.

The organisms described as discoid bodies with a peripheral granule lying free in the plasma or upon the red blood cells have not as yet been found in control cases, but a study of (n) slide in which they were extremely numerous and apparently typical throws doubt upon their significance. In this slide the bodies persisted after repeated decolorization and restaining; but, since they were found at a distance from the blood smear, it seemed obvious that they were not in the blood itself; and when normal blood was smeared over this portion of the slide the bodies appeared to be present upon and about the normal blood cells. It is clear that this observation is sufficient to discredit the significance of the bodies and their interpretation as possible protozoan forms.

In our paper it was stated that when tissue from the excised periosteum and fascia, taken from the tibial region of cases of trench fever, was implanted upon agar slants, there developed a progressive clouding of the media, with the appearance of numerous small bodies somewhat more variable in size than those seen in the blood films, and, for the most part, without a distinct peripheral granule. Further experiments have shown us that there may develop, under conditions which we do not understand fully, a similar clouding with tissue from cases in whom there is no reason to suspect a previous infection with trench fever. Examination of these tubes from control cases shows bodies indistinguishable from those observed in our so-called positive culture. We have come to the conclusion, therefore, that the clouding is due to a precipitation of the agar, and not to the growth of living organisms. To decide the matter finally, suspensions of agar containing the bodies have been injected into four individuals who volunteered for the experiment, and in no case did there develop any evidence of illness. It has been found also that normal blood slanted on agar and allowed to incubate for a sufficient period quite regularly produces a clouding in the depths of the agar which may show, on examination, bodies similar to those described. Whether or not the clouding appears earlier in blood from trench

fever cases we cannot as yet state definitely, but it is evident that the clouding is due to a precipitation in the agar, and not to a growth of living organisms.

Finally, as regards the very similar bodies seen in sections of excised periosteum, we are still in doubt; their significance, however, becomes doubtful in view of the fact that in some sections of control, supposedly normal tissue, we have found granules of similar form and staining reaction rather widely distributed about the blood vessels. These are possibly mast cell granules which have become freed from the cells and scattered through the tissue. However, it will be necessary to study further material before reaching a final decision on this point.

In conclusion, we wish to state that, as a result of our further experiences, we do not at present believe that the bodies described by us are micro-organisms, or related in a causative way to the production of trench fever.—I am, etc.,

ALWIN M. PAPPENHEIMER,
Captain, M.O.R.C., U.S. Army.

France, Oct. 17th.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—We should be glad to have an elucidation of the position in which the matter of attendance upon invalided soldiers and sailors was left by the Conference of Local Medical and Panel Committees last week.

By approval of the report of the Insurance Acts Committee the Conference approved the institution of the present system of payment per attendance from a special pool with a probable extra Treasury grant. This, in our opinion, would mean a very large extra payment for the treatment of these men, an opinion which one of us can support by experience of the working of a system of payment per attendance for ordinary insurance work.

By acceptance of Par. (c) of Motion No. 33 of the agenda, the Conference then proceeded to instruct the Insurance Acts Committee to press for a complete alteration of what they had already approved, and to merge the treatment of this special class with that of ordinary insured persons at an all round capitation fee of 10s.

Whilst this seems to us to give away entirely our case for special payment for a special class, and to use the special claim simply as an additional and unnecessary argument in favour of a well deserved increase of payment for ordinary insurance work (which might well have been pressed for in addition to the present arrangements), our chief object in writing to you is to obtain from our colleagues of the Conference, its Chairman, or the Chairman of the Insurance Acts Committee, a clear exposition of the present position in order that we may be able to report to our Panel Committees. Does the prior resolution stand and is it binding?—We are, etc.,

FRANK RADCLIFFE,
R. G. MCGOWAN.

Oldham, Oct. 20th.

SIR,—May I say, in reply to Dr. F. A. L. Burges, that the Insurance Acts Committee was instrumental in the suspension of the keeping of case records during the war, this same Committee has done much to annul this respite by favouring the new arrangements, which necessitates the use of Form I.S./7.

The Conference on October 18th agreed on the question of increased remuneration; does Dr. Burges think this an "impossible demand"? I feel, and many others agree with me, that the old capitation grant, for all, would be infinitely better than the new regulations.

In reading the result of the meeting on October 18th one must bear in mind that the representatives were those elected some time ago, before this question was before their constituents; thus the question was decided on what may be described as "an old register." The Panel Committees, as they now remain, do not represent—in fact, cannot represent—the views of panel medical men; the question has never been before the electorate of the panel. When it does come up, without a doubt the personnel of the Panel Committees will be changed.—I am, etc.,

Bristol, Oct. 20th.

JOHN WM. TAYLOR, M.D.

Obituary.

SIR PARDEY LUKIS, K.C.S.I., M.D., F.R.C.S.,
DIRECTOR-GENERAL INDIAN MEDICAL SERVICE.

We regret to learn that Sir Pardey Lukis, Director-General of the Indian Medical Service, died in India on October 22nd, at the age of 60. He had a serious illness a couple of years ago, and it was to a recurrence of this malady that his death was due.

Charles Pardey Lukis was a son of the late Mr. W. H. Lukis, and received his medical education at St. Bartholomew's Hospital. He took the diplomas of M.R.C.S. and L.S.A. in 1879, and entered the Indian Medical Service in 1880, being at the top of the list of successful candidates. He graduated M.B.Lond. in 1889, took the diploma of F.R.C.S. in 1890, and the degree of M.D.Lond. in 1904. He was with the field forces engaged in Waziristan in 1881, and in the Zhob Valley three years later. He then transferred to the civil branch, and held various appointments in the United Provinces. He became civil surgeon of Simla in 1899, and honorary surgeon to the Viceroy in 1905. His first connexion with Calcutta was as professor of materia medica, and in 1905 he was appointed professor of medicine, principal of the Calcutta Medical College, and first physician of the College Hospital. He was selected to be Director-General of the Indian Medical Service at the beginning of 1910, and by successive extensions had held this post for nearly eight years, a longer period, we believe, than any previous occupant of the post enjoyed. Lukis, from the beginning of his time in India, gave himself up to the clinical side of his duties with all the remarkable ability and energy with which he was endowed, and continued to keep himself abreast of the progress of medicine and surgery. When he was advanced to the highest administrative medical post in India he was able to show that he had not failed fully to appreciate the importance which laboratory and field research had attained. He used the influence his position gave him to promote the formation of the Indian Research Fund Association, which has already done a great deal for research in India. How much may partly be gathered from the paper read for him at a meeting of the Royal Society of Arts last March and from the speech of Sir Havlock Charles on the same occasion.¹ Lukis was the first editor of the *Indian Journal of Medical Research*, issued by the Research Fund. He was the editor of Ghosh's *Materia Medica* and Waring's *Bazaar Medicines of India* and the author of a manual of *Tropical Hygiene*, a third edition of which, revised with the assistance of Lieut.-Colonel Blackham, appeared a couple of years ago.

The outbreak of war threw a great deal of increased responsibility upon Sir Pardey Lukis. The civil personnel of the service he directed was greatly depleted by the calls of military expeditions sent to Europe, Mesopotamia, and East Africa, and it will be remembered that the Mesopotamia Commission bore testimony to the energy and vigour with which he laboured to remedy defects and shortcomings during the short period for which he was Director of Medical Services in India. The energy displayed and the speed with which new proposals were carried through were highly praised by the Commission. He was commissioner for the St. John Ambulance Brigade in India and chairman of the Executive Committee of the St. John Ambulance Association in India. In these positions he did everything to favour the fine efforts made by the princes and people of India for the relief of the sick and wounded.

Sir Pardey received the C.S.I. in 1910, and was promoted K.C.S.I. in 1911. He became honorary surgeon to His Majesty in 1913. He is survived by his wife, a daughter of the late Colonel John Stewart, R.A., and by one son and three daughters. His eldest son, who gave every promise of following his father's successful medical career, accepted a commission in the London Regiment immediately after the outbreak of war, and was killed in March, 1915.

JOSHUA POWELL, M.R.C.S., L.S.A.,
NEWCASTLE EMLYN, MID WALES.

The death on October 21st of Dr. Joshua Powell, of Newcastle Emllyn, will cause widespread regret in the part of

¹ BRITISH MEDICAL JOURNAL, March 31st, 1917, p. 427.

Wales in which he has so long practised. He was ill only for a short time, the cause of death being pleuropneumonia. He received his medical education at University College, London, and took the diploma of M.R.C.S. in 1874, and that of L.S.A. in the following year. After holding the appointment of house-surgeon to the Royal Free Hospital, London, he settled in practice first at Rhydlewis, the village in which he was born sixty-seven years ago; afterwards he removed to the market town of Newcastle Emllyn, from which centre he carried on a large practice in the surrounding districts of Cardiganshire and Carmarthenshire. He was medical officer of health for Newcastle Emllyn urban district and Llandysul rural district, and was also public vaccinator and certifying factory surgeon. He took an active part in the public work of the district, and was a justice of the peace for the counties of Carmarthenshire and Cardigan. He was a member of the British Medical Association, and had recently vacated the office of chairman of the South-West Wales Division.

Dr. Powell leaves a widow, a daughter, and a son, who is a member of the medical profession. The internment, which took place on October 25th at Twrgwyn, near Rhydlewis, was largely attended. Among those present was Colonel Lynn Thomas, C.B., C.M.G., who was a pupil of Dr. Powell's at Rhydlewis.

Dr. Joshua Powell was a fine specimen of the country practitioner, concealing under a somewhat rough exterior not only a kindness which endeared him to his patients and all the countryside, but also a sound practical knowledge of medicine and surgery, which he took care to keep fresh by constant reading of the newest books, preferring those which dealt with the principles of physiology and pathology. Goitre is very common in that part of Wales, and it was characteristic of Dr. Powell that one of the latest books he read was Major McCarrison's masterly volume on that bewildering subject.

Universities and Colleges.

UNIVERSITY OF OXFORD.

At a congregation held on October 18th the following medical degree was conferred:

M.B.—Samuel C. Varley.

UNIVERSITY OF CAMBRIDGE.

At a congregation held on October 18th, the Vice-Chancellor (Dr. A. E. Shipley) presiding, the following medical degrees were conferred:

M.D.—P. Stocks.

M.B., B.C.—K. B. Dickson, R. Francis-Jones.

UNIVERSITY OF ABERDEEN.

The General Council met on October 13th, when it was agreed to request the Secretary for Scotland to make an order continuing in office the four retiring assessors, one of whom is Colonel Scott Riddell, for another year, and empowering the court to deal with any casual vacancies. A report from the subcommittee of the Business Committee, suggesting certain alterations in the status of lecturers and assistants, and providing for their representation on the governing body, was remitted to the committee, as was also a report recommending the establishment of a Faculty of Commerce, after the principal had suggested that the people of Aberdeen, who profited so much from fisheries, should establish a fisheries lectureship in the University.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following office-bearers have been elected for the ensuing year:—President: R. McKenzie Johnston. Vice-President and Representative on the General Medical Council: James W. B. Hodsdon. Secretary and Treasurer: George Mackay. Convener of Museum Committee: Charles W. Cathcart. Librarian: Harold J. Stiles.

The following gentlemen having passed the requisite examinations have been admitted Fellows: H. H. Christie, J. B. Leather, R. Parsons, M. C. Pruitt, H. A. Rippiner, D. Welsh.

SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have been approved in the subjects indicated:

SURGERY.—*E. F. Deacon, *E. A. Leak, *† I. Liberman.

MEDICINE.—*J. L. D. Buxton, *E. F. Deacon, *A. Magill, J. S.

Mathews, *† G. L. Mitchell, *† J. H. Tighe.

FORENSIC MEDICINE.—J. L. D. Buxton, O. Halstead, J. S. Mathews,

J. H. Tighe.

MIDWIFERY.—G. H. Fitzgerald, O. Halstead, S. G. Mohamed, S.

Robinson, G. E. Spero, T. C. Stephen.

* Section I.

† Section II.

The diploma of the society was granted to Messrs. J. L. D.

Buxton, E. F. Deacon, I. Liberman, and J. S. Mathews.

The Services.

EXCHANGE.

OUR CORRESPONDENT R.A.M.C. serving with C.O.S. France desires exchange to hospital at home—Address, No. 3650, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Medical News.

SIX beds for the treatment of Bright's disease have been endowed in University College Hospital by Sir Lucas and Lady Ralli in memory of their son, Captain Leo L. Ralli, A.S.C.

FOUNDER'S DAY at the National Hospital for the Paralyzed and Epileptic, Queen Square, W.C., will be celebrated next Friday afternoon, when the civilian and military wards will be open for inspection from 3 to 6 p.m.

DEMONSTRATIONS of specimens of inflammation and gunshot injuries in the Museum of the Royal College of Surgeons of England will be given by Professor S. G. Shattock, F.R.S., on Mondays, November 5th, 12th, and 19th, at 5 p.m.

THE first meeting of the Röntgen Society for the session will be held on Tuesday, November 6th, at 8.15 p.m., at the Royal Society of Arts, when the president, Captain G. W. C. Kaye, D.Sc., will give an address on the part played by x rays in the war, and there will be an exhibition of apparatus.

IN reply to an inquiry by the Automobile Association, the Minister of Munitions has stated that so long as coal gas for motor vehicles is carried as at present, in bags at or slightly above atmospheric pressure and not compressed in steel cylinders, it is not considered that there is any need for restricting the use of coal gas for motor purposes. The Minister goes on to state that if motorists were to use coal gas on any considerable scale it might become necessary at some future time to impose certain restrictions.

THE arrangements of the Royal Institute of Public Health for discussions and lectures before Christmas include the Harben lectures on the "Treatment of infected wounds," by Dr. Carrel, to be given on November 26th, 27th, and 28th, at 4 p.m., at the Institute, 37, Russell Square, London, W.C. Other lectures will be delivered on Wednesdays at the same place and hour, the first to be given by Major Waldorf Astor, M.P., on October 31st, on "Health problems and a State Ministry of Health."

THE mission sent to France by the Rockefeller Foundation to assist in combating the threatened increase of tuberculosis has decided to work in three sections under the general direction of Dr. Farrand. The first section will establish in one of the arrondissements of Paris and in certain large provincial towns a complete antituberculosis organization consisting of dispensaries, clinics, and laboratories, with provision for domiciliary attendance. This section will be directed by Dr. Miller. A second section, under Dr. Charles White, will undertake the distribution of help in kind. A third section, under Professor Gunn, will be concerned with the education of the public: it has already commenced to organize travelling exhibitions, meetings, and cinematograph displays.

THE trial of Dr. George Harry Bishop, B. G. Grantway, and J. Trichter, for conspiracy to defeat the provisions of the Military Service Acts was concluded before Mr. Justice Shearman, at the Central Criminal Court, on October 20th, after a hearing which lasted several days. The allegation was that a drug had been supplied, in the form of pills, to Samuel Augustus Frank with intent to render him, or to induce the belief that he was, permanently unfit for service. Evidence given as to the analysis of the pills showed that they contained dried thyroid gland. The jury, after an hour's deliberation, found each of the prisoners guilty. The judge, in passing sentence, intimated that there was a point of law for the Court of Criminal Appeal. He sentenced Dr. Bishop and Grantway each to twelve months', and Trichter to three months' imprisonment.

AT the monthly meeting of the Staffordshire Insurance Committee it was reported that the Panel Committee had asked the Committee to support it in making representations to the Commissioners that steps should be taken to secure that panel practitioners should be supplied with petrol at pre-war rates. This had been considered by the Medical Benefit Subcommittee, which recommended the Committee to support the application. Exception was taken to the recommendation by several members of the Committee, and it was urged that the doctors who kept a horse conveyance might just as well ask for horse food at

pre-war cost. The recommendation was also opposed by a medical member of the Committee, who thought the correct way was for the doctors to organize for an increase in remuneration. In the end the matter was referred back to the subcommittee.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Atiology, Westrand, London*; telephone, 2631, Gerrard.
 2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
 3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.
- The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

E. P. D. desires to hear of a family with children, near London, which would receive a mild case of cretinism in a boy aged 7, with his nurse.

LETTERS, NOTES, ETC.

TETANUS BACILLI IN COURT PLASTER.

SIR JAMES BARR informs us that a good many years ago he ascertained that many specimens of gelatine contained the tetanus bacillus. As gelatine is used in the making of court plaster, the risk of using this old-fashioned remedy must be recognized.

TREATMENT OF VINCENT'S ANGINA.

J. R. W. writes to endorse Dr. Percy Newell's statement (October 13th, p. 502) that the iodine treatment of Vincent's angina is the best. I have, "J. R. W." writes, never yet seen it fail in any of the cases I had under my care in an infectious hospital in France. The cases were kept in a separate ward, and the treatment was discontinued when there were no traces of the spirilla; it seldom took more than a week to get the desired result.

THYROID GLAND DOSAGE.

MR. W. H. MARTINDALE, Ph.D. (10, New Cavendish Street, London, W.), writes, with reference to Dr. Carver's note in the JOURNAL of October 20th, p. 515, to express the opinion that the name "thyroid extract" is unfortunate, and has apparently led some to think that the prescriber intends a dose of equivalent amount of fresh thyroid gland substance. The fresh gland basis ought also, he considers, to be abolished as unsound therapeutically and commercially. He thinks it regrettable that the *British Pharmacopoeia* provides no standard for dried thyroid gland. Though it may be true that the iodine content does not adequately represent the potency of the gland, at the present time there is no other known constituent which could form the basis of assay, and he suggests that the medical man should prescribe dry thyroid gland standardized to 0.2 per cent. organic iodine content. He concludes his note as follows: "The organic iodine content in commercial samples of *thyroideum siccum* (B.P.) may vary from 0.029 to 0.5 per cent. The whole question of standardization of thyroid preparations is thoroughly sifted in the *Extra Pharmacopoeia*, vol. ii, p. 133 et seq., and a simple process of assay is provided. May I add that in your columns, June, 1913, p. 1278, you remarked: 'Standardization in accordance with the amount of dry combined iodine appears to be a wise course.'"

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0 5 0
Each additional line	0 0 8
A whole column	3 10 0
A page	10 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postae restant* letters addressed either in initials or numbers.

An Address

ON

INJURIES TO THE PERIPHERAL NERVES
AND THEIR TREATMENT.*

BY

SIR BERKELEY MOYNIHAN, C.B.,

TEMPORARY COLONEL, A.M.S.,

CONSULTING SURGEON, NORTHERN COMMAND.

[In the preparation of this paper I have received valuable help from my colleagues on the staff of the 2nd Northern General Hospital, Leeds, Captain Burrow, Captain Daw, Captain Richardson, and Dr. Cuthbert Morton.]

NATURE OF INJURIES.

The lesions of nerve trunks as the result of wounds may be of diverse forms.

I.

In the majority of cases the nerve trunk has not sustained a primary injury. It may be exposed in greater or less degree in a wound of the soft parts with or without fracture. If the wounds are gravely infected and suppuration occurs with, perhaps, necrosis of one or of many fragments of bone, the process of healing may be long delayed, and the cicatricial tissue which results will be of exceeding density. The nerve then may come to lie in the midst of a fibrous mass which, undergoing progressive contraction, presses more and more firmly upon the delicate and tender tissue of the nerve. The nerve trunk is strangled, bereft of its due supply of blood, and becomes in consequence functionless. It is impossible before operation to decide in the severer cases whether such a nerve has or has not been completely divided.

II.

The nerve fibres may not have been directly, or they may have been only very trivially implicated, but the projectile may have passed so near the nerve trunk as to have opened its sheath. The nerve then becomes adherent to the track of the missile, and a mass of fibrous tissue is found firmly welded on to its lateral aspect. Or the projectile, in this case a rifle or machine-gun bullet, may at that period of its flight when it has become steady have cleared through the trunk of a nerve separating the fibres and severing few or none. Haemorrhage within the sheath occurs and a fibrous mass develops in the centre of the nerve, causing it to assume a fusiform appearance. There is then a *central neuroma*.

III.

The nerve may have been partly severed, say in half its diameter, by a projectile, or a fragment of bone. The gap in the nerve is soon filled up by fibrous tissue, which extends widely upwards and downwards and away from the side of the nerve, so that a hard fibrous *lateral neuroma* is found.

IV.

The nerve may be completely severed. In such a case a gap of greater or less length is found between the divided ends. Bridging this interval there may be a connecting strand of fibrous tissue, or a blurred mass of scar material in which both cut ends are lost. In some cases the nerve may appear hard and swollen, and as though its fibres were continuous; but careful dissection will show that there is complete division.

When the nerve has been cut completely across the upper divided end is soon found to present a characteristic bulbous appearance. On section this is seen to consist partly of fibrous tissue and partly of nerve tissue. From the upper end of any divided nerve the axis cylinders grow downwards tirelessly, each one searching out diligently but blindly the lower end to which it seeks to unite. When the quest fails in one direction and an uncongenial tissue is met, the axis cylinder turns in another direction, searching there fruitlessly again, and so twists itself in ceaseless contortion until a tumour, a *terminal neuroma* is formed.

The fibrous mass, often of extreme density, which goes to the making of the bulbous end is probably the reply of tissues to the contact of exposed nerve fibres with them. The peripheral nerves are intruders among the other

tissues of a limb, reaching them by a process of invasion from without. The contact of these nerve fibres with any other tissue is prevented by their closure within a sheath whose function appears to be that of an insulator. The end organs of the sensory nerves may indeed be, as W. Trotter suggests, a special mechanism for isolating the nerve fibres, protecting them from actual contact with the tissues. Whenever the nervous system is injured, by accident or design, as in the operations of trephining and laminectomy, there is always a hasty and adequate attempt to isolate the parts again. There is an intolerance of the tissues for contact with nerve matter or conversely of these with other tissues.

Gosset says that the axis cylinder is very unintelligent. I am not sure that its search for the distal end is stupid because it is unsuccessful. The search is zealous enough, but the axis cylinder shrinks from ignoble conduct with a baser tissue, and turns aside to seek elsewhere.

The lower severed end becomes thickly covered with a fibrous cap which forms a barrier impenetrable by the axis cylinders seeking so earnestly to find their way along the distal nerve.

1. THE NERVES INJURED; RELATIVE FREQUENCY.

The relative frequency of affected nerves has in our experience been as follows:

	Per cent.
Musculo-spiral	25
Ulnar	24
Median	14
Sciatic	12
External popliteal	12
Internal popliteal	1
Upper portion of the brachial plexus	4
Lower portion of the brachial plexus (cords)	7
Anterior crural	1

This corresponds fairly accurately to the experience recorded by Gosset and by Tinel.

2. DIAGNOSIS.

The following points in the clinical histories are investigated:

- Date of injury.
- Nature of projectile.
- Position of patient at moment of injury.
- Immediate effects.
- After-history (including history of operations performed).

Physical examination consists in—

A. Inspection of the limb, to note—

1. Attitude, contractures (claw hand, etc.).
2. Position of wounds and scars.

B. Testing of the efferent impulses.

1. Motor weakness for paralysis, each muscle and each muscle group tested separately.
2. Trophic and vasomotor disturbances. Non-shedding of epidermis, "glossy skin," ulcers, changes in nails, etc.
3. Changes in deep tissues, for example, muscular atrophy, fibrillation, bone decalcification, etc.

C. Testing of the Afferent Impulses.

1. Pain, its character, distribution, relation to hot and cold applications or weather.
2. Loss of cutaneous sensibility, tested by standardized stimuli of special instruments so that results are strictly comparable.
 - Light touch.
 - Localization of spot touched.
 - Tactile discrimination (pressure, texture, etc.).
 - Stereognostic sense (size and shape of three dimensions); appreciation of compass points applied simultaneously.
 - Thermal stimuli (hot and cold test tubes).
 - Painful stimuli (pinprick controlled by standardized spring).
 - Roughness (Graham Brown aesthesiometer).
3. Deep sensibility.
 - Pressure pain.
 - Vibration sense in bones.
 - Joint and muscle sense, etc.

D. Electro-diagnosis.

The reactions to the interrupted current are tested by shocks from an induction coil, the electrode being placed upon the "motor point" of each muscle in turn. The current from a secondary coil is always used.

* Delivered before the Congress of Surgeons of North America.

A positive reaction to faradism is regarded as a contra-indication to operation, but failure to respond gives no definite information, for voluntary movement may return, after nerve injury, before the faradic response.

The muscles are next investigated by a constant current. "Polar changes" have been found to be of minor value; they may vary with the local circulatory changes following massage, etc. The character of the contraction is of much more importance. A brisk twitch indicates the probable presence of some conducting nerve fibres in the muscle tested, while a slow "vermicular" response is usually associated with a complete interruption of nerve fibres.

The nerve muscle is next examined by means of a condenser discharge. The method depends upon the fact that a condenser discharge through a constant resistance gives a current which varies in duration according to the capacity of the condenser used.

The more severe the damage to the nerve the greater will be the capacity of the condenser required to excite it. Or, in other words, the longer the duration of the current the more chance is there of obtaining a response in such a nerve muscle. The whole advantage of the condenser method is that a definite measurement of current or condenser used may be noted, and future progress may be accurately followed.

The condenser method is chiefly used in cases where operation is deferred because some function is found to be present in a given injured nerve. (The work done recently by E. D. Adrian and others shows that the condenser is disappointing in practice; but it nevertheless gives useful information in recording progress.)

Complete absence both of faradic and galvanic response is an indication for early operation. The cases which require careful and repeated examinations are those where there is pressure on the nerve trunk by a contracting scar. In some nerve trunks there is little damage to some of the fibres, with total loss in others. Operation must not be deferred too long in these cases, because the fibres with complete reaction of degeneration may never recover on account of a dense scar tissue formation at the site of injury. In other words, the presence of a degree of voluntary power in some individual muscles of a group supplied by a damaged nerve is no sure criterion that the paralysed muscles will recover without operation.

It is most important that nerve injuries should be re-examined at frequent intervals and carefully detailed records of motor power, sensory changes, and electrical reactions kept. In this way treatment may be modified according to progress.

In operations upon nerves where a diagnosis of total loss in some fibres only has been made it is our practice to test the exposed nerve both above and below the site of injury at the time of operation.

For this examination special sterilizable electrodes and long connecting cords which can be boiled are used. The nerve is gently lifted upon two small glass hooks and a very weak faradic current employed.

The most accurate anatomical arrangement of fibres may be noted by this means and the knowledge used to secure perfect adaption in nerve suture. The diagnosis is often completed during a period in which massage, baths, and electrical treatment are employed to improve the local circulation, and splint treatment adopted to relax affected muscle groups and to overcome contractures. The distinction between anatomical and physiological division is not made before operation.

Difficulties in Diagnosis.

The main difficulties encountered in arriving at an exact diagnosis are in cases where there are:

- Wasting and stiffness from disuse.
- Circulatory disturbances.
- Contractures.
- Destruction or adhesion of muscle and tendon.

Operation is decided upon in the following circumstances:

1. In cases of complete division.
2. In cases of incomplete division, where progress is arrested.
3. Where there is severe neuralgic pain, "causalgia."

Operation is deferred—

1. For one month after the closure of the wound where soft parts only are injured.
2. For two or three months after complete closure of the wound where bone has been involved.
3. Definitely so long as progressive signs of recovery in nerve functions continue.

The suture of the nerve may have to be delayed until unsatisfactory joint conditions are improved.

Contractures of the knee, for example, should be corrected before the sciatic nerve is sutured, otherwise the nerve would be in danger of rupture if the deformity were subsequently rectified.

In other cases the nerve may be sutured and the joint dealt with at the same period and subsequently.

It is of the first importance to start active measures to prevent or remove stiffness and deformity in the parts supplied by a wounded nerve. This can often be done for many weeks before it is possible to repair the nerve. It is not sufficiently realized that a nerve to be of use after suture must act upon live and supple tissue. Joints and muscles must be kept ready for the nerve impulse which some day will come to them again.

Operations.

When the diagnosis of a nerve lesion requiring operation has been made, the earliest prudent occasion must be chosen for operation. In both the French and British armies nowadays the suture of a divided nerve is performed in those most advanced operating centres where the first deliberate toilet of the wound is possible. It is realized, of course, that very often a complete union between the severed ends cannot result, but even if the operation prove eventually to be a complete failure the subsequent operative procedures are certainly easier, and it is a satisfactory thought that a chance has been given for healing to take place.

In the great majority of nerve lesions dealt with up to recent times the wound inflicted by the projectile has suppurated. We have learnt by bitter experience in this war what this means. It means that the bacterial flora in such a wound are numerous, and potentially at least of great malignancy. It means that even a simple operation upon a wound which still discharges pus may arouse a flaming infection and be a cause of tetanus or gas gangrene. Mere passive movement of a joint grown stiff by inactivity may bring about an attack of tetanus even though the adjacent wound has healed. In many cases an injury to bone may have been inflicted at the same moment as the division of the nerve; this is, of course, frequently the case when the musculo-spiral nerve is implicated. Many loose pieces of bone may remain as sequestra in the wound and may need removal or may escape spontaneously from time to time. In all such cases operation upon the nerve must be deferred until the wound has been soundly healed for some weeks; no rule is more binding upon the surgeon than that. During this period, which may be protracted, the most diligent attention must be given to the limb, especially to those parts, muscles and joints, distal to the injury. The paralysed muscles must be kept in a position of relaxation. This may be easy, as in those cases where the musculo-spiral nerve is divided; it is often difficult, as in cases of injury to the median nerve; it is sometimes impossible, as in dual or triple lesions of nerve trunks. But, difficult or easy, the best possible must be done, for the final functional result in respect of quality and of rapidity depends in no small degree upon the early care of the parts deprived of their nerve supply.

Special and unremitting attention is given to the joints, which must always be kept supple. It is remarkable how quickly the fingers, for example, become so stiff that forced movement is an agony. Every day, many times a day, all the paralysed parts must be freely moved to their full range, and the patient must be instructed to attend to this matter unceasingly. The most perfect nerve healing is robbed of its value if, through long disuse, the muscles whose innervation is restored have lost their power to act, and if the joints are so firmly ankylosed that even passive movement cannot bend them fully. The value of these preliminary and preparatory measures cannot be over-estimated.

When the operation actually takes place it is important

to observe certain essentials to success. There must be the most perfect and scrupulous asepsis and the most gentle handling. The finger should never be placed in the wound. All dissection should be carried out deftly and neatly; the most diligent care must be taken never to bruise the nerve by seizing it, however gently, in forceps. The nerve must never be twisted, or torn or stretched, or unduly separated from its bed. Other structures must be dissected from the nerve; the nerve must not be dissected from them. The nerve must not be stripped bare for too long a distance, otherwise it will be devascularized, and recuperative processes will be slow or absent. The wound as a whole, and the nerve in particular, must not be allowed to dry or to be chilled. The most dainty and precise movements are necessary throughout, and every bleeding point must be thoroughly secured. There are, of course, the observances that go to make up the ritual of every well-trained surgeon; their strict acceptance is more necessary here than in almost any other operation, if the most rapid and the most flawless recovery is to be made certain.

As a rule a tourniquet is undesirable, for two reasons: It is possible to harm the nerve, or other nerves in the limb, if the rubber band is applied too tightly, and for the long period sometimes necessary in this procedure; and when the operation is complete and the tourniquet removed, there will probably be an escape of blood into the wound—a thing in these cases most undesirable. In these wounds not infrequently there is a good deal of young fibrous tissue, from which free oozing may occur in the period of hyperaemia which follows removal of a tourniquet.

The incision is designed to fall on the skin at some distance from the original wound if possible; very often a flap will occur from the making of a curved incision. The planning of the incision gives scope for one's knowledge of anatomy; it is so arranged that no small nerves are wounded. Major Jamieson has shown that when the median nerve is injured in the forearm it may sometimes be more thoroughly and successfully dealt with from the outer instead of from the inner side of the flexor carpi radialis. So, too, when the musculo-spiral nerve has been injured high up on the outer side of the forearm, Dr. Cutlbert Morton suggests that instead of cutting through the outer head of the triceps it should be reflected complete from the humerus. Not only does this cause less damage to the muscle tissue, but it also exposes the nerve and its branches, as well as the profunda artery, to a very high level without undue risk.

The nerve trunk is sought above and below the point of severance, and is traced downwards and upwards to the gap. Swift, neat little cuts with a very sharp scalpel damage the tissue to the smallest possible degree. The surgeon must avoid contact of his fingers with the wound; it is clumsy and inartistic to prod about among muscles in the hope of feeling the nerve. It is his business to know before he begins these operations exactly where the nerve lies, and he should always be able to cut directly down on it. When the injured part of the nerve is exposed, it is usual to find a bridge of fibrous tissue between the ends, the proximal end being often very turgid and bulbous. If the gap between the refreshed ends of the nerve is likely to be wide, now is the time for stretching the nerve, so as to lessen the interval as much as possible. This is done with infinite gentleness and care by seizing the fibrous band between the ends and drawing steadily upwards and downwards, always remembering to make the pull in the line of the nerve trunk and to avoid twisting. The fibrous band is now split longitudinally, and then its ends are divided above in one direction, below in the other, so that to each cut end of nerve a fibrous tag is attached, by means of which the nerve ends can be drawn together. Progressive transverse cuts are now made into the nerve ends until on the cross section nothing but nerve fibres are seen. Every tiniest particle of fibrous tissue must be removed or the operation will fail. The axis cylinders coming from above must have free entry into the nerve below, otherwise in their downward development they will lose their way, and restoration of the nerve function will not take place. When the nerve ends are duly prepared they are brought into apposition with the greatest care. A series of very fine catgut sutures holding only the nerve sheath are inserted at intervals round the circumference of the nerve. A suture is never

passed through the substance of the nerve itself. In uniting the nerve ends it is of the first importance to avoid axial rotation. We know now that there is a differentiation of function within each nerve, and it is therefore strictly necessary to unite corresponding bundles of fibres. A nerve does not act as a whole, but consists of a multitude of strands each with its proper and restricted function. Unless nerve bundles which were originally continuous are brought accurately together by suture, the nerve is compelled to rearrange the functions of its several parts. This it can and no doubt frequently has to do. An examination of many cases shows, however, that a perfect and flawless recovery after a nerve suture is unusual, and it is at least a tenable belief that this inadequacy or delay in recovery is due to a want of recognition by the surgeon of all that is needed in the technical part of the operation. My colleagues on the staff of the 2nd Northern General Hospital in Leeds are obtaining results which in rapidity and completeness would have been thought impossible before the war.

There is rarely any difficulty in obtaining accuracy of apposition without tension. If, however, the nerve ends cannot readily be brought together, various procedures may be adopted to shorten the course of the nerve. The nerve may be dislocated from its bed and laid in a new and shorter line. The ulnar nerve, for example, may be brought to the front of the inner condyle. Or flexion of the limb may be enough to allow of easy approximation. In the case of the median nerve divided low in the forearm, flexion of the wrist will give an inch or more additional reach. In other cases the limb may be shortened by removing an inch or two of bone. It is desirable to avoid a subcutaneous course in all transferences to new positions. The nerve after suture should be brought to lie in a bed of healthy tissue. It must be placed between muscles, and away from all contact with new connective tissue, which will adhere to it, and hinder its union, or cripple its subsequent action.

It has been the fashion with many surgeons to surround the sutured nerve with some material supposed to have protective virtues. A piece of a vein—the saphenous, for example—is threaded over the upper cut end of the nerve before suture, and after these ends are approximated the vein is drawn downwards and made to surround the line of suture. In other cases a piece of fat dissected from near the wound, or from another part, is wrapped round the nerve, fat being supposed to be capable of insulating the nerve in its new position, or a layer of fascia may be used, or a piece of Cargile membrane. The value of all such methods is open to serious question; it is certain that they are sometimes harmful, it is doubtful if they ever help. They prevent access of blood to the nerve by new channels; they cause adhesions and compression of the nerve, and at times they are discharged from the wound almost unaltered. It is better to avoid such membranes, and to be content with ensuring that the nerve is laid along a path of uninjured tissues. Where end-to-end suture is impossible, a variety of other procedures may be attempted. A nerve graft, taken from a neighbouring cutaneous nerve, from the radial, the internal cutaneous of the thigh, or an intercostal nerve, may be used. Experience on the human subject has not yet enabled me to determine the value of this procedure. In experimental work it answers well, but I have rarely, if ever, seen a result which could be claimed as satisfactory. Colonel Mayo-Robson has had one of the very few successful cases.¹ Nerve anastomosis has been tried in a number of cases. The divided ends of a nerve are implanted into the side of a near-lying nerve, the ulnar into the median, for example. This has been done both with and without section of the nerve fibres of the intact nerve. All such procedures are worthless, and cannot be too strongly condemned. I have never seen any good come of them; indeed nothing but harm could conceivably result from section of a healthy nerve. And if it is allowed, as it must be, that a nerve consists of many separate strands, each with its own special and exclusive function, it is certain that permanent damage is inflicted by this method. There is no justification for this procedure nowadays, and it should be cast out among forgotten things. Lengthening of the nerve by turning down a strand from the upper divided end, or the bridging of the gap by strands of catgut, are methods with nothing whatever to recommend and everything to discredit them.

Happily the resources of surgery are not at an end in all cases where union of divided nerves is impossible. Tendon transplantation, especially in the case of the musculo-spiral nerve, and the posterior interosseous, gives results which in point of function are almost as good as those which come from nerve suture, and in point of time are much quicker. It is chiefly in the musculo-spiral nerve that large gaps are found, a piece of the nerve having been blown completely away. In such cases tendon transplantation gives excellent and speedy results. When the posterior interosseous nerve is wounded it is not worth while attempting to suture the nerve. The results in such cases are slow, and not always perfect.

In those cases where the nerve is partly divided, strands of intact fibres still remaining, the severed fibres are united in the same careful way, and the normal strand of the nerve bent upon itself, so as to allow easy approximation of the cut portions of the nerve. In perhaps the majority of operations upon nerves there is no division of fibres, but a length of the nerve is embedded in dense fibrous tissue. These cases give most excellent results. The fibrous tissue which so intimately surrounds the nerve is dissected away little by little. The nerve when first freed is seen to be white and shrunken; but within a few minutes it expands and takes on its normal colour. I had several cases of this kind in the Boer war, and the results at this long interval are perfect. It is in these cases that advantage may sometimes be taken of the method of fat transplantation, or of nerve dislocation.

AFTER-TREATMENT.

1. Postural.

In cases where flexion of a joint has been necessary to allow approximation of the cut ends of nerves, the position is maintained for a period of six weeks. By this time union of the severed ends is probably well advanced. Extension by slow and most cautious degrees is then begun. If the knee has been flexed to allow the sciatic nerve to be united the patient can walk with a boot and leg irons, keeping the position unaltered for, say, two months. Wherever possible a splint is applied which produces a "relaxation position." In the case of the median and ulnar this is difficult, and is best secured by moulding a "ball splint" to the hand of the patient. Every such splint must be made for the individual. In the case of the musculo-spiral it is very simple. The "cock-up" splint designed by Colonel Sir Robert Jones is excellent, if the lesion of the nerve is below the branch to the supinators. It maintains hyperextension of the wrist, and, reaching only to the heads of the metacarpal bone, it allows a forward bend of the metacarpo-phalangeal articulations. The thumb lies forward and a little inwards, so that the position of the whole hand is very much that assumed when a bottle is grasped. If the lesion is above the nerve to the supinator brevis, it is essential that this muscle also should be relaxed. For this purpose Dr. Cuthbert Morton has devised a splint which retains the forearm and hand in supination while the wrist is fully extended, the fingers being at the same time kept in the bottle-grasping position.

Similarly, in cases of injury to the external popliteal nerve, relaxation of the corresponding muscles may be secured by the boot which has been introduced by Dr. Cuthbert Morton in order to allow the patient to walk about with the foot in permanent dorsiflexion.

2. Massage and Electrical Treatment.

These measures are restarted about two weeks after operation with all due precautions and safeguards. If a splint has been applied to secure the "relaxation position," it must not be removed. Indeed, not for one moment at any time must paralysed muscles be stretched. An overstretching of a few minutes may call for diligent treatment of many weeks before the harm is undone. If a splint needs removal for purposes of cleanliness, the patient must be instructed beforehand to keep the limb in the exact position required. In the case of musculo-spiral palsies the hand drops into the correct position if the flexor surface of the forearm is *upward*.

RESULTS.

Our records are as yet necessarily incomplete. Recovery in the case of the musculo-spiral has begun within nine

weeks; in the case of the ulnar within three and a half months; in the case of the median in about four to five months. In one case of division of the inner cord of the brachial plexus recovery in all anaesthetic areas and a degree of recovery in all muscles occurred within five months. Recovery in the case of the sciatic nerve is slower. Something depends, it is sometimes said, upon the length of time elapsing between division of the nerve and its suture. My colleague, Captain Richardson, has, however, united the ends of an ulnar nerve cut across fifteen years before and signs of returning function were seen in about four months. The duration of the disability is, therefore, no bar to successful repair of the nerve.

The functions return usually in the following order:

1. Trophic and vasomotor function.
2. Deep sensibility.
3. Tactile discrimination and localization.
4. Motor power.
5. Cotton-wool sensation.

Perfect restoration of function has been most nearly approached in the case of the musculo-spiral nerve. In other nerves with more complex distribution perfect recovery will depend upon a recognition of the functional localization within the nerve trunk, in addition to the most scrupulous observance of all those technical details without which there will always be something less than perfection.

In the diagnosis and treatment of an organic lesion of a nerve it should never be forgotten that there may be superadded a functional disability. It is advisable at every stage to get rid of the functional in order properly to appreciate the organic. This is particularly important when the organic lesion is well on the way to recovery. Thus, in a recovering lesion of the inner cord of the brachial plexus it may be impossible for the fingers to be flexed until re-education has trained the laggard muscles into obeying orders from head quarters.

SUMMARY.

The following summary may be given of our experience up to the present time:

1. The earliest examination should be made of all wounds in which division of a nerve trunk is probable. If at the casualty clearing station such a lesion is found, end-to-end suture should be adopted forthwith. This is more likely to be possible in cases where primary suture of the wound, after excision, is found practicable.
2. If secondary sutures of the wounds, after the Carrel-Dakin method has been practised, is to be undertaken, the union of divided nerves should be secured at the same time.
3. If these methods have been attempted and have failed, they do not prejudice the later union of the nerve. On the contrary, they probably ensure that an easier and more satisfactory operation can then be practised.
4. Throughout the whole period before late nerve suture is attempted the strictest attention must be paid to the relaxation and nutrition of all paralysed muscles, to the maintenance of suppleness in all joints moved by these muscles, and to the preservation of the integrity of the skin.
5. Operations upon nerve trunks demand the most scrupulous observance of the ritual of asepsis. There must be the greatest gentleness of manipulation; the nerve must not be injured by instruments or by the surgeon's finger; it must not be separated from its sheath or disturbed overmuch from its bed; it must not be chilled or allowed to dry. All sutures must be of fine catgut, and introduced with most punctilious accuracy. Axial rotation of the nerve must be avoided. The cut ends of the nerve before approximation must show clearly the fibres of which the trunk consists.
6. Nerve-grafting is of little or no value; nerve anastomosis is to be sharply condemned; the turning down of flaps from the nerve to bridge a wide gap is useless.
7. Tendon transplantation is of great value in cases where nerve suture is impossible, or has given a result not entirely satisfactory.

REFERENCE.

- ¹ BRITISH MEDICAL JOURNAL, 1917, i, p. 117.

SURGICAL TREATMENT OF GUNSHOT WOUNDS OF THE CHEST.

THE SURGICAL TREATMENT OF SEVERE PENETRATING WOUNDS OF THE CHEST IN A CASUALTY CLEARING STATION.

By J. ANDERSON, CAPTAIN R.A.M.C.

It is generally accepted that the sooner a wound is purged of carrying agents of infection—namely, foreign body and clothing—and of the media suitable for the growth of bacteria—namely, blood clot and dead muscle—the better is the prognosis.

Reflection on the experience of two years of casualty clearing station work reveals the fact that in no group of cases has this axiom been so much neglected as in wounds of the chest. It brings home the very dangerous nature of many of these wounds, and makes one wonder why serious attempts have not been made long ere now to apply to them principles which have led to such marked improvement in the treatment of wounds of other parts. These serious cases have arrived in large numbers at casualty clearing stations, have improved up to a point, and then have succumbed to sepsis; just as in other wounds which have been inefficiently treated.

Wounds of the chest, as seen at an advanced casualty clearing station, may be classified into two main groups from the point of view of prognosis.

Group A.

1. Entrance and exit bullet wounds.
2. Entrance and exit shrapnel-ball wounds.
3. Wounds caused by small fragments of high explosive missiles.

As a general rule these cases do exceedingly well if treated expectantly and aspirated or operated on when occasion demands. They can usually be evacuated to the base in from three to ten days, and the ultimate results are good. Of course, in a certain proportion of such cases there is sufficient visceral injury to cause immediate or early death, but, as they seldom reach the casualty clearing station, they do not come within the scope of this paper.

Group B.

1. Wounds caused by large irregular fragments of high explosive shell which have lodged in the thorax. These are almost always associated with (a) clothing and infection carried in, and (b) open "sucking" wounds of the chest wall.
2. Tangential wounds of the thorax, enfiling the ribs and driving portions of bone, etc., into the pleura and lung.
3. Entrance and exit bullet wounds in which the exit wounds are "explosive" in character.

If treated expectantly only a very small percentage of Group B (1) reach the base, and many of those that are evacuated appear to die from the complications of their wounds.

In Group B (2) and (3) the prognosis is usually not so severe, but an unduly large percentage develop an infected haemothorax unless the chest wall wound is treated energetically. In this latter group the prognosis, when no operation is performed, is always worse in wounds of parts where there is a liberal muscle covering—for example, in the scapular region.

The cases in Group B usually have died hitherto at the casualty clearing station from sepsis and exhaustion, and it is this group of cases which demands more vigorous surgical intervention.

The mortality in all penetrating wounds of the chest at a casualty clearing station appears to vary from 7 to 25 per cent. or over. It is higher in stationary trench warfare, and in casualty clearing stations which are placed near the "line"; that is, there are more of the B group of cases. The question that faces us is: Cannot many of these cases which otherwise succumb be saved by immediate surgical intervention on the lines adopted for other wounds? Recent experience of this type of work has assured me that this is possible. The main factors which have militated against active interference on the part of

the surgeon are: (1) The danger of anaesthesia, (2) lack of experience in chest surgery, and (3) the fact that the surgery of the chest in civil practice has always been associated with very elaborate paraphernalia. One finds, however, that these objections are "phantom," or can be overcome.

As to (1), the majority of these cases can be efficiently anaesthetized by the regional method of local anaesthesia—namely, blocking the intercostal nerves in the intercostal spaces behind the angle of the rib with novocain solution 0.5 per cent. Where general anaesthesia is rendered necessary on account of multiple wounds, or because of restlessness of the patient, anaesthetists who have had experience of this type of case agree that the immediate danger is greatly overestimated, and that the closure of an aperture in the wall of the thorax more than compensates for any risk which is accepted. One must not forget the possible effect of a general anaesthetic on the "sound" lung already overstrained. (2) The operation does not demand manipulative skill beyond that possessed by a good general surgeon; and (3) it can be performed with the ordinary surgical kit of a casualty clearing station.

Principles of Operation.

A localizing x-ray examination is of extreme value. The extent of damage and route of attack can thus be much more accurately gauged and the operative procedure simplified. If, however, for any reason x rays are not available, I am satisfied that much is gained by the excision of the wound in the chest wall and closure thereof, with modified search for the foreign body. In several cases I have removed the foreign body successfully at a later date, when the patient's condition had improved. The wound in the chest wall should be completely excised, all loose and sharp fragments of rib being removed. The pleural cavity should then be wiped out, if the lung has collapsed and haemothorax exists. A search for the foreign body should now be made, the wound being enlarged if necessary to admit the hand. This may not be required, however, if the lung is adherent. It may be possible to palpate and control the affected part of the lung with two fingers, especially if the foreign body is lodged in the lower border. The fragment, with any carried-in clothing, is now removed, the lung being grasped by the hand or fingers. In some cases the affected part of the lung may be completely excised. The wound of the lung is treated by suture, plugging, smearing with an antiseptic paste, etc., according to indication, just as in wounds of other parts. Often the greater part of the damage has been done by portions of rib driven in, and these frequently cause several separate wounds of the lung.

Whether antiseptics should be used in the pleural cavity or not is still a moot point. I have used solutions of flavine and brilliant green without any untoward effects and probably with advantage.

The aperture in the chest wall is closed by catgut suture. Suture of overlying muscle may be used for this if the pleura is deficient, but the latter can usually be approximated. Suture of the muscle layer completes the closure of any minor deficiencies. The skin wound is closed by sutures at wide intervals, a dressing is applied and fixed by adhesive plaster. The great matter is to get the chest completely closed.

The marked improvement in a patient's condition during an abdominal operation on closure of the diaphragmatic wound was expounded by Captain Lockwood, and has been accepted by all. The same astonishing mechanical phenomenon appears after closure of open wounds of the chest.

If the operation is performed under local anaesthesia the patient can be got to expel a part or the whole of the air in his pleural cavity as the last suture is being tightened.

The whole aim of the operation is prophylactic against sepsis, and to bring the patient as nearly as possible to the *status quo ante*. If it fails, a secondary drainage operation may be required later. The procedure helps to eliminate secondary infection from the outside.

The lung expands gradually and apparently in inverse ratio to the amount of visceral damage. I have seen several cases in which a pneumonic condition appeared on the healthy side, and where the patient was apparently tided over the crisis by the activity of the wounded lung.

While operating on cases of infected haemothorax with open "sucking" wounds or severe rib injury, I have on several occasions found the lung adherent to the chest wall in the neighbourhood of the wound. The haemothorax is shut in by these adhesions. I have seen the same at two autopsies. Is this an attempt by nature to close an open chest cavity? It would explain the anomalies in clinical signs found in some cases and might account for the occasional difficulty in getting a sample of pleural fluid when an infected haemothorax is present. In two cases I have seen recent adhesions of the sound lung to the chest wall. I think this may be more common than is generally accepted.

Of course, one is dealing with a class of case in which the injury is very severe and the operative mortality must be high. When one considers that the large majority of cases will die if "left alone" the results indicate a very considerable advance on the more conservative methods of treatment.

Cases in Group B (2) and (3) do almost uniformly well if treated on these lines. Those earlier cases which died appeared to succumb to a secondary infection of the pleural cavity from the infected wound of the chest wall.

In the majority of the simpler cases of septic haemothorax which died in the casualty clearing station to which I am attached a streptococcus appeared to be the main infection. It is probable that systematic very early exploratory aspiration and culture will indicate means whereby this mortality may be reduced. It appears to me that this branch of surgery, although still in its infancy, has already saved many lives which would otherwise have been lost. Results will improve with improved technique and further investigation.

These are the factors which incite me to put in print my early findings. From my point of view, these remarks are premature, but, if I succeed in attracting attention to what has been a somewhat stagnant field of surgery, this article will have served its purpose.

In a working period of approximately two months the following results were obtained:

Total cases of Group B operated on and chest	
wall closed	58
Evacuated apparently doing well	44
Died	14
Required secondary operation (drainage, etc.)	12
Number of cases with multiple wounds	29

Attached are the short original unaltered notes of the last six consecutive cases included in the above statistics.

CASE I.

Pte. A., wounded 1 a.m. June 16th, 1917. Large shell wound through left arm. Fragment proceeds through latissimus dorsi into left chest—open sucking wound. Haemothorax; surgical emphysema. Patient getting progressively worse since admission. Symptoms: dyspnoea, with sense of suffocation; cyanosis. Pulse 140.

June 16th, 3 p.m. Under morphine, local novocain, chest wall wound excised with four inches of sixth rib. Large wound of lung felt, but owing to patient's very precarious condition no extensive search for foreign body was made. One ounce of 1 in 1,000 brilliant green was put in chest after swabbing out. Closure of pleura. The patient began to improve immediately. Chloroform administered for rough trimming of arm. Pulse after operation 120.

The patient gradually improved, but on June 22nd still had a temperature of 102° and pulse 96. Chest aspirated; bacteriological examination negative. Only ½ oz. fluid obtained. No trace of brilliant green. Right lung showed signs of basal congestion, which Colonel Herringham considered was probably pneumonia.

On June 26th temperature 102° and pulse 108. Dull patch at base of left lung behind. Under local novocain, portion of ninth rib resected over dull area and localized abscess evacuated with large foreign body, wedged in body of tenth dorsal vertebra. This cavity communicated with a bronchus, but was shut off from pleural cavity. Carrel-Dakin. Progress steady. Patient evacuated in excellent condition, with normal temperature and pulse, on July 7th, 1917.

Note.—Here the affected lung carried the patient through his pneumonic crisis. Simple closure immediately improved the patient's condition.

CASE II.

Prisoner of war, H. S., wounded June 15th, 1917. Entrance and exit shell wound, right chest. Operation June 18th, 1917, under local anaesthesia with omuopon. Large posterior sucking wound excised. Thorax wiped out. Lung found adherent to exit wound, partially blocking it. Streptococcal haemothorax. Symptoms of suffocation. Chest wall closed.

Improvement for twelve hours; death after twenty-four hours from streptococcal septicæmia. Extensive wound in lower lobe of right lung.

Note.—Streptococcal infections are always severe. Sucking wounds which are closed late have always a more serious prognosis.

CASE III.

Pte. B., high explosive wound, chest and left leg, June 16th, 1917. Entrance and exit wound, right scapular region with large open wound in neck; fracture of first rib behind angle. Extremely collapsed. Breathing very distressed. Under chloroform, partial excision of track. Bipp, paraffin pack, entirely plugging opening in neck. Severe bronchitis of "sound" lung.

June 22nd. Aspirated, 20 oz. Negative bacteriological report.

June 26th. Temperature and pulse normal.

July 3rd. Evacuated, well.

Note.—When the track cannot be efficiently excised and closed a paraffin pack (gauze wrung out of liquid paraffin) is extremely efficient.

CASE IV.

Pte. J., wounded June 21st, 1917. Under chloroform and oxygen, wound of left lower chest with tear of tip of lower lobe of lung and diaphragm. Foreign body removed from diaphragm, which was sutured with catgut. Upper wound small; excised. Fragments of rib removed from entrance and exit wound of lung; 40 c.cm. brilliant green injected (into pleural cavity), chest wall closed. Multiple wounds of left arm; partial excision and Carrel.

July 2nd. Temperature normal but breathing easily disturbed by moving.

July 4th. Evacuated, apparently well.

CASE V.

Pte. P., wounded 12 midnight, July 2nd, 1917. Operated on twelve hours later. Much shock; hypertonic intravenous saline. Resection of fractured ribs in front. Hernia of omentum into chest cavity. Excision of wounds. Hernia reduced. Diaphragm closed by six sutures; chest wall closed by suture. After wiping out haemothorax and 1 oz. brilliant green injected, bullet casing removed from spleen. Spleen and kidney drained, packed with gauze; only upper pole of kidney damaged.

July 12th. This patient has made practically an uninterrupted recovery.

CASE VI.

Second Lieutenant X., wounded June 30th, 1917. Wound of kidney, spleen, and large tear of diaphragm from chest wall. Haemothorax wiped out; brilliant green injected, and diaphragm stitched to chest wall with mattress sutures. Fragment of shell removed from above spleen. Upper pole of right kidney pulped; spleen and kidney packed; no apparent injury to lung. Uninterrupted progress.

July 8th. Patient evacuated, well.

THE SURGICAL TREATMENT OF SEVERE WAR WOUNDS OF THE CHEST.

BY

CAPTAIN J. E. H. ROBERTS, R.A.M.C.,

AND

CAPTAIN J. G. CRAIG, R.A.M.C.

THE early treatment of penetrating wounds of the chest is one of the problems of the present war which is of the greatest importance.

Up to now the materials for the discussion of the problem have been relegated mainly to the physician, and it is only recently that the surgeon has had the opportunity of operating on any but late cases. Accordingly the results of a sufficient number of cases on which to form a just estimate of the value of operative treatment as compared with expectant measures have not been available.

We have collected the results of our experiences of these cases, and we offer them as a contribution to the discussion.

During the earlier part of the period the results have led us to believe that, except in cases where the general condition of the patient will not allow of these measures, there is no defensible reason why chest injuries should not be treated at the earliest moment on exactly the same principles as wounds of other parts. It is generally admitted that the proper treatment for open wounds of limbs is to excise all the lacerated tissues and to remove the foreign body. In so far as these measures are not carried out with perfect technique and success, so

much longer is the patient in becoming fit for service again.

Sepsis may be carried into the depths of penetrating chest wounds and develop there primarily, or it may pass gradually from the skin through lacerated muscle, smashed rib, and torn pleura, and ultimately fulminate in the pleural cavity or wounded lung. This latter type of what might be termed secondary infection is seen especially in cases of perforating bullet wounds with explosive exit.

It must be remembered that the pleural cavity, when filled with effusion and blood clot, is, in a general way, one of the finest incubating chambers an organism could have. Even in the case of perforating bullet injuries with insignificant entrance and exit wounds one must always be on the look-out for evidence of a septic infection of the usually concomitant pleural effusion.

The principles we have tried to follow in the treatment of chest wounds recently dealt with have been identical with those guiding the operative treatment of a wound of a joint. In these latter cases the two essential rules are:

1. Complete removal of all possible sources of sepsis.
2. Conservation of the function of the joint if this is compatible with (1).

As applied to penetrating chest wounds these principles involve operation at the earliest possible moment, free excision of all infected tissues, removal of the foreign body and cleansing of the pleural cavity or wound of the lung, followed by accurate suture of the lining membrane and tissues over it, whenever possible without drainage. Drainage of the pleural cavity has been employed only when one or other of these principles could not be fulfilled—for example, when a large foreign body, with infection around it, could not be removed.

When anaërobic infection of the superficial muscles is present the wound is left open to an extent corresponding to the area of the infection—for example, in the case of a wound of the back when the more superficial muscles alone are infected it is possible to suture the pleura and leave the superficial part of the wound freely drained.

There does not seem to be grave objection to washing out with, and possibly leaving inside the pleura, a few ounces of a non-irritating antiseptic, such as Dakin's or flavine solution, but the necessity for this is by no means established.

The 199 cases of perforating wounds of the chest dealt with by us can be divided up into four classes as follows:

	Cases.
1. "Open" or sucking wounds with free air entry	39
2. "Closed" wounds with large septic laceration of the parietes	32
3. "Closed" wounds with early signs of infection of haemothorax	20
4. "Closed" wounds with no evidence of intra-pleural infection	108
Total	199

All cases in Class 4 were evacuated to the base as soon as they were fit to travel, without operative interference of any sort.

It is a fallacy to regard many of the cases in the last three classes as closed with regard to access of infection to the chest cavity, and it must be understood that the term "closed" is applied to these wounds purely in the macroscopic sense.

The cases for operation were not chosen. Many apparently hopeless cases were undertaken, and we were rewarded by the recovery of many whose condition before operation had been despaired of.

In the first three days of the period under review there were no fewer than twenty-two deaths in cases in which no operation had been performed and in which the chest wound was the principal injury. This will give some idea of the gravity of the wounds and of the condition in which the patients arrived at the casualty clearing stations. This high mortality impressed upon us the necessity of adopting surgical measures more frequently and earlier. Partly on account of the number of other cases hitherto regarded as deserving more urgent surgical attention, our chest cases were seldom operated upon until they had been in hospital for one to three days.

Only such cases as, in the light of the mortality of the

first three days, were in all probability going to die if left alone were taken to the operating theatre.

General Condition of Patient.

Respiratory distress was practically always pronounced, and in some cases it was intense. In many cases mental anxiety was a noticeable feature. The usual signs of loss of blood were present in greater or less degree.

After a few days, especially in septic cases, the skin assumed a lemon-yellow tint, and in some instances the patient became quite jaundiced in appearance although the liver was unwounded.

The temperature we found to be of varying ranges, but in the majority of cases it was normal or subnormal on admission. Respiration and pulse rate were invariably quickened and breathing was laboured and attended with pain. Haemoptysis was a constant symptom when the foreign body had penetrated the lung tissues, but it never assumed alarming proportions.

Physical Signs.

The physical signs presented a striking uniformity. The side on which the wound was situated did not move freely; vocal fremitus was feeble if present at all; on auscultation no breath sounds could be heard at the base of the affected side, but in the upper part of the chest bronchial breathing, with crepitations or râles, were very frequently present. Vocal resonance was absent over the lower part of the chest, and between that area and an area of normal resonance or hyper-resonance in the region of the apex of the lung there was very frequently an area where oegophony was present. Over the base and back of the chest on the wounded side there was usually an area of total dullness, indicating the extent of the effusion. Curiously, no cases were found in which the effusion was hidden by the presence of adherent lung, as has been experienced by other surgeons.

In open cases a pack of gauze was usually found *in situ* on admission. On removal of this, as a general rule, fluid of varying nature bubbled out from the wound with each upward movement of the diaphragm. Removal of the plug invariably increased the distress of the patient, which again was relieved soon after the opening was re-occluded. This observation had great influence in deciding the operative treatment. The immediate improvement in respiratory comfort when the pleural cavity was closed at operation was very striking.

Preliminary Treatment.

Most of these cases arrived from the various dressing stations in a condition of respiratory distress, and many were suffering from collapse.

They were put in a special ward, warmed up by various measures, and allowed to rest quietly. If the patient was very distressed 1 c.cm. (one-third of a grain) omnopon (Roche) was administered hypodermically. One pint of hot coffee with 1 oz. of glucose was given by the rectum. If necessary, 15 minims of a solution of camphor 1 part, olive oil 4 parts, and ether 5 parts were also given intramuscularly. These wounds produce more mental anxiety than do wounds of almost any other part, and by blunting the patient's sensibility we found that the mental distress disappeared, and the general condition gradually improved.

The patients were found usually to be most comfortable when well propped up in bed in Fowler's position; if they slipped down they soon began to show symptoms of distress, which passed off when they were lifted up again into their former position. Tight clothing and bandaging were avoided. The risks of septic bronchopneumonia of the uninjured lung are great, and to attempt to combat these, creosote (2 minims in mucilage) was given three times daily. In cases where there was little or no expectoration but where moist sounds were numerous, a mixture containing ammonium carbonate, tincture of digitalis, and tincture of senegae was also given.

Examination of fluid from the pleural sac was carried out in many cases, and in the large majority streptococci were found. In order to try to diminish the virulence of this infection, polyvalent antistreptococcal serum, 10 c.cm., was given as a routine to the most severe cases of chest wounds after we realized the prevalence of this form of infection.

In many cases nothing further in the way of treatment was necessary.

Indications for Operation.

Open cases were operated upon as soon as the condition of the patient permitted. The great majority of cases in this class have never hitherto reached the base.

"Closed" cases with gaping or lacerated wounds of the soft parts and bone, whether scapula or clavicle, were treated as soon as possible.

As regards the remaining cases the indications for operation were based on (a) the general condition of the patient, and (b) the physical signs.

So-called "closed" cases without large wounds of the soft parts were usually left alone; a little bismuth, iodoform, and paraffin paste was rubbed into the wound and the skin disinfected round about.

If the respiratory distress increased, especially when accompanied by increasing displacement of the heart, operation was performed. In many cases, even when a preliminary exploratory puncture had been made, the result of bacteriological examination was not waited for, as experience showed that sometimes the withdrawn fluid produced no growth, while that obtained at the operation was proved to be infected.

Nature of Operation.

Where the external wounds were large, through-and-through, and the foreign body had traversed the lung and pleural sac, one or both, the wounds were excised, including the smashed ribs and soiled edges of the pleura. If possible this was done *en masse*. In bullet wounds it was usually unnecessary to excise the entrance wound.

If the site of the wound permitted of free inspection of, and access to, the pleural cavity, sufficient rib was removed to allow of insertion of the hand into the pleural sac for exploration and cleansing.

If sufficient access could not be obtained, owing to the position of the wound, four inches of the eighth or ninth rib below the axilla were removed and the pleural cavity was freely opened. This usually was enough to allow of inspection, palpation, and cleansing, but if more access still was required the rib above was divided or resected.

The procedure detailed in this last paragraph was also carried out in cases subjected to operation when only small "entrance and exit" wounds existed.

Injuries to the Lung.

If the wound of the lung was a superficial tear it was palpated and freed, by wiping, from blood clot and possible foreign material; if it bled it was sutured by a rounded needle and catgut or rubbed with bismuth, iodoform, and paraffin paste, and packed with gauze.

A through-and-through wound of the lung was usually left alone, unless very large.

Gangrenous portions of lung were clipped away, bleeding being stopped as above described, but haemorrhage was seldom found to be a troublesome factor. All blood clot was carefully removed from the pleura and the cavity was left as dry as possible.

When the Lung is Adherent.

In cases in which there is a localized inflammatory area in the lung and it is adherent to the parietes we consider that early operation is especially important because of the danger of the spreading of inflammation in the uncollapsed lung. Free access in such cases is easily obtained by excision of the superficial soft tissues and ribs, and the finger can then be introduced in order to ascertain the direction and extent of the track. Before this examination it may be necessary to fix the lung to the parietal pleura by stitches to prevent recent adhesions being broken down.

If the foreign body and clothing are felt they can be removed with forceps. If the haemorrhage prove troublesome the wound can be packed with dry sterile gauze lightly smeared with bipp paste, and in any case the "bed" of the foreign body should be carefully wiped out, smeared with paste, and a drainage tube or light gauze pack inserted.

When the Lung is not Adherent.

We found that the lung was non-adherent in the majority of instances, and this factor makes treatment much

more difficult. The operative measures we adopted were as follows:

The foreign body was sought for and removed. If it was embedded in the opposite wall of the thorax or mediastinum the aperture of exit could be seen or felt, and, if necessary, a separate incision was made for its removal. An attempt was always made to excise the margins of the exit wound in the pleura and to stitch them together. If this cannot be done the track should be rubbed with bipp from the pleural side. In some cases the foreign body was found at the base of the chest, having gravitated there.

If embedded in the lung, that organ was pulled up and fixed between the fingers, or caught with forceps, and the foreign body was removed as already described. When discovered near one of the margins of the lung, it was found to be an easy matter to excise the lung tissue enclosing the foreign body, and to suture the cut surfaces.

The pleural cavity was then wiped clean of blood clot very carefully and the pleura stitched up. Suture of the pleura proved usually the most difficult part of the operation. In order to facilitate it, subperiosteal resection of a considerable length of rib was performed when necessary.

Catgut threaded on a curved intestinal needle was used as a continuous suture to bring the divided edges of pleura accurately together when the suture was pulled tight. The patient was then roused if necessary, and asked to make a forced expiratory effort with closed lips while holding his nose. The object of this was to produce expansion of the collapsed lung and thus to expel air from the pleural sac. When this had been satisfactorily accomplished the catgut suture was tightened and tied.

In all cases not too widely infected the muscles were stitched up layer by layer. The skin was sutured, and the wound was then closed and no dead spaces were left.

In some cases a small drainage tube was put in almost down to, but not actually in contact with, the pleura, so that there was no danger of its producing a communication with the cavity. If, however, excision had been thoroughly done, and the wound had been irrigated with antiseptics (Dakin's or flavine solution) and rubbed lightly with bipp, it was found unnecessary to use drainage of this kind.

If the edges of the pleura would not come together the muscles and the skin were stitched over. As smooth a muscular surface as possible should be presented to the expanding lung. If neither pleura nor muscle could be brought together, the skin, at any rate, was always sutured. A plastic operation was performed if necessary to permit of this.

Drainage of Pleural Cavity.

No cases were drained unless (1) the chest wall could not be closed owing to the condition of the patient; or (2) if infection of the lung, or of the pleura as distinguished from its contents, was definitely established.

We soon overcame our scruples about completely closing up cases with a streptococcal infection, but we must admit to a more gradual conversion to the idea of closing cases with anaerobic infection. This, however, we have proved to be quite a safe procedure when the precautions we have enumerated are carried out.

In cases in which drainage had to be resorted to—for example, when suppuration was definitely established—the cavity was drained by means of a large tube, half an inch in diameter, with one end reaching just inside the opening in the pleura, and retained in position by one or more stitches. The tube was long enough to reach under the surface of a solution of boric acid in a wide-mouthed glass bottle which stood upon the floor at the side of the patient's bed. The use of such a receptacle and long drainage tube is not only a means of causing a negative pressure in the pleural cavity and of saving expense in the matter of dressings, but the patient was thereby rendered much more comfortable, as he was saved from having to lie in soaked and offensively smelling dressings. When the discharge becomes less in amount it is advisable to cut this tube off one to two inches from the skin surface and to wash out the pleural cavity two or three times daily with Dakin's solution or flavine. To do this it is advisable to pass a smaller piece of rubber tubing—for example, a catheter—through the stitched tube; this ensures a free return of the injected fluid. The patient can help in the

washing out process and the expulsion of the fluid by coughing. When the cavity is not being washed out the wound is covered with an antiseptic dressing, and external to this is a piece of jaconet larger than the dressing. This latter has a valvular effect and prevents the sucking of air into the pleural cavity. The piece of jaconet or rubber tissue may be placed directly on the skin in some cases, no tube being used. By its valvular action the occluding covering favours expansion of the lung.

Anaesthetics.

In the choice of anaesthetics the tendency to inflammation of the hitherto unaffected lung and the frequently irritating property of general anaesthetics must be remembered.

Local anaesthesia has not only the advantage of avoiding this irritation, but of enabling the patient to expand his own lung before final suture, and thus special pressure apparatus is rendered unnecessary. But the surgeon who attempts to operate on chest wounds under nerve blocking and local infiltration purely and simply will meet at first with disappointing results. In this, as in other procedures, practice makes perfect.

The patient must be rendered drowsy first of all if the full benefits of local anaesthesia are to be reaped. For this reason we gave the patient 1 c.cm. of omopon and scopolamine ($\frac{2}{3}$ grain omopon and $\frac{1}{15}$ grain scopolamine) one hour before operation, and if he was not drowsy in half an hour another one-third grain omopon alone was given. The local anaesthetic used was novocain 1 per cent. with 10 minims of adrenalin hydrochloride added to every ounce used. The average amount of solution required was three to six ounces.

In addition to local infiltration around the wound, blocking of the intercostal nerves, at or just internal to the angles of the ribs, was carried out. It is essential to block at least one nerve above and below as well as those involved in the wound. In wounds of the upper part of the chest the descending cervical nerves must be blocked. If the scapula is involved, as is fairly frequently the case, the suprascapular twigs may be anaesthetized by injection of the dorsal scapular muscles all around the injured area.

RESULTS.

Of the 199 cases, 103 were evacuated without operation, 24 died without operation, and 67 were operated on.

Of these 67 apparently forlorn hopes, 34 eventually recovered and were evacuated to the base, and 33 died. Of the 33 fatal cases, 16 had other gross lesions, which were more directly responsible for the fatal result than the chest wounds. Eleven of these 16 had wounds passing through the diaphragm into the abdominal cavity. Two had very septic wounds of the pharynx and trachea, and required tracheotomy. Two had extensive gas-infected wounds of the chest wall. One had a lacerated wound of the pericardium, and the patient became so collapsed that the operation had to be abandoned. In these 16 cases death did not occur, in our opinion, from the injury to the lung or pleural sac, and it may be justifiable to exclude them in estimating the mortality.

If it is permissible to exclude them,

The rate of mortality in the 51 remaining cases was ... 33.3 per cent.
And the recovery-rate was ... 66.6 "

If, however, one includes these 16 cases,

The rate of mortality in 67 cases was ... 49.25 per cent.
And the recovery-rate was ... 50.75 "

More instruction can, however, be obtained from the following tables:

Operation Results.

Class.	No. of Operations.	Recovered.	Per-centage.	Died.	Per-centage.
1 ...	29	10	34.49	19	65.51
2 ...	23	10	43.47	13	56.52
3 ...	15	14	93.3	1	6.6
4 ...	—	—	—	—	—
Totals ...	67	34	—	33	—

Pleura Closed.

Class.	Total Closed.	Recovered.	Per-centage.	Died.	Per-centage.
1 ...	12	5	41.6	7	58.3
2 ...	7	4	57.14	3	42.8
3 ...	6	6	100.00	—	—
4 ...	—	—	—	—	—
Totals ...	25	15	—	10	—

Pleura Drained.

Class.	Total Drained.	Recovered.	Per-centage.	Died.	Per-centage.
1 ...	17	5	29.4	12	70.5
2 ...	16	6	37.5	10	62.5
3 ...	9	8	88.8	1	11.1
4 ...	—	—	—	—	—
Totals ...	42	19	—	23	—

Types of Infection.

The fluid from the pleural cavity was not examined in every case, but of the 35 examined for us by Captain R. L. Thornley—

Streptococci were present in ...	72.7 per cent.
<i>B. aerogenes capsulatus</i> was present in ...	54.5 "
Pneumococci were present in ...	36.3 "
Staphylococci " " ...	27.2 "
<i>B. influenzae</i> " " ...	27.2 "

The *Bacillus tetragenus* was present in 18.1 per cent., and a spore-bearing organism (probably that of malignant oedema) and a diphtheroid bacillus were present in 9.09 per cent. of the cases examined. In the majority of cases a combination of these organisms was found; in four cases only was a single type of organism present.

Results have shown that even although anaerobic bacilli or streptococci are present the pleural sac can be completely closed with success, the wounds healing by first intention. Consequently we are increasingly inclined to disregard the nature of the infection provided that approximately clean surfaces can be left internally.

We feel that in an apparently simple case of haemothorax with increasing severity of symptoms better and quicker results will be obtained by opening the chest as described, and cleansing and closing the pleural cavity, as has been done by Major Gask at another casualty clearing station. We have since operated on several such cases, so far with complete success in every case.

In cases in which streptococci or anaerobic organisms have been found a sharp look-out should, however, be kept for reaccumulation of fluid or deterioration in the patient's symptoms.

By far the commonest cause of death in the chest cases with no other injury was septic bronchopneumonia of the uninjured lung. It was for this reason that we gave creosote as a prophylactic measure and also antistreptococcus serum in severe cases. There is no accurate means of testing the value of these measures, but the impression gathered from their use was favourable.

The whole object underlying early operation in these chest wounds is the rational one of trying to secure early recovery, not only of the patient but of the function of the lung. This involves thorough removal of all possible sources of septic infection, whether in the form of dead tissue, devitalized tissue, infected fluid or blood clot, clothing or other foreign body, followed by closure of the pleura after expulsion of air from the sac.

When this complete operation can be thoroughly carried out before the patient has sunk too low the results are distinctly encouraging. The patient immediately becomes comfortable and his breathing improves. Breath sounds can often be heard over the lung within a few hours. The patient has a good prospect of a quick recovery to normal health with a lung doing its work in a normal way.

NOTES IN CONNEXION WITH THE ABOVE ARTICLES ON SURGERY OF THE CHEST.

BY

TEMPORARY COLONEL H. M. W. GRAY, C.B., A.M.S.

It is most gratifying and encouraging that such good results have been obtained from operative interference in these very distressing cases by surgeons who have hitherto had but little experience in the surgery of the chest. The types dealt with were nearly as fatal as are non-operated penetrating wounds of hollow viscera of the abdomen. Closed "E and E" or small "E only" wounds may be compared with similar wounds of solid abdominal organs.

I think it was in February or March, 1916, that Captain Roberts and I first deliberately undertook one of these operations at a base hospital. An almost spent bullet had smashed the ribs in the left axilla and had lodged in the anterior border of the left lung close to the heart. The bullet was extracted easily enough, and the chest wall was stitched up completely. Unfortunately the patient died of septicaemia four days later. It was somewhat discouraging, but we procured intratracheal anaesthesia apparatus in order to be better equipped for the next case. As stated, such cases are very rare at the base, and transference to the front was necessary before either of us could develop the operation. The accounts now given represent that development. From what I can learn, French surgeons operate in the same manner. Major Gask in another area has been carrying out similar procedures, and has operated on a considerable number of cases.

The results obtained in these severe chest operations are better than those obtained by the same surgeons in abdominal operations performed during the same period. The abdominal field was not "new ground" to these surgeons. One would therefore expect that greater experience in thoracic surgery will lead to much better results. Captains Roberts and Craig laboured under the disadvantage of having no x-ray apparatus. The localization, previous to operation, of a lodged foreign body, is of the utmost importance in many of these cases, but their cases could not wait. In some the patient's condition was so bad that x-ray examination was purposely omitted. It was judged that practically all would have succumbed to the effects of further transport or delay. It is difficult by description to indicate how bad some of them were. They were, on the whole, of a kind rarely seen in base hospitals. They formed 35 per cent. of all penetrating chest wounds in the casualty clearing station where Captains Roberts and Craig were working.

These cases should be sent on, as soon as their condition permits, from the field ambulances to the casualty clearing stations, because, as will have been appreciated from a study of the papers, the sooner they are operated on the better is the chance of recovery. A *laissez faire* policy is no longer justifiable.

The operative procedures are very rightly compared with those which have been found essential for uniform success in wounds of the knee joint. The principles of treatment of war wounds in France should be the same whatever part of the body is affected. The application of these principles must be modified according to the local character of the wound, and by consideration for the patient's general condition. The possibilities attending their application—the results, that is to say—depend chiefly on the capacity and judgement of the surgeon.

Intrathoracic Manipulations.

Intrathoracic manipulations may be carried out safely with much greater freedom than has been supposed. It is curious that in most cases the pleura, both parietal and visceral, may be handled and wiped without causing pain, and this although only a few of the intercostal nerves may have been "blocked" by local anaesthetic. It is equally curious, therefore, that some patients complain severely when such manipulation is attempted. Unless it is roughly pulled upon, the lung is apparently equally insensitive. The same remarks apply to the pericardium and heart, but I have never seen a case in which the parietal peritoneum and abdominal viscera could be handled, under similar conditions, without causing severe pain.

Methods of Causing Expansion of the Collapsed Lung.

Special positive pressure apparatus is not essential, although it would prove of great advantage in most of the operations, especially when it is considered safe to expand the lung before the pleural cavity is closed. The writers of these articles have described how this expansion may be brought about. The air in the pleural cavity may also be aspirated after the wounds are closed. It is interesting to note the auscultatory phenomena during this procedure.

Time for Operating.

While the patient should not usually be subjected to operation in cases of open "sucking" wounds until the shock, respiratory distress, and cardiac frequency and irregularity have been alleviated, yet persistent haemorrhage may compel immediate operation. In many cases also mere plugging or suturing of the wound fails to relieve the dyspnoea. This is sometimes found when wound of the diaphragm is present. In these cases operation should not be delayed. If the cardiac action is fairly regular, the operation can be carried out, and it is, indeed, in these patients that its effects are most impressive.

I would urge very strongly that these operations be undertaken at the earliest possible moment. The best access for these cases is got by excising six inches or so of the fifth rib in the axillary line. By delay sepsis is allowed to get a strong hold, and then it may be dangerous to close the chest. In the early stages of infection, when the organisms are still breeding only in the blood clot or pleural effusion, it is apparently safe to close completely, even though gas bacilli or streptococci are present. In later stages streptococcal infection is much more dangerous than that by gas-forming organisms.

Suture of Wounds in Diaphragm.

As remarked by Captain Anderson, Captain A. L. Lockwood¹ deserves the credit of having shown the necessity for suture of diaphragmatic wounds during abdominal operations. It is of equal importance in chest cases, and should be done as a first step after excising the parietal wound. (See later, under "Multiple Injuries.")

Closure versus Drainage.

The striking improvement which occurs when the wound is closed by suture, plug, or strapping is possibly due chiefly to the fact that the mediastinum is steadied, and that then the opposite lung and the heart can function more easily. The effect is still more rapid and remarkable when the chest wall is closed by suture at the end of the operation. In some cases the change in the patient's condition is really magical. In late cases, where intrapleural sepsis has developed fully, there is not the same amount of distress when the chest is opened, possibly because the mediastinum is more fixed by inflammation.

It is very desirable to close the chest completely in every early case. I believe that by so doing the mortality will be lessened.

During one month 193 cases were operated on at certain casualty clearing stations, with drainage of the pleural cavity; 99 (50 per cent.) of these died, 57 cases were closed completely, and 17 died (29.8 per cent.) It appears, therefore, that the operation with complete closure is 20 per cent. better than the operation with drainage. It may be necessary to reopen the chest on account of the development of intrapleural sepsis or to remove a foreign body, but by the time this is necessary the patient has been tided over his dangerous period, and when the pleural cavity is drained there is not any more respiratory distress than after an ordinary empyema operation.

When old adhesions fix the wounded lung to the parietes and there has been much soiling along the track of the missile, it is advisable to leave the wounds of the lung and chest wall open. In these cases bipp, or one of the recently used paraffin packs, makes very suitable dressing, easily removed. Early secondary suture can usually be effected.

The Use of Local Anaesthesia.

It may be that a patient can be steered successfully through the operation under general anaesthesia, but it is far safer to dispense with this altogether, if possible, owing to the evil effect which is otherwise exerted on the unaffected lung already predisposed to inflammation. It

is remarkable how the lung of the operated side may expand and remain healthy, according to reliable clinicians, while the other lung develops well-marked signs of inflammation. As Captain Anderson states, this fact may really turn the scale favourably in the patient's chances of recovery—another reason for complete closure.

The patient should be well "doped" before operation. He should be made very drowsy, but at the same time be capable of being roused and of doing what he is asked to do. Omnopon, or some similar preparation of opium, is more satisfactory from many points of view than the alkaloid morphine alone. Scopolamine is given with advantage with the first dose, but is omitted from the second, if a second dose is necessary. The same amount of care in preparation of the patient and administration of the local anaesthetic should be exercised as when a general anaesthetic is chosen for these cases. A specially skilled anaesthetist is usually selected in the latter case.

If he is in any way "fit," the patient should be warned in a tactful way that he may feel extraordinarily distressed and apprehensive during the operation, that, indeed, the operator expects this, but that he should try to lie and breathe quietly, that struggling and excitement will only increase his distress, and that the symptoms will pass off very quickly when the operation is finished. If, in spite of such warning, he is very restless, a small amount of general anaesthetic should be given.

The Importance of Speed.

Speed is of the utmost value in certain cases; therefore the plan of the operation should be mapped out beforehand and understood by all assistants. Suitable instruments should be handy at each stage of the operation, and a sufficient number of sutures, on needles of various sizes and curves, should be prepared. The operator must not "lose his head" when things become alarming. He is assured of a speedy peace when the pleural cavity is closed. It is wonderful, at this alarming stage, what a soothing effect a few whiffs of general anaesthetic may have, but the anaesthetic should be given for as short a time as possible. It is in these circumstances that a positive pressure apparatus would probably be of great value.

In Multiple Injuries the Chest Wound takes Precedence.

When a "sucking" wound of the chest is accompanied by an intra-abdominal injury, the chest should always be dealt with first. Sometimes the abdominal condition can be effectively treated by prolonging the chest wound downwards and forwards. In such cases care must be taken to suture the diaphragm (air-tight) to the chest wall around the periphery of the wound. It is astonishing to what a height and at what tension the diaphragm can be sutured in this way, with practically no subsequent distress to the patient.

Introduction of Antiseptic Fluid.

If the foreign body cannot, for various reasons, be removed at the primary operation, a small quantity (1 to 3 oz.) of one of the recently devised antiseptic solutions (flavine, brilliant green, iodoform 1 per cent. in liquid paraffin) should be left in the pleural cavity. This may have the effect of delaying or limiting septic processes until the foreign body can be dealt with at a second operation. When the intrapleural conditions have been thoroughly "cleaned up," I doubt whether the use of such fluids is essential, but, so far as one can judge, they are not harmful.

Conclusion.

It must be remembered that the operation is undertaken with two great objects in view—(a) to prevent sepsis getting a hold, and (b) to tide the patient over the dangerous period. Complete closure of the chest wall attains these objects more successfully than when drainage is used.

Patients subjected to such operations should not usually be evacuated until about ten to fourteen days after operation.

REFERENCE.

1 BRITISH MEDICAL JOURNAL, 1917, vol. 1, p. 319.

PLASTIC TRANSCOSTAL THORACOTOMY.

BY

E. M. COWELL, M.D., B.S., F.R.C.S.,

CAPTAIN R.A.M.C.(S.R.).

THE development of thoracic surgery as a special department of military surgery has made great strides in the past year. Thanks to the pioneer work of Major G. E. Gask, D.S.O., R.A.M.C., and M. le Médecin-Majeur Duval, of the French Medical Service, chest surgery has now been placed on a sound basis, and in the hands of experts is yielding good results. The technique of thoracotomy and subsequent manipulation of the lung as practised by these operators is simple and quick. The complete closure of the chest, however, is not so easy, and in many parts of the chest wall is extremely difficult owing to the thinness of the pleura and the rigidity of the thoracic wall. By means of the plastic operation I have devised this difficulty would appear to be overcome; it is now possible to close the chest soundly in a few moments, as against the ten to fifteen minutes or more of the usual methods.

Method of Operating.

To open the chest in a patient of average size the selected rib is exposed for about 5 in. (22 to 23 cm.), the periosteum is incised, and the cut A made about 1½ in. (4 cm.) long, ½ cm. from the lower border of the rib, the saw being directed upwards so that the rib is sawn with bevelled edges. As soon as the chest is opened a key saw is introduced and the cut B made. As indicated in Fig. 1,

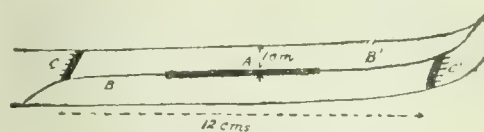


FIG. 1.

the cut stops just short of the rib margin in order to avoid injury to the intercostal vessels. From this point the third cut, C, is made in such a way that the cut end of the rib is rounded off and no sharp points are left which may tear the glove.

In the same way the cuts B' and C' are made on the other side of A, and the sawing is complete. In order to facilitate the rib section, a special key saw has been devised with a blunt end and double edge, so that one can saw in either direction, that is, forehand or backhand, without having to take out and reintroduce the saw. The two pieces of rib with attached pleura are now turned outwards on the hinge of intercostal tissue as shown in Fig. 2. In this way an opening 3.5 cm. wide is pro-

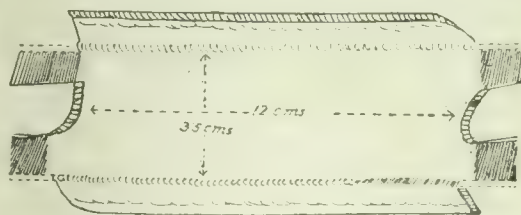


FIG. 2.

vided, which is easily increased to 6 cm. by "spreading" the adjacent ribs in the usual way. Through this opening an average size hand can easily be passed, and the required manipulation of the lung carried out.

To close the chest two or three stitches of stout catgut or silkworm-gut are passed round the rib, care being taken to keep the point of the needle against the rib to avoid the vessels and nerve. The sections of rib are now turned back into their original position, where they fit into place like pieces of a "jig-saw" puzzle; the stitches are tied, and in a few moments the chest is closed, with the cut edges of pleura in close proximity. A layer of muscle and fascia is stitched over the rib to reinforce the line of suture, the skin incision is closed, and the chest wall is restored to normal.

Indications for the Operation.

The main indications for this thoracotomy in war surgery are: (1) Removal of a large foreign body; (2) suture of torn lung; (3) exploration of haemothorax with evacuation of blood clot and septic material.

The method can be applied when the chest is to be opened through either the wound of entry or exit, since it is quite easy to saw the two portions of traversed rib longitudinally; and the subsequent closure is so much simplified.

Lastly, a modification of this method affords a great saving of time in those operations for infected haemothorax where "air-tight" drainage is so advantageous. According to Elliott and Henry,¹ "This procedure (that is, sewing pleura, muscle, and skin in layers tightly round the tube, after resection of rib) adds at least fifteen minutes to the time taken for the operation, for it is not an easy matter to sew up inelastic pleura." Two inches (6 or 7 cm.) of rib are exposed, a disc 1 cm. across is cut out with a trephine and the rest of the operation completed as described above. If a larger drainage tube is needed, the opening can be widened with nibbling forceps. The pleura, by means of its attached piece of rib, is closed with two stitches; the tube is air-tight and the whole proceeding has taken but a few minutes.

In civil practice this operation will afford an ideal route for exploratory thoracotomy, pneumectomy, etc.

Advantages of the Method.

This thoracotomy is simple and quick, provides perfect access to the chest contents, and moreover ensures a rapid perfect closure.

It was originally with the idea of saving time that this operation was thought out. One of the lessons war surgery has taught is that not only the recovery of the individual but the welfare of many patients often depends to a great extent on the speed at which the surgeon works.

Again, the operation which gives as an end result the closest approximation to the original normal anatomical condition, without risk or other disadvantage to the patient, is always the ideal at which one should aim.

REFERENCE.

¹ Elliott and Henry, BRITISH MEDICAL JOURNAL, March 31st, 1917.

THE EARLY OPERATIVE TREATMENT OF PENETRATING GUNSHOT WOUNDS OF THE CHEST.

By FRANK J. HATHAWAY, M.D.,

SURGEON, KING EDWARD VII HOSPITAL, WINDSOR;
LATE CAPTAIN R.A.M.C.

THE necessity of early operation in gunshot wounds of the chest is now established. There is no doubt that many lives are saved, and convalescence shortened by early and complete operation in a casualty clearing station, and I hope these short notes of my own experience may be of value.

*Nature of Wounds and of Projectiles which
Caused Them.*

(a) Clean through-and-through wounds caused by a rifle bullet or shrapnel ball, with small wound of entrance or exit, require no early operation. Aspiration of the haemothorax may be necessary. Frequently the shrapnel ball is under the skin and may be removed.

(b) However, a rifle bullet or shrapnel ball frequently strikes bone, scapula or rib, and makes a large wound of exit. This, if not operated on very soon, becomes very septic, and, an open track being left to the pleura and lung, gives rise to secondary complications. Such cases should be dealt with, the exit wound completely excised down to the pleura, all loose fragments of bone removed, the wound cleansed, and sewn up if possible.

(c) Tangential wounds of the chest are amongst the most fatal when associated with much rib damage. Fragments of bone and clothing are driven into the pleura and lung, and there is a large sloughing wound with an open track to the pleura. The diaphragm is frequently injured, and there may be penetrating wounds of abdominal viscera. In all of these cases a complete and careful excision of the whole wound is necessary. Pleura and lung must be

cleansed of bone fragments and cloth, and the diaphragm closed if wounded. If necessary more rib must be excised in order to be well clear of damaged tissue and to allow the wound to be closed.

(d) Through-and-through wounds caused by shrapnel or high explosive have large entrance and exit wounds with ragged much-damaged edges. In these both the entrance and exit wound should be completely excised down to the pleura, all damaged tissues removed, and the wound closed if possible by suture.

(e) The large group of cases is that in which a missile is retained in the chest cavity. Rifle bullets and shrapnel balls can be left, the progress of the case watched, and if sepsis supervenes they can be removed at the base. But the case is different with ragged pieces of shell. Here there is much laceration, and fragments of clothing are carried in. If the fragment is really small it may be left. If large and in an accessible position it should always be removed. Toilet of wound, for example, excision of all lacerated tissue down to the pleura, should be carried out, the metal fragment removed if possible, and the wound closed in successive layers.

Preparation for Operation.

Time to Operate.—Wait for shock to pass off. To get clean results, operation should be done in the first twenty-four hours. This follows experience of ordinary wounds. Thus, if early and completely excised wide of damaged tissue, and sewn up, they should heal by first intention.

X ray is essential. A plate should be taken, and should show bone as well as fragments embedded in lung. The metal fragment must be carefully localized.

Anaesthetic.—Local anaesthesia with novocain is the best. If necessary, a few whiffs of chloroform and ether can be given. Frequently, with multiple wounds, a general anaesthetic is necessary, and in my experience is well taken. No intratracheal pressure apparatus is necessary.

Operation.

Wide and careful excision of wound and damaged tissues is the first thing. Resection of rib. It is necessary to allow plenty of room, so that a good view may be obtained and the whole hand passed into the pleural cavity. To do this wide resection of rib is necessary; three inches may be removed from two adjacent ribs or six inches of one. The pleura is then exposed. If there is a large opening, with pneumothorax, the edges should be excised, and the hand put into the pleural cavity and the metal fragment removed. If the wound is small, with little or no sucking in of air, a small incision should be made into the pleura, and the lung quickly grasped with a pair of toothed forceps. Moynihan's or tissue forceps are excellent. The lung is then firmly pulled to the wound, and the incision in the pleura enlarged. It is then possible to gradually evacuate the haemothorax and only allow a small amount of air to enter. The grasping of the lung with forceps and firmly pulling on it prevents it from collapsing, and, in my opinion, should always be carried out, for sudden and massive collapse of the lung is one of the great dangers of the operation and should always be prevented if possible. After exposure of lung, the metal fragment can often be seen and picked out, for, as Colonel Elliott and Captain Henry have shown, the lung itself offers little resistance, and the fragment either tends to pass right through or remain in the pleural cavity or surface of lung. Some fall to the most dependent part of the pleural cavity. If, however, the metal fragment is embedded in the lung, the wound of lung should be sought for and the track of the missile followed up; this can be done with the knife, the track being held in good view, or with a thermo cautery. Another method is to insert the finger in the track, feel for the fragment, and extract with forceps or scoop, but the obvious danger of this is detachment of a clot from a large vessel and not being able to see what one is doing. Any haemorrhage is now controlled. If large, the wound of lung should be sutured with catgut. The pleural cavity should be washed out with flavine or Dakin's solution; by this fragments of clothing which may have been overlooked are removed. Some flavine may be left in the pleura.

The pleura is then, if possible, completely closed, leaving any infection "to be dealt with by the natural power of the pleura to dispose of infection," which has been shown

by Colonel Elliott and Captain Henry to be very strong. The parietal pleura should be sewn together if possible; if the opening is too large then it may be stitched to the lung and visceral pleura. The skin and muscle are brought together with a few interrupted sutures. Where the skin, however, cannot be closed the wound should be firmly packed with gauze, a salt or paraffin pack, and strapped.

After-Treatment.

This depends on the progress of the case. The majority, where the ideal early operation can be carried out, should do very well and make an uninterrupted recovery. It is extraordinary how quickly a lung will expand after the pleura is closed. If much blood should collect it should be aspirated. If gas infection or empyema supervene the ordinary treatment should be carried out and the pleural cavity drained. This can be done through the original wound if dependent; if not, a lower rib should be resected and the cavity drained.

Localized Collection.

A local collection of pus round the wound may develop and require evacuation.

Conclusions.

The ideal methods of modern war surgery are (1) early operation, (2) complete excision of wound and damaged tissues, (3) removal of metal fragment and clothing, (4) mechanical cleansing of wound (the use of strong antiseptics is to be avoided), (5) complete suture of wound. Provided one can get *early and complete* operation, there is far more danger from secondary than from primary infection.

The treatment of wounds of the chest, therefore, follows the same lines as those of the abdomen, head, knee, or other joints; they require just as early operation, and it will be found that the results are just as good.

THE TREATMENT OF GUNSHOT WOUNDS OF THE ELBOW-JOINT: A PLEA FOR PRIMARY EXCISION.

By C. MANSELL MOULLIN, F.R.C.S.,

LIEUT.-COLONEL R.A.M.C.(T.F.),

2ND LONDON (CITY OF LONDON) GENERAL HOSPITAL.

THE ultimate results of the injuries inflicted in gunshot wounds of the elbow-joint cannot be regarded as satisfactory. In the majority there is complete, or almost complete, ankylosis. If the wound pursues a thoroughly aseptic course, and the injury is confined to the olecranon or one of the epicondyles, the joint may regain a fair range of movement. But when, as in the majority of instances, the wound becomes septic and the bones are badly comminuted, especially if the lower end of the humerus is involved, the results are deplorable. Effective drainage is very difficult to carry out, even if Carrel-Dakin's method is employed. Acute septic inflammation nearly always follows. The whole region of the elbow becomes immensely swollen. Accurate reposition of the broken fragments is out of the question. A great deal of new bone is thrown out, many of the fragments become necrosed, and after a prolonged illness running into many months the elbow is left either ankylosed at an awkward angle, so that often the patient cannot use his hand to feed himself, or at best with a limited degree of flexion and extension, with rotation at the shoulder-joint as a clumsy substitute for supination.

The results of primary excision of the elbow-joint, on the other hand, are wonderfully good, provided sufficient bone is removed—that is to say, the lower end of the humerus just above the level of the epicondyles, the whole of the head of the radius and the ulna at the same level. I have notes of five cases in civil practice performed for injury in which the joint was excised in this way, with complete restoration of movement and recovery of the muscles so that the arm was to all intents and purposes as strong and as useful as it was before. Even if the conditions are such that the wound is already infected, the drainage is so free that a serious degree of sepsis can usually be avoided, and there is not that enormous mass of callus thrown out, binding everything together and

locking the fragments so that they cannot move. It is true that, owing to the necessity of re-educating the muscles of the forearm, which have been separated from their attachments, it may be twelve months before recovery is complete, but the fingers and wrist can be used after the first few weeks, and, if a suitable splint is provided, the elbow as soon as the wound is sound.

The operation, of course, is much more tedious when performed for injury than when performed for disease. The muscles cannot be so easily separated from their attachments, and when the bones are comminuted and the fragments displaced, there is need of careful dissection, which may take up valuable time. But provided the operation can be done before septic infection has spread far, and sufficient bone is removed, the results are so different from those of the conservative method of treatment that there is no comparison between them.

It is not, of course, possible to say whether the conditions at a casualty clearing station are such as to allow a proceeding of this kind to be carried out at a time when every moment is required, but the only conclusion at which one can arrive from three years' experience at a base hospital, is that if primary excision of the elbow were adopted more generally a great deal of illness and suffering would be saved and much more useful limbs would be left. Excision can, of course, be performed later with an excellent result, and doubtless in many cases it will be, but this means a second operation of some gravity and a second period of convalescence before recovery is complete.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

REAMPUTATION.

THE following technique has been evolved in the Dartford War Hospital in the large number of reamputations performed here. Various points were gleaned from various sources, and among the most valued recent suggestions is that of Major W. A. Chapple¹ to employ button sutures of relaxation in the deeper parts of the flap.

Preliminary.—During the waiting period use a weight and pulley with adhesive plaster to bring down the skin. Clean up the surface as thoroughly as possible but do not wait for all small pockets to become healthy. A fortnight is long enough.

Stage 1.—Apply a tourniquet. Curette the whole surface, especially any pockets, whilst flushing thoroughly with a dilute antiseptic.

Stage 2.—(Usually needed but not always.) Make a free incision down to the bone on the outer side of the limb, exposing it to above the intended line of section.

Stage 3.—Make a circular incision round the bone near its end, through the periosteum, above the point at which there are spurs and plates of new bony deposit; but where these extend up the shaft far, then at 1 in. from the surface of the stump. Carefully peel the tissues, including the periosteum, off the bone, splitting them through the outer incision.

Stage 4.—Cut the bone either with a Gigli saw, which we have been frequently employing for the past eighteen months, or by the ordinary saw if the tissues can be retracted sufficiently. Use a cloth retractor with a hole in it to slip over the end of the bone. I devised a special metal retractor but it did not work satisfactorily.

Stage 5.—Study the stump; see whether any of the fleshy mass needs to be trimmed to enable the skin to cover it. Free the skin from the underlying muscular tissues for 1½ in. to 2 in.; avoid scoring the subcutaneous fat.

Stage 6.—Remove the tourniquet; check all haemorrhage with ligatures and hot wet swabs.

Stage 7.—Suturing. Unite the periosteal sheath over the bone by a catgut mattress suture. Place two or three catgut sutures into the muscles, approximating them or inverting them as the case requires. Put in two or three silkworm-gut sutures, piercing rubber tubing in the way described by Major Chapple, compressing the flaps into good apposition.

One small rubber drain should be placed from the deepest part by the bone to the outer incision; another at the inner corner of the wound just under the skin flaps, which should be sutured at intervals of ½ in. A very useful skin suture is often employed by my colleague, Mr. Bost. It pierces the skin ½ in. from the edge then returns ½ in. from the edge, which is thus slightly everted and closely apposed.

Since this technique has been used (1) we have taken to earlier operation; (2) we have removed rather less bone; and (3) we have had better results in the way of primary union.

¹ BRITISH MEDICAL JOURNAL, August 25th, 1917, p. 242.

Several officers have taken part in the operating. My thanks are also due to Colonel Bond for permission to publish this.

Major A. NEVE, F.R.C.S.E.,
Surgical Specialist, Dartford War Hospital.

Reviews.

MANSON'S TROPICAL DISEASES.

WHEN the first edition of Sir PATRICK MANSON'S *Tropical Diseases* appeared, in May, 1898, it marked an epoch, for it was the first volume in which an attempt was made to bring together and render available for the working doctor in one portable volume the large mass of new material with regard to diseases of the tropics which had then already accumulated. How great was the need of such a book was shown by the fact that the first edition had to be reprinted three times within nine months of its appearance and that a new and revised edition was called for in 1900. The fifth edition appeared in May, 1914, just sixteen years after the first. The new edition¹ has been thoroughly revised, but, we are glad to say, only a little enlarged. The text appears to have been revised throughout, but the most important accessions to knowledge which it notes as having been made since the fifth edition are those relating to the extracorporeal life-history of *Schistosomum haematobium*, due to the researches of Dr. Leiper, and the demonstration that dengue is conveyed by *Stegomyia calopus*. An alteration in arrangement of some significance is that rat-bite disease has been removed from the section on general diseases of undetermined nature to that on fevers, and that the chapter on pellagra which appeared in the last edition among fevers is now relegated to the section on general diseases of undetermined nature. In this chapter on pellagra a cautious attitude is properly observed. Sambon's hypothesis, which attributed it to a protozoal organism, transmitted by some blood-sucking midge belonging either to the Chironomidae or to the Simuliidae, is fully set out, but Goldberger's failure to communicate the disease and his consequent rejection of a germ cause are also noted. Additional evidence in favour of the view that the disease is due to defects in diet has recently been afforded by observations in America, as noted elsewhere in this issue (p. 593).

The chapters on mosquitos and tsetse flies and ticks have been revised by Lieut.-Colonel Alcock, C.I.E., I.M.S., lecturer on medical entomology and general medical zoology in the London School of Tropical Medicine. The numerous illustrations in these chapters are of real value, for they not only help the comprehension of the facts established with regard to the life-history of the parasite, but will be found of practical utility for reference by workers engaged in the recognition and investigation of malaria and trypanosomiasis in districts where it is impossible to carry about a large library. No considerable alterations appear to have been found necessary in the chapter on dysentery, but a short section is inserted on *Lambia* infection, and also a note on the isolation of the bacillus from the stools.

In spite of the many editions through which it has passed, the book retains the stamp put upon it in the first. It is the work of a master thoroughly familiar with a subject, to which, both directly and through his stimulating influence on his pupils, he has contributed so largely. Theoretical considerations are fully stated, but always along with the facts and observations upon which they are founded, as well as those which may be held to militate against them. This plan involves the inclusion of an immense number of details, which must be continuously increased or corrected as research progresses. It would be a very laborious undertaking to compare the new edition with the last on every point, but so far as we have carried this process we invariably find new work noticed. The new edition will maintain and extend the reputation of the work as a sound guide for the use of students and practitioners; it is comprehensive, without being too large for the practical purposes of a physician in the tropics.

¹ *Tropical Diseases: A Manual of the Diseases of Warm Climates.* By Sir Patrick Manson, G.C.M.G., M.D., LL.D. Sixth edition, revised throughout and enlarged. London: Cassell and Co., Ltd. 1917. (Cr. 8vo, pp. 968, with 12 coloured and 4 black and white plates, and 254 figures. 16s.)

X RAYS IN THE DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL.

*The Roentgen Diagnosis of Diseases of the Alimentary Canal*² is the title of a book written by Drs. CARMAN and MILLER, respectively the head and the first assistant in the Section of Roentgenology, Division of Medicine, of the Mayo Clinic. The aim of the authors has been to select and arrange in a systematic manner those things which seem not only to be true but worth while, and especially those which they have verified by their own experience, and the result is a reference book which should be of very great value. In its general scheme the idea has been to follow the gastro-intestinal tract through from beginning to end, allotting a chapter to each definite condition of the part under consideration, giving a short reference to the principal published papers at the end. Arranged in this manner, a single chapter becomes a short monograph, complete in itself, and yet it remains an essential part of the whole scheme, as one chapter leads on to another. Any extensive description of apparatus has been avoided, but the general technique of examination is fully discussed, and an important point is made in Chapter II, in which the principle is laid down that each roentgenologist should have some customary routine to follow in order that his comparisons should be made on a uniform basis, but that at the same time, whilst following this routine, it should be made flexible to meet exceptional circumstances. Emphasis is also laid upon the fact that routine will not alone make diagnoses, but that the interpretation of findings, which can be learnt by experience alone, is quite as important as technical methods.

The vast amount of material at the author's disposal in the Mayo Clinic is evident throughout the whole book. Proof of this is seen in the chapter on syphilis of the stomach with its many illustrations of this condition. It is quite evident, as is pointed out, that syphilis cannot be diagnosed from the x-ray appearances, which would as a rule suggest cancer or ulcer; but the discrepancy between the extent of the lesion and the general condition of the patient, who is often under the cancer age, and is anaemic rather than cachectic, and is not markedly weakened or emaciated, are points which should give rise to suspicion.

In discussing the x-ray diagnosis of duodenal ulcer it is pointed out that the condition is so important and frequent that more than 2,300 cases have been proved by operation at the clinic. Careful investigation has convinced the authors, who had previously been sceptically inclined, that Cole's sign—namely, deformity of the duodenal contour—a "direct" sign of the presence of a duodenal ulcer, is of the greatest diagnostic value. There are many illustrations showing this condition, and these are the more valuable inasmuch as the cases have gone to operation and the x-ray diagnosis has been confirmed. A few rare conditions, not without interest, are to be found here and there throughout the book, but essentially the radiographic conditions illustrated and described are such as occur daily in any large x-ray clinic.

Taken as a whole this work is a valuable record of systematic and careful observation of cases; it is well got up; the letterpress is excellent; the illustrations are well chosen, profuse, and typical of the conditions described. It is the best book which has as yet been published on the subject, and it should become a standard textbook.

NOTES ON BOOKS.

WE have on several occasions called attention to the excellence of Mr. MUIRHEAD BONE'S illustrations in the periodical, *The Western Front*,³ published for the Government from the offices of *Country Life*. The first five numbers have been collected into a volume containing, with extra letterpress and index, 100 plates of places and incidents with the British armies in France, in munition works in England, and with the Grand Fleet. The volume is of permanent interest, for Mr. Bone has the power of giving not only a transcript of a landscape which is faithful to its outlines, but can record its spiritual effect

² *The Roentgen Diagnosis of Diseases of the Alimentary Canal.* By Russell D. Carman, M.D., and Albert Miller, M.D. Philadelphia and London: W. B. Saunders Company. 1917. (Roy. 8vo, pp. 558; 504 illustrations. 6 dollars net.)

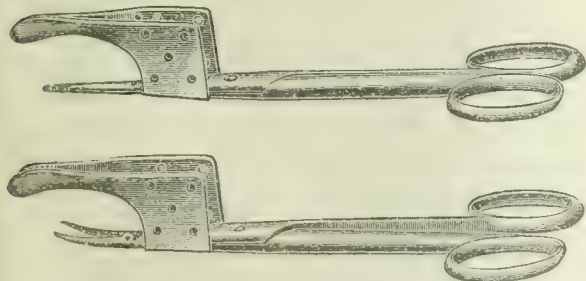
³ *The Western Front.* Vol. I (15s.); monthly numbers 2s.). *Generals of the British Army.* Part I (5s.). London: Published for the Government by *Country Life*, Ltd.

on the spectator, as witness his sketches of the Somme, where the sense of distance and the ideas of remoteness and desolation carry to the eye of the mind a picture the truth of which those who have looked across the country itself will be the first to acclaim. No other pictures we have seen, whether of artist or photographer, approach these in conveying to those who have stopped at home a true impression of the places in which their sons have been fighting, the burrows and billets in which they have dwelt, and the towns and villages through which they have marched. The letterpress is just full enough to recall the times and circumstances in which the drawings were made. The September number shows the artist in his most varied form. The fourteen drawings in France give us, in addition to impressionist sketches of the armies, three finished drawings of undamaged France—one of the exquisite doorway of a house built for one of Napoleon's generals, one of the quaintly beautiful square in Hesdin, and another of Rollencourt village with its church and surrounding trees and the wide landscape beyond. The other seven drawings in this number are of the sea, the last being a vivid picture of the bridge of a merchant ship. A character sketch of each man could be written from it, and the whole is flooded with the light that fills the "high and lofty" bridge house by day. The October number contains drawings more in the line of work which first brought Mr. Bone reputation. They are all concerned with ship building, and include several drawings of standard ships in various stages; one, a shipyard seen from a big crane, and another, entitled "the seven cranes," show the artist of machinery at his best. The same publishers have issued the first part of another periodical, *Generals of the British Army*. It contains twelve portraits done from life, mostly in France, by Mr. FRANCIS DODD. They have the effect of coloured pastels and are admirably reproduced. They are not smooth and flattering, but give the man as he is, with a strong impression of the mind and character behind the outward showing. The first, of Sir Douglas Haig, is not only an extraordinarily good likeness, but in the expression of the face and the whole attitude and pose of the alert figure tells the qualities which have brought him to the great place he holds. The last portrait is of General Smuts, standing full face, looking very straight to his front. Each portrait is accompanied by a short biography. It may be interesting to note the nationality and age of the eight generals here portrayed who have commanded armies. Two, including the Field Marshal, are of Scottish birth, and both are aged 56; four are of English family, aged 53, 55, 56, and 60; of the two others, both aged 47, one belongs to an Irish and the other to a South African family. The portraits of Sir Douglas Haig and General Smuts have also been reproduced on a larger scale for framing, as well as portraits of Admirals Jellicoe and Beatty, which appear to belong to another series we have not seen.

MEDICAL AND SURGICAL APPLIANCES.

Combined Scissors, Forceps, and Sponge-holder.

W. B. AINGER, F.R.C.S., Captain R.A.M.C.(T.F.), writes: A glance at the accompanying sketch will at once make clear the utility of this instrument, which combines in itself the functions of scissors, forceps, and sponge-holder. When the scissor action is required the instrument is grasped as



one would an ordinary pair of scissors, with the hand pronated. When the forceps or sponge-holder action is required all that is needed is to supinate the hand completely. The instrument is designed to obviate the necessity for constantly washing the hands, steeping them in lotions, etc., and all the ritual, so often imperfectly carried out, which goes to the performance of the simplest dressing. The instrument should be kept in a jar with the blades immersed in strong lysol and the handles

exposed. Before use the blades should be rinsed in some weaker solution and then, on completion of the dressing, once more rinsed before returning to the jar. The instrument has been made for me by Mr. Alfred E. Dean, Leigh Place, Brook Street, Holborn, E.C.1.

THE WELFARE OF THE BLIND.

We gave in the JOURNAL of August 18th an account of the general character of the report¹ presented by the Departmental Committee on the welfare of the blind, appointed in May, 1914, and mentioned its principal recommendations. The matter, however, is of so much importance and possesses so much interest for the medical profession that it appears desirable to give a more extended notice of the scope of the inquiry.

The Number of the Blind.

The report of the Committee states that according to the census of 1911 there were 33,965 persons (males and females in nearly equal proportions) returned as totally blind. Of these 2,184 were under the age of 15 years. The census returns specified 8,693 as "occupied," including children of 10 and upwards. Figures obtained by the Committee from institutions indicate that approximately 3,000 blind persons are occupied in workshops and institutions. It endeavoured to collate statistics as to the capable blind who were unoccupied; the data is incomplete, but a conservative estimate points to there being not less than 3,000 blind persons capable of training and employment, but unoccupied. In July, 1914, there were 12,015 persons in receipt of outdoor poor relief. Of these, 2,809 were returned as capable of training and employment. The evidence before the Committee from Poor Law returns and the figures furnished by certain organizations indicates that there are probably not less than 10,000 incapable blind persons in the United Kingdom.

A comparison of the census returns of 1901 and 1911 indicates that though the total number of blind has increased, the proportion of blind to the population has diminished, except in Ireland. The exception is explained by Dr. Coey Bigger, of the Local Government Board for Ireland, as probably due to the effects of emigration leaving a residuum of blind persons out of proportion to the rest of the population.

Age Incidence and Causes of Blindness.

The data on age incidence are meagre. The returns of the census indicate that the three main causes of blindness (the last is the heaviest) are: (1) Accidents; (2) congenital and infantile diseases; (3) cataract, optic neuritis, or other eye trouble.

Comment is made on the part played by ophthalmia neonatorum in the production of infantile blindness. It is held to account for 10 per cent. of the total of blindness at all ages. Some evidence was taken on the measures in vogue for the prevention of the disease and for the better securing of the full effects of these measures. That a very high standard can and should be obtained is manifest, and it is equally clear that there is room for improvement in not a few parts of the country. Prompt notification of the disease is needed, and efficient nursing for "the treatment of a child with ophthalmia neonatorum means treatment nearly all day and a good part of the night." It is essential that hospital accommodation should be provided for the child (and if necessary for the mother also) in a certain number of cases. The disease is more prevalent in squalid homes, where efficient treatment cannot be secured, than in those where better conditions prevail. Comment is made on the large number of cases of blindness due to interstitial keratitis consequent on inherited syphilis. The report quotes the Royal Commission on Venereal Diseases as coming to the conclusion (par. 102) "that over 50 per cent. of all blindness was due to venereal diseases." This is a misquotation; the words of the report of the Royal Commission are: "The figures laid before us by Mr. Bishop Harman show that more than half of all cases of blindness amongst children are the result of venereal disease in the parents."

Under the heading of "Occupational Blindness" attention

¹ H. M. Stationery Office, London, 1917. (Cd. 8655.) To be purchased through any bookseller, price 9d. net.

is called to the need for more care for the protection of the eyes of workpeople engaged in hazardous occupation.

It appears that, with the exception of the bottling of aerated waters, in no industry are the employers compelled to provide, or the workpeople to wear, goggles; and, further, where goggles are provided (and such places are few) workmen will not wear them, partly because sufficient attention has not been given to the production of comfortable goggles, and partly because of sheer prejudice on the part of the worker; . . . 5 per cent. of all accidents reported by the certifying surgeons in factories and workshops for the years 1907-14 are eye injuries; and of these, 2.5 per cent. at least result in the loss of one or both eyes.

Education.

The effect of the Elementary Education (Blind and Deaf Children) Act of 1893 for England and Wales has been admirable, and Scotland is equally well provided for. There is no such provision for Ireland, and the Committee report that a system of compulsory education, on the line of the Act of 1893, accompanied by State inspection and State grants, should be set up in Ireland. The endless controversy between day and residential schools crops up, and it is evident that strong opinions on either side were expressed. The report shows the effect of this diversity.

The witnesses who considered the day school as the better system laid stress on the undesirability of withdrawing children from their home life and segregating them from their sighted fellows. There is undoubtedly much weight in the latter consideration; education with sighted children obviously tends to make the blind child more normal. The majority of the witnesses were, however, strongly in favour of residential schools as providing better discipline, a more constant and skilled supervision, greater individual attention, more highly-organized games and exercises, a proper dietary and medical supervision, and greater education facilities generally.

In considering these opposed views the report gives weight to both, but in the final summary plumps wholly for the institutions or residential schools. A similar conflict of evidence arose regarding the use of sighted and blind teachers. The former have the benefit of the better discipline they can secure; but the value of the blind teacher is undoubted. As Sir Arthur Pearson pointed out in reference to the training of blinded soldiers and sailors, "the whole outlook of a man becomes different when he finds himself in the hands of a teacher who works under the same handicap as his own."

The necessity for special provision for the training of myopic children is emphasized, and praise is given to the excellent work done by London in initiating these special classes. Comment is made, also, on the necessity for extending the system of "after care" of the children who have attended blind schools. With a few notable exceptions the suggestions of the Royal Commission of 1889 have not been carried out in this respect. To secure the best effect of the education given to these children it is necessary to oversee them for at least two or three years after leaving school, to assist them to good and continuous work, otherwise difficulties daunt them, and they drift into the unoccupied ranks.

With regard to professional training, the Committee is satisfied from the evidence that there are some callings on which blind people may embark with a reasonable prospect of success: music, pianoforte tuning, the religious ministries, teaching, massage, and various forms of business work, such as typewriting and shorthand. But for each a proper aptitude and education is necessary to success.

The matter of training for industrial occupation is carefully handled, and it is pointed out that there must necessarily be a high percentage of blind persons for whom this form of occupation is alone suitable. Many forms of manual work are cited as being successfully followed, and among additional trades it is suggested that upholstery should be taught. But in all trades it is urged that success needs more than training; it requires the provision of suitable workshops where the trained blind can work successfully. For this there is the greatest need of provision, and until this need is met further facilities for training will be of little avail.

Wages.

As to the earning capacity of the blind, the Committee finds—

The value of the output of the blind worker is, in the first place, diminished by the cost of the sighted supervisor, which is absolutely necessary. In the second place, the blind worker is normally . . . not capable of attaining a speed of more than

half that of a sighted worker. As a general rule it does not appear that the earning capacity of the blind worker can be put higher than half that of a sighted worker.

As to the manner in which the poor earnings of the average blind can best be augmented to a level at which they can live, it is stated that several methods have been adopted by institutions to augment wages. Better organization of the workers is insisted upon, so that each gets the work he can earn most at. The relative values of workshops or home industries came under consideration. It was found that for the large majority the workshop was better; the home industries produce only one-half to two-thirds of the wages earned at the shops.

With regard to the large number of blind in receipt of Poor Law relief it is said:

We entirely agree that the incapable blind should be assisted by pensions rather than Poor Law relief. . . . In our opinion every incapable blind person who is worthy should be secured an adequate pension; and it will be necessary for the State to provide additional funds for this purpose.

The existing provision for pensions by various societies is set out. Some of the pensions are pittance of £5 to £6. The Committee fear these small sums are waste of money, and may stimulate the recipient to go-round cadging. This part of the report concludes with a eulogistic account of the work done by Sir Arthur Pearson for blinded soldiers and sailors.

Recommendations.

The most urgent necessity shown by the inquiry is a co-ordination of effort. To this end it is recommended that a special Government department should be created whose function shall be the general care and supervision of the blind. The department should form part of the "Ministry of Health," or, pending the establishment thereof, the Local Government Board. A scheme for the provision of 3,000 more workshop places is urgently needed, and it is recommended that a strong Advisory Committee of persons associated with the care of the blind should have the immediate guidance of the scheme.

The Committee recommend the adoption of the definition of blindness arrived at by the Ophthalmological Section of the Royal Society of Medicine: "Blindness means too blind to perform work for which eyesight is essential." Further recommendations cover a number of details regarding statistics, elementary, professional, and industrial training, the general trend of which are indicated in the foregoing summary of the report. In conclusion the Committee write: "We want to impress upon the country the extremely hopeful nature of this problem."

Reservations.

There are certain "reservations" made by members of the Committee. Mr. A. A. Allen, Sir Arthur Downes, and Mr. Thomas Stoddart comment on the weakness of the recommendation of the Committee regarding pensions. This is the more remarkable in view of the fact that the State has assumed responsibility for those blinded in the war to the extent of 27s. 6d. a week. These members recommend that the State should recognize the handicap from which blind people necessarily suffer and should make a suitable allowance to every blind person above the age of 21 who has no private means of support and is not unworthy. Another reservation by Messrs. A. A. Allen, H. W. T. Bowyear, and Sir Arthur Downes concerns elementary schools. They take exception to the general recommendation of residential schools: "It seems to us that, as in the case of sighted children, institutional life is a poor substitute for home and family life." They cite as eminently successful the system in vogue in the London County Council area of day centres for the children up to a certain age and then the provision of residential trade schools for boys and for girls. They also point out that there is another objection to drafting young blind children into institutions—"such a system would meet with opposition from many parents."

THE Alvarenga Prize of the College of Physicians of Philadelphia has been awarded for 1917 to Dr. Wilburt C. Davison of Baltimore for his essay on the superiority of inoculations with mixed triple vaccine (*B. typhosus*, *paratyphosus* A, and *paratyphosus* B) over successive inoculations with the single vaccines, as shown by agglutinin curves in men and rabbits.

THE SANATORIUM TREATMENT OF TUBERCULOSIS.

ANNUAL REPORTS.

National Hospital for Consumption, Ventnor.

In his report for the four years, 1912-15, the Senior Resident Medical Officer of the National Hospital for Consumption, Ventnor, Dr. Arthur Hawkins, opens with a detailed description of the exact daily routine which is adopted for all patients admitted to the institution.

So much of the success of treatment depends upon the strict adherence by the patient to the instructions given to him that it is very necessary for intending patients and for the medical advisers to know exactly what those instructions are. At first sight the rules and regulations in force at Ventnor would seem somewhat alarming. Every moment of the patient's day is mapped out for him. But among the first of these rules is one which obliges him to attend a lecture on his first Saturday afternoon, in the course of which he is made to understand the *rationale* of the system and the advisability, for his own sake, of cordial co-operation.

The scale of diet at Ventnor is not framed with any idea of over-alimentation, but it appears to be sufficient, and the average gain of body weight is satisfactory. Special attention is paid to mastication of food, and full time is allowed for the purpose. The vital importance of this point is too often forgotten, but the relation of dental hygiene to digestion has of late years been more fully recognized, both in military and in civil practice.

The introduction of graduated manual labour, both indoor and outdoor, is being proceeded with steadily, and the general results of treatment are being maintained at a fair level. A system of after-reporting has been introduced by means of prepaid reply forms, and much valuable information as to the duration of improvement is being accumulated. It has to be noted that the number of cases admitted in the later stages of disease is still very high. The percentage of improvement amounts to 65, as compared with 91 per cent. for cases in the early stages, but it is probable that such improvement in the one case is only temporary, while in the other the patient may have been restored to usefulness. The resources of the Ventnor Hospital would be capable of dealing with a much larger proportion of curable disease if the admission of cases for which only temporary amelioration can be afforded were rigidly curtailed.

Hertfordshire.

In Hertfordshire the work of detection and treatment of tuberculosis has been vigorously pursued, although hampered in its progress by economic causes which are not at present remediable. Dr. Hyslop Thomson, the Medical Officer of Health and Tuberculosis Officer for Hertford, calls special attention in his report to the need for extension of domiciliary treatment and for loyal co-operation between the local practitioners and the special officials. Personal qualities play so large a part in the introduction of regular visitation and home treatment that it must of necessity be most successful where tact and sympathy are most in evidence. It is satisfactory to learn that provision is about to be made for the treatment of advanced cases in a county hospital and that an industrial sanatorium is also to be set up. The introduction of definite employment as a part of institutional treatment is so important a factor that it is to be hoped that it may become universal. The melancholy spectacle of fairly able-bodied men and women loafing about the wards, corridors, or grounds of large hospitals for sheer lack of employment of any kind, is only too familiar. Active work, within the physical powers of both sexes, must of necessity be advantageous, and if at the same time it can be made to pay its way, the working patients would be enabled to continue their treatment until the activity of disease had subsided, instead of returning, as they do at present, to the unhealthy surroundings from which they came, before their health is fully restored.

Newcastle-upon-Tyne.

The influence of the war upon the death-rate from consumption is the principal theme of the Medical Officer of Health for Newcastle-upon-Tyne, Dr. H. Kerr. The rate has steadily increased during the last three years, and it is disressing to note that the chief sufferers have

been among young girls from 15 to 20 who have so nobly been filling the gaps in factories, shops and offices, and in many heavy outdoor employments.

Overcrowding in dwelling-houses and overstrain, both mental and physical, would seem to be the chief factors in the general rise of mortality. The many other contributory causes, although constantly present, do not appear to have been more than usually effective, and some of them, notably alcoholism, have been far less so.

British Guiana.

An interesting report, not differing in form from the usual home type, reaches us from a far-away part of the British empire. The Society for the Treatment and Prevention of Consumption in British Guiana has been established for the last ten years, and its record of activity will compare well with that of similar organizations nearer home. The population of the colony is very mixed, but all races appear to recognize the usefulness of the society as a means of seeking out and dealing with the disease, which has hitherto caused a high death-rate, more especially in Georgetown.

A central dispensary, a public hospital, and an almshouse have provided the means for dealing with the different stages of the disease, and the steady work of lady visitors has been effective in persuading suspected cases to come up for examination. The large proportion of non-tuberculous cases would seem to indicate that their efforts have been appreciated. The death-rate in the colony is still high, more especially among female patients.

A MINISTRY OF HEALTH.

CONFERENCE OF SANITARY AUTHORITIES.

A CONFERENCE of sanitary authorities, called by the National Association for the Prevention of Infant Mortality, was held at the Mansion House, London, on October 29th, to consider the proposals relating to a Ministry of Health. Representatives attended from a large number of municipalities in England and Wales and Scotland, and were welcomed by the Lord Mayor.

Mr. NEVILLE CHAMBERLAIN took the chair, and presided for the greater part of the day. The war, he said, had shown how greatly the power, and even the very existence, of the nation depended upon the quality of its manhood and womanhood. Those who had had access to the statistics of medical classification of males of military age must have been shocked by the very large proportion of young men who failed to reach the standard of military fitness. While a Ministry of Health would not cure all the ills that flesh is heir to, it was obvious that the present division of public health administration among a number of different departments did not make for efficiency. He instanced four respects in which progress in the health services might be furthered: (1) The establishment by local authorities of their own service of midwives, who should be allowed to take pupils; (2) the appointment of doctors—perhaps preferably women doctors—specially for midwifery cases, at a suitable salary and in such numbers as might be necessary for the needs of the neighbourhood; (3) the provision of better medical attendance and treatment for young children, including sufficient hospital and convalescent home accommodation; (4) greater public control of milk and patent foods. Mr. Chamberlain also suggested that, seeing that medical officers of health were vital to all schemes of the kind, they should be selected from the best talent available, and paid a higher salary than was generally the case at present, though with the higher salary should go a stiffening of the preliminary training.

Mr. S. ROBERTS (chairman of the Sheffield Health Committee) moved, and Dr. E. W. HOPE (Medical Officer of Health, Liverpool) seconded:

That this Conference urges the establishment of a Ministry of Health.

Both speakers laid emphasis upon the difficulties and delays arising out of the present distribution of health administration among a number of Government departments.

Sir WILLIAM CHANCE declined to support the resolution. He held that there was too much inclination to call for new ministries as a solution of problems when all that was

wanting was a strengthening of existing machinery. The Local Government Board had done magnificent health work, and he was content to leave the question to that department and to existing public health authorities. He hoped that the red herring of the Poor Law work of the Board, which was an entirely separate department, would not be drawn across the track.

Sir HANER GREENWOOD held that as an immediate policy the powers of local authorities should be increased, but a Ministry of Health was an ideal that could not be realized at least for ten years. It was impracticable to proceed with the matter during the war, and afterwards it would necessitate a Royal Commission.

Dr. S. G. MOORE (Huddersfield) suggested that, without waiting for a Royal Commission, it would be possible for Ministers acting collectively to advise the King to appoint a Minister of Health, and it could then be left to that agent of the Crown to effect the co-ordination and consolidation all desired.

The following, among other medical officers of health, spoke in general support of the main resolution: Dr. JOHN ROBERTSON (Birmingham), Dr. JAMES WHEATLEY (Shrewsbury), and Dr. JAMES PATERSON (Maidenhead). The resolution was carried with three or four dissentients, and a number of addendums were put to the meeting, two of which were carried. The first of these was on the motion of Dr. T. W. N. BARLOW (Wallasey):

That the unification of control in all matters relating to the public health of the community is equally necessary locally as centrally.

The other was on the motion of Dr. HAROLD SCURFIELD (Sheffield):

That, pending the establishment of a Ministry of Health, there should be no delay in promoting legislation for the welfare of mothers and children, and particularly in extending to England the powers recently given to Scotland under the Notification of Births Act, 1915.

Councillor MARGARET ASHTON (Manchester) then moved the second of the main resolutions:

That, in view of the paramount importance of motherhood and infancy, a special department of the Ministry of Health be established to safeguard their welfare.

She called for a more united effort on the part of doctors, midwives, and local authorities to provide better conditions for motherhood. What was wanted was a real maternity benefit which could be spent on the mother herself; not a largely fictitious benefit such as the one provided for under the National Insurance scheme. She also pleaded for special care for working girls, many of whom were required to perform the duties of maternity after having been rendered unfit for such duties owing to the conditions of their occupation. No regulations with the special object of safeguarding the maternal powers of working girls and women were in force.

Alderman BENJAMIN BROADBENT (Huddersfield) seconded the resolution, although he thought that there might well be more difficulty in getting a department of maternity established within the Ministry of Health than in establishing the Ministry of Health itself. Dr. KAYE (County Medical Officer for the West Riding) and Dr. C. W. SALEEBY, both of whom urged the great necessity for ante-natal care of the mother, supported the resolution, which was carried unanimously.

Lord RHONDDA then addressed the Conference and said that his idea for a Ministry of Health was the result of his experiences at the Local Government Board when he saw the differences between the various Government departments and the occasional obstruction that resulted. Therefore it had been his ambition to co-ordinate all the health activities of the Government in one department, so that on this vital matter there would be no overlapping or friction. He had a promise from the Prime Minister that the work he had done should at least be safeguarded, and he was satisfied that the Prime Minister was as anxious to fulfil his promise as he himself was to see it fulfilled. But the Prime Minister's first duty was to maintain the unity of the nation and avoid anything likely to give rise to controversy, and thus it was necessary, before he (Lord Rhondda) could press him to fulfil his promise, that the Local Government Board and the National Health Insurance Commissioners should come to an agreement. He

urged all who were interested in the health of the country to do everything they could within the next two months to see whether some fair compromise could not be reached. A Royal Commission had been suggested, but there was no need for such an inquiry. All that was wanted was a short bill to co-ordinate the health functions of the various departments; if necessary, an inquiry could be made after the new department had been created. He added that he saw indications that some of those who had been inclined to obstruct were realizing that the Ministry of Health was an urgent matter.

After Lord Rhondda had spoken the Conference agreed to the appointment by the Association which had convened the Conference of a small committee to act in conjunction with Lord Rhondda with a view to calling together the various bodies concerned and determining whether some agreed measure could be arrived at.

ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee, held on Tuesday, October 9th, nineteen cases were considered, and £176 voted to sixteen of the applicants. The following is a summary of some of the cases relieved:

Widow, aged 60, of L.R.C.P. and S.Edin. who practised at Liverpool, and died in 1894. Applicant has for some years acted as health visitor for a county council, but, owing to ill health and increasing age, will have to resign. Has recently had an operation on her foot. Income as visitor £104 per annum. The Fund promised £12 per annum when she has to give up her work.

Daughter, aged 50, of M.B.Lond. who practised at Newcastle, Staffs, and died in 1885. Applicant lost all her income through bad investments, and her health is so bad that she is unable to work. Relieved three times, £29. Voted £12 in twelve instalments.

Daughter, aged 57, of M.R.C.S.Eng. who practised at Newport, Mon., and died in 1892. Has tried to earn a living by keeping a children's school, but, owing to ill health and the high cost of living, cannot make it pay. Relieved twice, £24. Voted £12 in twelve instalments.

Widow, aged 72, of L.R.C.S.Ire. who practised in London and Wales and died in 1915. She was left entirely without means, through long illness of husband. Has two daughters, one of whom is very delicate, and the other helps all she can. Has the old age pension. Relieved twice, £26. Voted £12 in twelve instalments.

Daughter, aged 60, of M.R.C.S.Eng. who practised at Wymondham and died in 1870. Applicant is quite unable to work, and the loss of her benefactress of fourteen years left her quite destitute. Relieved nine times, £52. Voted £12 in twelve instalments.

Daughters, aged 53 and 45, of L.S.A.Lond. who practised in London and died in 1903. One is an epileptic, and the other unable to earn a living. Joint income, £69 a year. Relieved jointly nine times, £101. Voted £18 in twelve instalments.

Widow, aged 48, of M.R.C.S.Eng. who practised in London and New Zealand and died in 1901. She was left unprovided for with three young children. She has endeavoured to make a living by taking in boarders, but her house being on the Essex coast she had not been able to make it pay since the war commenced, and has had to give it up. Her eldest son has joined a cadet school, with a view to taking a commission. Relieved six times, £71. Voted £10.

Daughter, aged 56, of L.R.C.P.Lond. who practised at Birmingham and died in 1874. Endeavours to make a living by taking in lodgers, but has not been successful of late. Has only received £3 this summer. Relieved six times, £68. Voted £12 in twelve instalments.

Subscriptions may be sent to the Acting Honorary Treasurer, Dr. Samuel West, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is now called upon, as a result of the war, to deal with many widows and children who, in happier times, would not have thought of asking for assistance. It is glad to receive secondhand clothing and household linen. The class of clothes most wanted is that suitable for boys and girls working in offices, for women, and for old men. The gifts should be sent to the secretary of the Guild, 43, Bolsover Street, W.

THE death-rate in Belgium has greatly increased in the last two years, and there has been a large decrease in the birth-rate. While the number of births in the Brussels district in 1913 was 6,417 (17 per 1,000 of the population), and the death-rate 13.7, in the first six months of 1915 the birth-rate was 14.3 and the death-rate 14 per 1,000. In the corresponding period of 1917 there were 3,311 births (8.5 per 1,000), and the death-rate had risen to 19.3.

British Medical Journal.

SATURDAY, NOVEMBER 3RD, 1917.

MEDICAL DEMOBILIZATION.

SINCE almost all the prophets have been wrong in their forecasts of the course of the war and its immediate economic effects, we may fairly suppose that prophecies as to after-war conditions will prove to be no more correct. The duration of the war is still uncertain, and the general situation at the close of hostilities can only be guessed at; but, although the future is obscure, it is a primary national duty, even at the climax of the war when victory seems the only thing that matters, to look ahead and prepare for peace. The war took us unawares, and the nation as a whole has only put itself on a war footing at a vast expenditure of time, money, and energy. Our unpreparedness for war has cost us dearly, and unless we take adequate steps in time the advent of peace may find us at an equal disadvantage. A Minister of Reconstruction has been appointed, and the Ministry of National Service is in process of reorganization upon lines which seem to be sound for the immediate purpose in view; but demobilization and the reconstruction of national life after the war will test the best brains of every department of State, and of every trade and profession. The wheels are all moving in one direction now, and the problem is to adjust the machinery whilst it is in motion so that it may stand the shock of moving in the opposite direction.

While it is our duty to make ready for peace, when it comes, the number of incalculable factors renders it impossible to draw out precise plans now. We do not know when or how the war will end, nor can we foretell the economic condition of the world when peace arrives; least of all can we conjecture what will be the attitude of the nations towards armaments and international rivalries; yet the whole circumstances of demobilization and reconstruction must depend upon the length of the war, and be governed by its moral and material results. Demobilization signifies the reduction of military forces to a peace footing, but until the end is in sight no one can say what will be the peace footing of our naval and military forces in the changed conditions after Armageddon. It is necessary to take this wide outlook in approaching any discussion of general or sectional demobilization, for otherwise there will be a danger of being captivated by concrete schemes which in the nature of things must rest on a basis of hopes and prophecies.

Having said so much, we may welcome any indications that the military and civilian medical authorities are approaching the matter in advance from a statesmanlike standpoint, before their hands are forced by the arrival of peace and the need for immediate action. Notwithstanding all the uncertainties it is high time to begin collecting information and ideas, and we are glad to know that the Central Medical War Committee has already discussed certain aspects of medical demobilization, and offered its assistance to the Army Medical Department. The way in which doctors are to be restored from the forces to civilian life needs careful thought. If, when the time comes, it is to be conducted on an orderly, rapid, and equitable plan, with due regard to economy, co-operation will be

needed beforehand between the naval and military authorities, various Government departments and public bodies, on the one hand, and the statutory professional committees, whose duty it has been to find civilian doctors for the army while safeguarding the medical needs of the public at home, on the other.

The process of drafting medical officers out of the army after the declaration of peace is one in which the War Office will, we have no doubt, be ready to have the guidance and help of civilian medical authorities. Military considerations will determine the numbers that can be dispensed with, and the rate at which the outgoing stream should flow; beyond this the problem is far more civilian than military in nature. An adequate supply of specialist services will have to be maintained in the army during demobilization; otherwise, the principles upon which individual medical officers are selected for release, and the order in which they are released, must be determined mainly by reference to civilian needs, of which the army is not in a good position to judge, and to individual circumstances, of which the statutory professional bodies are the best judge.

Any scheme for demobilization of individual medical officers, however provisional, will naturally take into consideration such factors as age, health, and physique; professional circumstances and domestic obligations; and length and kind of military service. The kind of service is of great importance, and no scheme will do justice all round which fails to reckon with this factor. Whatever plan is devised there are sure to be hard cases, but everything possible should be done during demobilization to remedy existing grievances by smoothing the homeward path of those whose terms of service have been the hardest. An equitable basis of selection would thus take into special account the case of the Territorial and Special Reserve officers, who have served since the first days of the war, with no prospect of release, and with disabilities in respect of pay, gratuity, and promotion, which are familiar to our readers. No military technicalities should be allowed to retain these men a day longer than is strictly necessary. The circumstances of temporarily commissioned officers vary widely; some who have served for two or three years, or longer, are now, if of military age, not much better off than their Territorial and Special Reserve colleagues—since their contracts are no longer annually renewable. Other things being equal, it would seem fair that those who have served longest should be liberated first; and of these the senior men nearing the upper limit of military age, with strong professional claims on public or private grounds, would have a *prima facie* case for early demobilization—almost as strong as those in like circumstances but above military age. Discrimination will be a delicate task, because the Military Service Acts altered the whole situation. With regard to newly qualified men the matter should be rather less difficult; it would seem to be both fair and politic that these should be withdrawn from the army last, and that medical students who have been allowed to continue their studies should, on joining the profession, become automatically available for the medical services of the army during the process of demobilization, and for a certain period afterwards if needed to maintain the officer strength of the R.A.M.C. and the Navy Medical Service. This would do something to equalize matters as between students who have had preferential treatment under the Medical Service Acts and those who, serving as combatants, have fallen behind in the race of life. The latter have a strong case for special

consideration, and if it is inexpedient to return them all now to their studies they ought in justice to have every opportunity for making up lost ground as soon as the war is over.

These few preliminary observations will have served their purpose if they indicate some of the lines along which the problem of medical demobilization is being approached, and thus stimulate discussion within that large section of the profession which will be directly affected by the method chosen for returning doctors to civil life at the end of hostilities.

SPIROCHAETOSIS ICTERO- HAEMORRHAGICA.

As an example of the value of what may be called "team work," in establishing an accurate explanation and view of the clinical course of a disease and its prophylaxis, attention may well be directed to the series of papers¹ recently published from the First Medical Clinic of the Imperial University in Kyushu, Fukuoka, Japan. In 1915 a disease in Japan, resembling that known as Weil's disease and formerly ascribed to infection with *Bacillus proteus fluorescens*, was proved by some of these workers to be due to the *Spirochaeta icterohaemorrhagiae*, and this advance was subsequently confirmed on the Western front. The disease has therefore been called spirochaetal jaundice (icterohaemorrhagic), and it has been further shown by British observers (Stokes, Ryle, and Tytler²; Hume and Dawson³) that this spirochaetosis though usually is not invariably accompanied by jaundice. In one of the recent Japanese contributions the view that house and wild rats and field mice act as carriers is confirmed, the spirochaete being present in the kidneys and urine only and not in the blood—a condition resembling that in human convalescents from the disease. The escape of these urine-borne spirochaetes into the soil of damp mines and trenches facilitates infection through the skin, especially in barefooted miners. Further, the curves of the incidence of rat and human infection correspond. Stimulated by the knowledge that the cholera spirillum and other bacteria and protozoa do not thrive in an acid soil, Ido, Hoki, Ito, and Wani found that the spirochaete dies in a weakly acid medium and that the disease is rare in the parts of the province of Fukuoka with an acid soil, whereas it is endemic in those with an alkaline or neutral soil.

Two other papers, that by Kaneko and Okuda on the distribution of the *Spirochaeta icterohaemorrhagiae* in the human body, based on forty-three necropsies, and that on the clinical aspects of the disease by Inada, considerably modify our existing views, first by dividing the course of the disease into three stages in correspondence with characteristic features as regards the presence or absence of spirochaetes and their antibodies in the blood, the urinary excretion of the spirochaetes, and their distribution in the organs of the body; and, secondly, by throwing doubt on the assumption that the second attack of fever observed in 28 per cent. of the cases is a true relapse of the disease. The first or febrile stage, during which spirochaetes are present in the blood and in the main extracellularly in the liver, adrenals, and kidneys, lasts about a week, and on the fifth day the formation of antibodies begins. In the second or icteric stage, also lasting a week, in which jaundice is

at its height and the mortality is highest, the spirochaetolytic and spirochaeticidal antibodies destroy the spirochaetes in the blood in the liver and adrenals, where irregular degenerated relics only are visible. The blood thus becomes free from spirochaetes, which, however, persist in the heart muscle and kidneys, chiefly inside the cells. In the third or convalescent stage, beginning about the thirteenth day, the jaundice subsides, anaemia and emaciation appear, the antibodies are fully developed, the urinary excretion of spirochaetes, which occurs to some extent during the earlier stages, reaches its maximum and may continue till the fortieth day of the disease, and the spirochaetes have disappeared from the organs of the body, except the kidneys, where they are always present, and do not seem to be affected by the antibodies. During convalescence there may, after an afebrile interval of two to ten days, be a second period of fever lasting from four to twenty days, and usually spoken of as a "relapse," but Inada points out that the symptoms are those of fever only and not a repetition of those seen in the primary attack, that spirochaetes are absent from the blood and organs except the kidneys, and that the antibodies are fully developed. This "after fever" is regarded as a reaction on the part of the body to the resorption of spirochaetal poisons; but, as it is not clear why it occurs in a proportion only of the cases, more information as to its nature is required.

A further point of interest brought out in two more papers by the same team of investigators is the comparison between spirochaetosis icterohaemorrhagica and rat-bite fever, which is now known to be a spirochaetosis and not, as was formerly thought, a sporozoa or a streptothrix infection. In rat-bite fever the serum of convalescents contains an antibody which destroys the causal spirochaetes, but is much weaker than the antibodies in spirochaetosis icterohaemorrhagica. As a result the immunity conferred is not complete, and recurrences may take place yearly for ten or even for fifteen years (Kitagawa and Mukoyama).⁴

A FRENCH VIEW OF THE DECLINING BIRTH-RATE.

THE French Academy of Medicine received nearly six months ago from a special committee a report, drawn up by Professor Charles Richet, on the depopulation of France. It has been discussing this report and another by Professor Pinard in its own leisurely fashion ever since, but has not as yet formulated its final conclusions. Professor Richet's report is lucid, eloquent, and courageous, as we expect everything from his pen to be, and it will be worth while to trace the general lines of his argument.

He started on a pessimistic note; the number of births in France, he said, is diminishing with the constancy and precision of the regular parabola described by a stone falling to the earth. There were over a million births in 1876 and less than three-quarters of a million in 1913. The birth-rate fell from 210 per 10,000 inhabitants in 1901 to 172 in 1911; though the rate of mortality has diminished, the excess of births over deaths grows smaller, and in one year, 1911, the deaths were 34,869 in excess of the births. The birth-rate, as is well known, has been falling pretty steadily for about half a century in all the countries of the western civilization, but the fall began earlier in France than in the others, and has been steadier. Comparing the ten years 1841-50

¹ Papers on Spirochaetosis Icterohaemorrhagica: *Journ. Exper. Med.*, Baltimore, 1917, xxvi, pp. 325, 341, 355; also a combined paper in the *Kitasato Archives of Experimental Medicine*, Tokyo, 1917, i, 53-153. Papers on Rat-bite Fever: *Journ. Exper. Med.*, 1917, xxvi, pp. 363, 377.

² BRITISH MEDICAL JOURNAL, 1916, vol. ii, p. 413.

³ BRITISH MEDICAL JOURNAL, 1917, vol. ii, p. 345.

⁴ Kitagawa and Mukoyama, *Arch. Int. Med.*, Chicago, 1917, xx, 317.

with the ten years 1901-10 and taking the rate in the earlier period as 100 in the several countries, the fall was, according to the figures used by Professor Richet, in France to 74, in England and Sweden to 84, in Austria to 89, and in Germany to 92; comparing the periods 1871-80 and 1901-10, the birth-rate in France per 10,000 inhabitants fell from 254 to 206, in Sweden from 305 to 258, in England from 354 to 272, in Germany from 391 to 329, and in Austria from 390 to 347.

Professor Richet then examined in succession the various explanations suggested to account for the fall of the birth-rate in France, and we may follow him, for though his facts and conclusions apply only to France, they are of value to us if only as destructive criticism of some favourite theories.

One suggestion of a cause more or less peculiar to France is the provision of the law compelling the division of property, land and houses, between a man's children. Professor Richet considered that though this cause might be assumed to have some effect, its influence had been greatly exaggerated; his main argument is that though the law dates from 1801 the fall of the birth-rate has been more rapid than ever since 1878, and that it has taken place not only among peasants directly affected by the legal provision as to the partition of property, but also among the workmen who have no property to bequeath. He considered, further, that little weight can be attached to increased indifference to the injunctions of the Church; he admitted that in certain districts, as in Brittany, where the religious sentiment is strong, the birth-rate is high, but he pointed to others, equally religious, where it is very low. He was equally disinclined to attach much weight to the theory which would attribute any great influence to migration from country to town, for in France the birth-rate in rural districts is diminishing as rapidly as in the towns, and he quotes several instances of regions in which it is higher in the industrial parts than in the rural; but he appeared to admit that as it is chiefly the young who migrate, the migration must have some effect. With regard to alcoholism, he held that its effect is rather to cause a deterioration in the physique of children than to diminish their number, and points to certain districts in which, though alcoholism is rare, the birth-rate is low. It seems to us a defect in Professor Richet's report that he did not examine fully the influence of venereal diseases on sterility and infecundity. He included it among the causes of complete sterility in the 15 per cent. of sterile marriages, but made only a passing and not very lucid reference to the effect of venereal disease contracted after marriage in preventing the birth of more children after the first one or two.

It was estimated that in 1911 there were in France 11,696,663 families. Of these, 14.6 per cent. had no children living, 25.7 per cent. had one child living, 23 per cent. had two, 13 per cent. had three, 7.5 per cent. four, 6.8 per cent. five or six, and 2.8 per cent. seven or more. Nearly a million families were not accounted for, but assuming the distribution to be the same in them it would appear that half the families in France have only one or two living children, and that only a third at most have more than three. Remembering that nearly a sixth of the families have no children it is not surprising that even before the war the population had become almost stationary, and included a large proportion of old persons.

Some years ago Richet and Pinard came to the conclusion, from the examination of the statistics of

Berlin, Paris, Scotland, and Rio de Janeiro, that the proportion of sterile marriages in these communities, so different in manners, social condition, and race, and experiencing such varied climates, was 15 per cent.—practically the same as in the whole of France. Of the 85 per cent. of marriages remaining, they allowed that 35 per cent. might be infecund owing to physiological, or rather pathological, reasons. Professor Richet argues that the remaining 50 per cent. of marriages ought to result in large families. Taking the average age at marriage for a woman in France as 22 years, he assumes that she might have a child every second year up to the age of 44, so that families of ten children should be common. His general conclusion is that the cause of the decline in the birth-rate in France is to be found in deliberate and voluntary restriction of families, due only in small degree to the practice of abortion. Dr. Louis Parkes, as was shown in an article published in our columns on April 1st, 1916, arrived at much the same conclusion, and pointed out that it applied not only to Great Britain but to all the more highly civilized and industrial nations. He attributed the decline to a desire for a higher standard of social comfort, disinclination of women to give so much of their lives and energies to the rearing of the future race, and their desire for a larger share in the political and other privileges enjoyed by men, combined in the case of both parents with a doubt as to what the future may have in store for the offspring. Professor Richet attaches most weight to the actual cost of rearing a child; he estimates that in the working classes a child, up to the age of 15 years, costs every year a sixth of the father's earnings, and the main conclusion he recommended the Academy to adopt was that the only remedy is for the State to make an equivalent contribution to the family budget, payable to the mother; it seems probable that a recommendation in this sense will be made.

MILITARY HOSPITALS IN INDIA.

SIR GEORGE MAKINS, President of the Royal College of Surgeons, who for the last three years has been consulting surgeon with the British Expeditionary Force in France, has been appointed chairman of a committee instructed to report on the organization and equipment of hospitals for British troops in India. Both the Royal Army Medical Corps and the Indian Medical Service are represented on the Committee, and the inquiry will be conducted in India. It is hoped not only that the Committee will report early but that there will be no undue delay on the part of the Government of India in acting upon its recommendations. The ground has already been cleared and the points at issue narrowed down by the labours of two recent committees. The last, in 1913, was hampered by the instruction that no recommendation made should involve any increased expenditure, and it is, we believe, a fact that all previous attempts during the last quarter of a century to bring stationary or cantonment hospitals for British troops in India up to date, have been impeded by the opposition of the finance department of the Government of India. In spite of this adverse circumstance, the Committee of 1913, which was presided over by Sir Arthur Sloggett, then Director of Military Medical Services in India, made certain recommendations, not all of which, however, were carried out by the Government of India. Some of the evidence given before the Mesopotamia Commission condemned existing arrangements very strongly. Sir Alfred Keogh, for instance, speaking, he said, with a full sense of responsibility, asserted that the medical arrangements connected with the army in India had been for years most disgraceful, and Surgeon-General

MacNeece, then Director of Military Medical Services in India, said of the hospitals for British troops, "even now there are practically not more than two or three up-to-date military hospitals in India." The Commission recommended that there should be an immediate and general improvement in the whole standard of comfort and accommodation in the hospitals for British troops in India, and added that it was discreditable to the Indian Government that the general standard of hospitals in India should fall below the standard and efficiency now demanded in military hospitals at home. The new committee has been instructed to report only on hospitals for British troops in India, but Sir Havelock Charles described the sepy hospitals in India as a disgrace to the Government of India, and Sir William Babbie said that they were so bad that he thought it would be necessary to reform them *ab initio*. The Mesopotamia Commission advised that no time should be lost in substituting a station hospital system for the present regimental treatment of Indian troops. Time has already been lost, and we cannot hear that the Government of India is displaying any anxiety to introduce the reforms long overdue. The general impression of those who know the ways of the Government of India is that the delay is solely due to the opposition of the finance department, which fears that any improvement will involve increased expenditure. The finance member of the Governor-General's Council, in presenting his budget after eight months of war, boasted that "our chief economy occurs under the military services." The Mesopotamia Commission admitted that it was the primary duty of every well regulated government to enforce effective economy, that is to say, to prevent waste and yet ensure efficiency; but it went on to observe that "economists, when in office, not unfrequently found themselves, in defence of their principles, obliged to subordinate efficiency to economy, by adopting the simple process of cutting down aggregates of expenditure, or, at any rate, of refusing an increase of existing outlay, no matter what may be the urgency of the fresh demand." So long ago as 1911 Sir Douglas Haig, then Chief of the Staff in India, put in a memorandum on the need for giving the Indian army modern equipment in all branches, and Sir O'Moore Creagh, who was Commander-in-Chief down to April, 1914, stated that he was constantly calling attention to the deficiency of the Indian army as regards modern equipment in various respects, including transport and medical complements. He was overridden by the finance department, and it would not be surprising to learn that it was again the finance department which is standing in the way of improvements in the methods of treating Indian soldiers. Eloquent tributes were paid in both Houses of Parliament last Monday to the gallantry with which Indian troops helped to hold the line in Flanders in 1914 and to their services in Mesopotamia, Egypt, and Africa. This is very right and just, but it does not relieve the home Government of its responsibility for the continued neglect to provide proper treatment for sick and wounded Indian soldiers. The Mesopotamia Commission found that the home Government agreed with the Indian Government in limiting the military preparations of India before the war in the interests of retrenchment, although the finances of India were at that time in a most prosperous state. Public opinion in this country is outraged by the inference that Indian soldiers are to suffer death by disease and wounds in order to provide the Finance Minister with a larger surplus. But whatever the extent of the responsibility of the home Government, the main responsibility rests upon the Government of India; its duty is clear, and we may well hope that the objections of the finance department will at last be overridden by the Viceroy and the Secretary of State, whose mission to India may, we hope, be productive of good results alike for the Indian soldier and the British soldier in India.

THE WELFARE OF THE BLIND.

The President of the Local Government Board has promised that effect shall be given to the main recommendations of the Departmental Committee on the Welfare of the Blind, which are the establishment of a special department for the general care and supervision of the blind, the provision of a capital sum for the establishment of workshops, and an annual vote out of which grants could be made. The Committee regards the problem as hopeful, pointing out that there has been a steady decline in the proportion of blind to the population, and that there is reason to expect that, apart from the effect of the war, the proportion can and will by degrees be permanently diminished, but it insists on the necessity for central control, organization, and assistance for the existing agencies of voluntary help. We publish elsewhere in this issue a summary of the facts upon which the Committee based its recommendations and conclusions. From it it will be seen that the main difficulty of the blind is industrial. Most of the blind can work, but with rare exceptions they work under a heavy handicap; their skill is often less, and their speed is much less, than that of a sighted worker; their average earning power is one-half that of the sighted man. The recommendation for the establishment of workshops will meet with general approval. But how best to make up the poor earnings of the blind to a living wage is a problem which has been left unsolved by the Committee. It is difficult to steer a clear course between help that fosters self-reliance and help that smother's initiative and only awakens a hunger for more help. Three members of the Committee make important reservations: they contrast the obligation undertaken by the State for those blinded in the war with the absence of recognition of obligation for the rest of the blind. They think "the better course would be for the State to recognize the handicap which blind persons suffer, and to make suitable allowance to all blind persons above the age of 21 who are not unworthy of assistance and who have not sufficient private means of support. If a system of general pensions for the blind were to be adopted, it would be necessary for the central authority to be satisfied that the blind person was doing his best to contribute to his own support and to have power to withhold a pension if the blind person refused training or suitable employment, or took to street begging, or was convicted of crime or drunkenness. Strictly speaking, the terms of reference of the Committee did not cover inquiry into the causes and prevention of blindness; but it took some evidence thereon, and in this it has been scarcely happy. The witnesses called were very few, and only one was an ophthalmic surgeon. On many important points the evidence displayed a scarcely excusable ignorance of municipal administration, and this has led to comments in the report which are inaccurate. Certain municipalities are complimented upon the excellence of their arrangements for the care of the notified cases, but London is damned with faint praise. It would appear that the Committee did not know what London is doing for the care of these cases; it might have obtained the information from the reports of the Medical Officer of Health for the London County Council for the last six years, or from the recent report of the Central Council for District Nursing in London. This lack of care extends even to the matter of quotations from official reports and blue books. For example, it is stated that in one year (1913) in Birmingham "in only one case was the sight lost" from ophthalmia neonatorum. When the report of the medical officer of health of this city is examined it is found that the case so returned was "blind in one eye," but there were three cases of "complete blindness" and "five of large corneal opacities." Again, on the larger question of the influence of venereal disease on the production of blindness, the Committee quotes the Royal Commission on Venereal Disease as finding that "over 50 per cent. of all blindness was due to venereal diseases," whereas reference to the cited paragraph of the Royal

Commission's report shows that the statement is made in regard to blindness amongst children only. Such errors of quotation are blemishes on a report issued from the Government department which has more to do with public health than any other; they are liable to cause serious misapprehensions. It is not unlikely that the erroneous statement that 50 per cent. of all blindness is due to venereal disease may be used by persons who do not trouble to verify their references, to make a mischievous and unwarranted reflection upon the blind.

RURAL HOUSING.

THE housing of the working classes is an economic problem the solution of which has taxed the wit of social reformers for many years past. It is a problem so bound up with other important issues, such as the rate of wages and the tenure of land, that it is not surprising to find it still unsolved. Whether conditions existing in pre-war days, and to a large extent at the present time, will in the coming years be so modified as to render the task of dealing with the problem easier it is impossible to foretell. It is perhaps tolerably certain that in country districts the wages of the labourer will be increased, so that he may be in a better position than formerly to pay what has been described as an "economic rent." On the other hand, if the cost of building is increased *pari passu*, so that with an increase of wages there is a corresponding increase in house rent, no progress will have been made. In many urban districts the pressure of public opinion has been sufficient to compel the authorities to admit that they have obligations in this matter, though it may not often have been adequate to ensure their fulfilment. In rural areas matters have not got even so far as this, for there public opinion can, as a rule, only find imperfect expression. The rural district council is the local authority responsible for the proper housing of the inhabitants of the district, and it usually consists of farmers and other employers, who would have to pay most of the increase in the rates a forward housing policy would entail. A great deal of hesitation has been shown in the past by many of these rural councils in improving housing conditions. It is, perhaps, safe to predict that that hesitation will not be so pronounced in the future. A broader and more enlightened view must of necessity be taken. One of the greatest lessons to be learnt from the war is the need of stalwart and vigorous British men and women. In the past three years, and especially in the past two, mighty efforts have been made to raise the physical standard of recruits, and it is marvellous to see the improvement that has resulted even in a few months from regular habits, good feeding, and proper housing. Category C men have become fit in this way for category B, and B men for A. The aim of all thoughtful men should be that every man, woman, and child in the British empire should be living under such conditions as will ensure that he or she is normally in category A. This result might possibly be attained in England if those members of rural district councils who have in the past obstructed housing schemes not only ceased obstructing but assisted in bringing such schemes to a successful issue. A very common reason alleged for the paucity of building enterprises in rural districts is the necessity for complying with building by-laws. It is true this excuse is not heard so frequently as at one time, for in many districts its plausibility has disappeared owing to the success of the work of the Building By-laws Reform Association, which during its short existence—it was dissolved in 1912—drew up a set of by-laws for rural districts to replace those which had previously done duty for urban as well as rural districts. About the same time the Local Government Board put forward a new series of model by-laws for rural areas to which little or no exception could be taken provided they were administered in a proper spirit. Though this is not always the case, the first step for every reformer to take is

to secure the adoption of these modified by-laws in rural districts and their equitable administration. From reports of recent discussions at meetings of rural district councils it appears that there are still some members of these bodies who argue against the adoption of by-laws on the ground that a house having been erected on lines opposed to present-day views of a healthy residence the district council possessed ample powers to secure the closing of the dwelling. A very slight experience of the past actions of these bodies is sufficient to convince an inquirer that no steps would be taken to close such a house, and that if every builder were left free to set up for himself a standard of a sanitary dwelling little or no advance would be made in securing better habitations.

TREATMENT OF HAEMOTHORAX BY ARTIFICIAL RESPIRATION.

Hess¹ gives an account of the method of treating early cases of haemothorax by artificial pneumothorax. He contrasts the conservative treatment he followed in the earlier part of the war with the more active treatment he has now adopted in the field. He points out as defects in the earlier treatment of leaving the fluid untouched, the following facts: (1) The patient must remain for a long period in bed, as even sterile effusions of blood take much longer to absorb than ordinary pleuritic effusions. (2) Infection of the haemothorax fluid is very common. Hess has therefore recommended, since the beginning of 1916, early withdrawal of the fluid by puncture, followed by the introduction of nitrogen or of air under controlled pressure. He describes his technique, the chief point of which appears to be that after withdrawing 50 c.cm. of fluid by suction, double the volume (that is, 100 c.cm.) of the gas is slowly blown in, so as to keep up a positive pressure and collapse the lung. Thereafter 100 to 200 c.cm. of fluid are withdrawn, and double the volume of gas blown in to replace it. This quantity is removed again and again, and replaced by the gas, until no more fluid will flow. The lung, he says, may be kept collapsed for as many days as appears necessary, by the reintroduction of nitrogen or air by means of puncture.

THE ETIOLOGY OF PELLAGRA.

In Bulletin No. 106 of the Hygienic Laboratory of the United States Public Health Service appear some very important studies on pellagra. In the first, on tissue alteration in malnutrition and pellagra, Dr. Sundall comes to the conclusion that from a pathological standpoint there can be no objection to the classification of pellagra along with rickets, scurvy, and beri-beri as dietary diseases; that no organisms which can be regarded as specific etiological factors have been found in the tissues, while the pathological changes show no characteristic cell alterations apart from those resulting from malnutrition, and that the degenerations that occur in the nervous system, both in a series of badly fed animals and in pellagrins, are similar, and readily explained by the exhaustion theory of Edinger, Meyers, and others. In the second paper Dr. Francis relates cultivation experiments with the blood and spinal fluid of pellagrins. He states that the results were negative; the cultures either remained sterile or an occasional tube showed a growth which was evidently a contamination. His extensive feeding and inoculation experiments also were negative. "Of the 94 animals reported upon, 54 are living and 40 are dead; 18 of the latter died of tuberculosis; 10 died of acute peritonitis following peritoneal injections; 2 died of cerebral abscess following cerebral injection; 1 died of oesophagostomum; 1 female died in labour; while 8 died from causes which could not be determined at the autopsy." The survivors, with one exception, showed no indications even suggesting pellagra. Dr. Francis's work thus furnishes no support for the view that pellagra is

¹ *Munch. med. Wochenschr.*, July 1st, 1917.

an infectious disease; these very accurate and exhaustive studies would seem to indicate a deficiency origin akin to that of scurvy, beri-beri, and rickets.

A FATEFUL OPERATION.

Much has been heard lately of the evils of secret diplomacy. It does not lie within our province to discuss the general subject, but there is a closely analogous problem with which doctors are from time to time confronted. The health of rulers is a matter of direct concern to those whom they govern, but although the people may claim to know the truth if the life of the head of the State is in danger it is not always expedient that the whole truth should be known. A striking illustration of this general principle is given by Professor W. W. Keen, the eminent American surgeon, in the Philadelphia *Saturday Evening Post* of September 22nd, where he tells the story of a serious operation performed on President Cleveland in 1893. It was a time of world-wide financial crisis, when, owing to the spread of what Dr. Keen calls the "silver heresy," the life of the President stood between his country and national disaster. Had the gravity of the operation performed on him been known at the time the "panic would have become a rout." As it was, an early account of it by an enterprising journalist created acute excitement, which was only allayed by the appearance of Mr. Cleveland on several public occasions. There was no visible evidence of the operation, his voice was unaltered, and his general health was as good as could be expected in a man who had to bear the burden of his position at a time of great anxiety. Mr. Cleveland's inauguration had taken place on March 4th, and on June 18th his professional advisers found in his mouth an ulcer encroaching slightly on the soft palate. It had first been noticed a few weeks previously. There were no enlarged glands perceptible, but the condition was diagnosed as malignant. Dr. Joseph D. Bryant of New York, long the President's attendant and his intimate friend, recommended removal. Mr. Cleveland was strongly opposed to publicity, as he feared the effect of it on the people and on the financial situation. To ensure secrecy, therefore, it was arranged that the operation should be done on board Commodore E. C. Benedict's yacht, the *Oneida*. It was fixed for July 1st, and the evening before Dr. Keen, who had been called in consultation, Dr. E. G. Janeway of New York, Dr. R. M. O'Reilly, afterwards Surgeon-General of the United States Army, Dr. Bryant, his assistant, Dr. John F. Erdmann, now a well-known surgeon of New York, and Dr. Ferdinand Hasbrouck, a dentist, went on board. The living rooms of the yacht had been prepared and disinfected, and an operating table and all necessary instruments, drugs, and dressings sent on board. The President was 56 years of age, very corpulent, with a short thick neck, and the doctors were anxious about the anæsthetic. Dr. Hasbrouck first extracted the two left upper bicuspid teeth under nitrous oxide. Dr. Bryant performed the operation, assisted by Drs. Keen and Erdmann. The incisions in the roof of the mouth were made under nitrous oxide; ether was then given by Dr. O'Reilly. The whole of the left upper jaw was removed from the first bicuspid teeth to just beyond the last molar and nearly up to the middle line. The floor of the orbit had not yet been attacked, but a small portion of the soft palate was removed. This extensive operation was thought necessary because it was found that the antrum was partly filled by a gelatinous mass, evidently a sarcoma. This diagnosis was afterwards confirmed by Dr. W. H. Welch. The entire operation was done within the mouth, without external incision, by means of a cheek retractor brought from Paris by Dr. Keen. The retention of the floor of the orbit prevented any displacement of the eyeball. "This normal appearance of the eye, the normal voice, and especially the absence of any external scar, greatly aided in keeping the operation an entire secret." Only one blood vessel was

tied; pressure, hot water, and at one point the galvanocautery checked the bleeding. Only about six ounces of blood were lost. The President was up on July 3rd, and on July 5th he walked from the launch to his residence with little apparent effort. On July 17th Dr. Bryant removed some suspicious-looking tissue and applied the galvanocautery to the entire surface; on September 1st his notes record "All healed." Dr. Kasson C. Gibson of New York fitted the President with an artificial jaw of vulcanized rubber. With this in place his speech was excellent, and the quality of the voice was not altered. Mr. Cleveland died on June 24th, 1908, fifteen years after the operation. No recurrence of the sarcoma had taken place. Professor Keen says that now, after the lapse of nearly a quarter of a century, it is even more evident than it was at the time that Mr. Cleveland's instant decision, concurred in by his professional advisers, that the operation should be kept a profound secret, was very wise. "What the consequences would have been had it become known at once we can only surmise and shudder."

NATIONAL SERVICE MEDICAL EXAMINATIONS.

The Minister of National Service, in his address to the Medical Advisory Board on October 4th, as reported in our columns of October 13th, said that the first matter to which he hoped the Board would give attention was the preparation of a manual containing a code of standards of physical fitness for the guidance of the National Service medical boards in the examination of men coming before them, so as to ensure uniformity. This code or guide has now been completed, and a pamphlet (N.S.I. No. 3 of 1917), containing general directions for the guidance of commissioners, of deputy commissioners, and of members of medical boards, is now ready for issue. It defines the duties of commissioners of regions and of deputy commissioners, and lays down the method of examination to be followed by all National Service medical boards. The plan provides that all recruits will be seen at some stage of their examination by each member of the board. As a rule, the first examiner will take the weight, height, and chest measurement, and note the colour of the hair and eyes, and other general physical characters. The second examiner will pay attention to the physical development, testing the movements of the joints and investigating deformities; the third examiner will test the organs of special sense and the condition of the teeth and throat; the fourth examiner will examine the chest and abdomen, make inquiries as to previous illnesses, and will, if deemed necessary, examine the urine. Each examiner will initial the medical history sheet, indicating the grade for which he considers the man fitted. The final grading will be entered on the medical history sheet by the chairman, who, in case of doubt, will consult the full board and adopt the opinion of the majority; should opinions be equally divided he will have the casting vote. Notes are added on the points in the medical and physical examination to which special attention should be given; the conditions for which men should be rejected are indicated and standards of vision are set out. The importance of close co-operation between the medical and recruiting officials is insisted upon, as is also the need for great care and consideration in medical examination and re-examination, and in avoiding confusion of identity between two men. The medical boards are also instructed fully to consider any medical certificates produced by men at the examination. The grades recognized are four: Grade 1 comprises men who attain the normal standard of health and strength and are capable of enduring physical exertion suitable to their age. Minor defects, such as of the teeth and of eyesight, which can be removed or compensated by artificial means, will not be regarded as disqualifications. Men who fulfil the conditions of Grade 1 will be fit for general service in the army. In Grade 2 will be placed those who, being subject

to partial disabilities or near the maximum age, or beyond it in signs of wear, do not reach the standard of Grade 1, but are yet physically able to do vigorous work. Such men must be able, when trained, to march six miles with ease, must have fair hearing and vision, and must possess moderate muscular development. Men in this grade must be fit at once either for service at home or garrison duty abroad, and some will sooner or later become fit for general service. Men placed in Grade 3 will be those who are not suitable to undergo military training as fighting men, but will be fit for any of the auxiliary services connected with the army and fit to continue within the army the work on which they are already employed or its equivalent. This grade will also include those who are fit only for clerical and other sedentary occupations, such as tailoring and bootmaking. The chairman of the medical board, in the case of these men, will indicate whether they are fit for auxiliary service with the troops, for labour, or for sedentary occupations. The fourth grade will include all men unfit for military service.

THE AMERICAN COLLEGE OF SURGEONS.

COLONEL SIR BERKELEY MOYNIHAN, who is at present on a mission for the British Army Medical Service in America, and Colonel T. H. Goodwin, C.M.G., D.S.O., A.M.S., who went out with the Balfour Commission and has been in America since, were elected Fellows of the American College of Surgeons at the congress of surgeons of North America held last week. The College was founded at a meeting in Washington in May, 1913, with a membership of 300. At the first meeting the number had risen to 1,050, and last year it had reached 3,400. At this first meeting Sir Rickman Godlee, then President of the Royal College of Surgeons of England, read a message from the council of that College conveying its congratulations, and expressing the hope that the American college would grow and prosper, and that by its influence the ideals and standards of surgery would be maintained on a high plane and advanced. At a meeting in 1915 the College received the gift from Sir Rickman Godlee of a gavel designed and used by Lord Lister. In order to further its objects, which include matters of character and training of surgeons, the betterment of hospitals, and of teaching facilities at medical schools, and laws relating to medical practice and privilege, and also to provide itself with a permanent home in Washington, its Fellows have raised an endowment fund of £100,000. We publish this week an address given by Sir Berkeley Moynihan at the recent congress of the College. It deals in a systematic and masterly way with the nature and treatment of injuries to peripheral nerves. The subject has been much advanced during the last two years owing to the large number of gunshot injuries of nerves, but Sir Berkeley Moynihan's essay deals generally with the subject, and his conclusions are applicable to nerve injuries however sustained. His remarks on after-treatment are of especially wide application, for though it may fall to the lot of comparatively few to undertake operations for the suturing of nerves, the after-treatment is prolonged, so that cases may come under the care of general practitioners either in institutions or in private practice. His observations on the preparatory treatment before late nerve suture are also of very general interest. It will be noted that he insists on the strictest attention being paid to the relaxation and nutrition of all paralysed muscles, to the maintenance of the suppleness of all joints moved by those muscles, and to the preservation of the integrity of the skin. It must obviously be useless to attempt to restore continuity of a nerve if the muscles it supplies cannot act owing to scar tissue, contraction of the skin, or stiffness of the joint.

THE next session of the General Medical Council will begin on Tuesday, November 27th, when the President, Sir Donald MacAlister, will take the chair at 2 p.m., and give an address.

Medical Notes in Parliament.

The Vote of Thanks.

THE first four of the five clauses of the vote of thanks adopted on October 29th in both Houses of Parliament referred, the first to the Royal Navy, the second to the officers, non-commissioned officers, and men of the British armies in the field, and also to the women's medical and other services auxiliary thereto; the third to the troops from the Dominions, India, and the Crown Colonies; and the fourth to the officers and men of the Mercantile Marine. The last clause acknowledged with grateful admiration the valour and devotion of those who have offered their lives in the service of the country, and tendered sympathy to their relatives and friends in the sorrows they have sustained. The vote was moved in the House of Commons by the Prime Minister, who, in a striking speech reviewing each clause, paid special tributes to the fishermen, of whom, he said, 60 per cent. are in the naval service; to the air service; and to the medical service. Of this service he said: "When you come to the Medical Service, the men and the women, they have never shown greater courage, knowledge, and experience. Thousands of them have devoted themselves—devotion is the right word—to the curing of the wounded and the healing of the sick. Great consultants have given up princely incomes and volunteered for this service. Wounds have been cured which before the war were regarded as fatal, and I may give an illustration, and only one illustration, of the services they have rendered in saving life, not merely by their curing expedients, but by the precautions they have taken. In the South African war I believe 50,000 men died of typhoid. In France, out of our gigantic army, during the whole three years of the war, only 3,000 have fallen victims to this disease. We owe thanks to the medical profession; they have suffered, hundreds have been killed, and many more hundreds wounded. We should also thank the women, our trained and untrained nurses, whose tenderness and care for the wounded have earned thanks from the lips of hundreds of thousands of poor men whose lives have been saved, and who have been spared much suffering through their tender ministrations. They have not escaped perils. Many have been killed by shell fire, many of them drowned in hospital ships sunk with the sign of the Red Cross. We all owe them a debt of gratitude." England, he said, had contributed 75 per cent. of the army of the empire, and 75 per cent. of the loss had fallen upon England. Scotland had, as always, done its due share; Ireland had made a distinguished contribution; and Wales, he said with pride, had in voluntary recruiting just beaten the record by a shade, Scotland coming second. Mr. Lloyd George was followed by Mr. Asquith, who delivered a speech of characteristic dignity and conciseness. Next came Mr. Redmond, who said that the Irishmen who had fought need have no misgivings that they were right from the first, that time would vindicate them, and show that while fighting for civilization and liberty in Europe they were also fighting for civilization and liberty in their own land. Next, Mr. O'Grady spoke for labour; Mr. Eugene Wason for Scotland, Sir J. H. Roberts for Wales, General Croft for the New National Party, and Mr. Peto expressed the thanks of the officers of the merchant service for their inclusion in the vote. Mr. Lloyd George had referred to the great contribution of India. Colonel Yate, as an old Indian officer, pointed out that the 70,000 men in the first forces which came from India in 1914 had helped to hold the trenches until our own new army was ready. In Egypt, in Mesopotamia, in East Africa, and elsewhere, also, they had done well.

In the House of Lords Earl Curzon made a striking tribute to the effort of India, which, he said, was in some respects the most remarkable of all; it had provided troops for a larger number of the theatres of war than any of the other overseas contingents. Speaking of the medical service, he said that at the beginning of the war the Royal Army Medical Corps had 3,168 officers and 16,330 other ranks. There were now nearly 14,000 officers and 125,000 other ranks. The health of the army had been better than that of the civil population at home. The nurses had not only been ministering angels in hospitals behind the lines, but had been constantly pushed forward to the very

clearing stations only just behind the front, where they had literally stood between the living and the dead. Seven had been drowned by submarine action and several others had been killed by enemy bombs on hospitals.

In both Houses glowing tributes were paid to the men of the original Expeditionary Force—the old army—and it was appropriate that the vote of thanks was moved and adopted on the third anniversary of the opening of the first battle of Ypres.

Ministry of Health: Hope of Substantial Agreement.—In answer to Sir William Collins, who asked whether some form of inquiry, by Royal Commission or otherwise, into the desirability and practicability of instituting a Ministry of Health would be instituted, Mr. Bonar Law reiterated the hope that substantial agreement would shortly be reached amongst those directly concerned; as the subject has already been very carefully investigated and reported on by the Reconstruction Committee and by a Committee of Ministers, the Government did not consider the appointment of a Royal Commission necessary.

Medical Students in Combatant Service.—In reply to question as to medical students who volunteered for service in the early days of the war, whether, in view of the sacrifices made by them and the services rendered, they would be entitled to recognition as well as combatant officers, Mr. Macpherson said that all these cases were very carefully considered, and regulations were being issued which he hoped would include men of this type. The whole question of the condition of military service as it affected medical students was under consideration by the Ministry of National Service, and representations on the subject would, he was informed, shortly be laid by that Minister before the Army Council.

Territorial General Hospitals.—Colonel Gretton asked, with reference to the regulations for general hospitals of the Territorial Force, which laid down that for each 520 beds there should be, in addition to the medical officers engaged in military duties, four lieutenant-colonels and eight majors selected from distinguished members of the medical profession, for a detailed return showing how many beds there were at the present time in each of the five London General Hospitals and the number of officers of various grades. Mr. Macpherson said that only half of the numbers specified were to be on duty at one time and the employment of the mobilized staff was subject to such modification as the General Officer Commanding of the Command might think necessary. Mr. Macpherson afterwards gave the following particulars as to the London Territorial General Hospitals:

Hospital.	Beds.	Lt. Cols. and Bt. Lt.-Cols.	Majors and Bt. Majors.	Other M.O.s and Civil Practitioners.
1st London ...	1,021	4	4	21
2nd London ...	1,512	2	5	21
3rd London ...	2,400	2	5	36
4th London ...	2,171	2	3	31
5th London ...	662	1	1	16

Medical Treatment and Training of Discharged Soldiers in Wales.—The Secretary to the Ministry of Pensions informed Major David Davies that some 176 institutions, including military, auxiliary, and civil hospitals and convalescent homes, were in use and open to the treatment of discharged disabled men in Wales and Monmouthshire, and the Joint (Disablement) Committees set up by local War Pensions Committees, and the Ministry had been invited to submit proposals for meeting any deficiencies in this respect. Schemes for establishing an after-care colony with training for tuberculosis, and for at least one centre for orthopaedic treatment, were now under consideration. With regard to training, schemes had been sanctioned for cinema operating at Cardiff, cabinet-making and toy-making at Trefnant, and horticulture and market gardening at Wrexham Garden Village. Diamond-cutting and polishing would, it is hoped, shortly be established at Wrexham, and it was proposed to start a number of courses in various subjects at Cardiff.

Nerve Shocked Soldiers and Sailors.—In reply to Mr. King, Sir A. Griffith-Boscawen said that men who were invalidated from either the navy or the army suffering from nerve strain were medically examined by a special expert board. Any representations of local committees or available opinions of medical practitioners were considered. He added, in reply to a further question, that there were thirteen Scottish and Irish doctors serving on the medical boards, and of this number three held posts connected with lunacy. The functions of these boards were solely the assessment of disability for pension purposes, and the recommendation of suitable cases for treatment in

homes of recovery. He could not consider that a special knowledge of mental disorders rendered a medical man unsuitable to exercise the functions to which he had referred.

Home Hospital Men.—In answer to Mr. Tyson Wilson, Mr. Macpherson said that men of the Home Hospital Reserve who are under 41 years of age were now discharged, unless they were willing to accept liability for service overseas. By such discharge they became liable under the Military Service Acts. Mr. Wilson asked whether a large number of these men, if they had remained in civil occupations, would not have been exempt from service in the army.

Disabled Soldiers: Medical Referees.—Mr. Charles Roberts asked the Pensions Minister what arrangements had been made for the appointment of medical referees under Article 12 of the instructions and notes on the treatment and training of disabled men. Mr. Pratt said that a number of applications had been received from all parts of the country, and a Committee of Selection, consisting of representatives of the Central Medical War Committee, the Local Government Board, and the Insurance Commission was considering the qualifications of candidates. The Committee had already made recommendations to cover all the Southern and some of the South Midland counties of England and the whole of Wales; over one hundred medical referees out of a probable total of about four hundred have been appointed.

War Pensions Local Committees.—On the second reading of the War Pensions Local Committees Bill, which has for its object to include the representation of discharged soldiers and sailors on the Committees, Sir A. Griffith-Boscawen said in reply to criticisms that it was intended that discharged soldiers or sailors should be given membership and not mere representatives. The nominations would come before the Pensions Minister, and the representation would not necessarily be limited to one member for each Local Committee. He promised to see that the proposal was made clear in Committee, and the second reading was carried without dissent.

Discharged Soldiers' Minimum Pensions.—Mr. Pratt informed Mr. Byrne that the lowest pension to an invalided soldier—5s. 6d. a week—was one applying only to cases where the disablement was small, interfering little with the man's powers. The cases of grants of 4s. 6d. a week, to which Mr. Byrne had referred, were cases in which the disability, almost always disease and not injury, had been found to be neither due to nor aggravated by service. In such cases the man had a right of appeal to the special tribunal. There was no limit in time to right of appeal, but obviously in case of delayed appeal it was much more difficult to establish the connexion between a man's present disability and service.

Vaccination in Ireland.—In answer to Sir T. Esmonde, Mr. Duke said that resolutions in favour of extending the "conscience clauses" of the English Vaccination Acts to Ireland had been adopted by forty-seven unions in Ireland; had been marked "read" by thirty-two unions; either not adopted or rejected by seven unions; and endorsed "no action taken" by eleven unions. Four unions had deferred consideration of the subject, and the minutes of fifty-four unions contained no reference to the matter. In reply to Mr. Byrne he said that the Local Government Board took every precaution to ensure that the calf lymph supplied was absolutely pure, and their bacteriologists reported that no purer lymph could be produced than that supplied and distributed by the Irish Vaccine Department. The results of the thousands of vaccinations performed each year afforded the best possible experimental proof of its harmlessness.

At a meeting to which all members of the profession in the Exeter Division were summoned, held at the Royal Devon and Exeter Hospital on October 25th, when Mr. G. G. Gidley was in the chair, a memorandum on the medical aspects of the Education Bill, 1917, was read. The meeting resolved unanimously to support the policy of the Association in regard to the opposition to Clauses 18 and 19 of the bill, and to make representations to members of Parliament pointing out the objections entertained by the profession to Clause 18, whereby power to provide treatment is extended to all schools, since it is not for the public good that the treatment of young people should be taken out of the hands of the family doctor.

HENRY VIRTUE SIDDONS, who, as reported in the JOURNAL of September 15th, was committed to the Liverpool Assizes on charges of forging medical certificates and obtaining money by false pretences, has since committed suicide. There were nine charges in all in the calendar. Siddons had been allowed bail in the sum of £1,000.

THE trial ended on October 31st, before Mr. Justice Salter at the Central Criminal Court, of Dr. A. M. R. Sinclair, B. G. Grantway, and J. Trichter, who were charged with offences in connexion with the examination and classification of recruits. The jury found Dr. Sinclair not guilty of the charge of conspiracy to defeat the provisions of the Military Service Acts, and he was acquitted. The other two prisoners were found guilty.

THE WAR.

CARREL-DAKIN TREATMENT OF WOUNDS.

THE Director-General Army Medical Services has received a report on the Carrel-Dakin treatment of wounds by a committee which visited France last summer. The members were Lieut.-Colonels Sir Alfred Pearce Gould, Sir Thomas Myles, C.B., and Albert Carless, and Captains Attwater, Beesley, and Douglas-Crawford. The hospitals visited were M. Carrel's, which at the time of the visit was under the surgical care of M. Guillot; the clinics of MM. Tuffier and Chutro in Paris; the American Ambulance in Paris, and Mrs. Depew's Hospital at Annel. The report is as follows:

REPORT.

The Carrel treatment consists in the application at frequent intervals of a gentle stream of fresh antiseptic fluid to the whole surface of an infected wound, without any interference with the dressings. It aims at obtaining a reduction in the number of pathogenic organisms in a wound until less than 1 per "field" in a smear of the discharge can be found with a microscope. Such a wound is regarded as "clinically sterile." When this standard of sterilization of wounds is attained, it is found that they heal rapidly, without fever, and without the danger of secondary haemorrhage, and that they can be safely closed and "primary healing" be obtained. In "clinically sterile" wounds fractures can be safely plated, and comminuted fractures consolidate without necrosis.

The instillation of the antiseptic fluid is effected by means of small rubber tubes, closed at the end, and perforated with six to eight small holes at half-inch intervals; these are placed on or in the wound in such numbers and in such positions that fluid escaping from them is brought into contact with every part of the surface. These tubes are connected with a reservoir containing the selected antiseptic fluid, which is raised about four feet above the patient. By means of an electric clock, of an automatic siphon, or by a nurse loosening a compressor on the supply tube, a given amount of antiseptic fluid is made to flow out through the tubes and over the surface of the wound. As a rule the fluid is made to pass over the wound every two hours. The interval may be shorter (hourly); rarely is it longer than two hours. The tubes are kept in place by laying sterilized gauze soaked in the antiseptic over them and the whole wound, this deep dressing is covered by dry sterilized gauze, and over all is placed a larger sterilized outer dressing of non-absorbent cotton-wool between two layers of gauze, and this is held in place by a few safety pins. In some clinics a thin inner layer of the outer dressings is made of absorbent gauze and cotton-wool. In M. Guillot's and M. Tuffier's wards we saw the dressings renewed every day. In M. Chutro's clinic the inner dressing is changed daily for three days after an operation, and subsequently every second day, and the outer dressing is renewed only about once a week. We did not notice that M. Chutro's less costly practice was attended with any disadvantage.

Every dressing is made by the surgeon himself under the strictest aseptic precautions. Rubber gloves were worn, two pairs of sterilized forceps were used for each patient, and the tubes were placed, the various layers of gauze laid on, and the outer dressing folded round the limb by these forceps; the gloved hand was never allowed to touch either the wound or the dressing. The surgeon was assisted by a large staff of highly trained and careful nurses, each of whom carried out one step only in the preparation for or the conduct of the dressing. Thus one nurse went just ahead of the surgeon and removed the pins from the dressing about to be renewed, and fastened the pins in each dressing as it was completed; a second nurse attended to the "smears," a third to the "combs," a fourth to the vaseline, a fifth handed the fresh outer dressings, and the sister handed the forceps to the surgeon and then handed him the tubes and the wet and the dry gauze as he required them. This made the technique elaborate and the process rapid. Since our return home we have found it possible to carry out the dressings with two or at most three trained helpers, and without any undue lengthening of the "dressings."

In MM. Tuffier's and Guillot's wards a "smear" is taken

from each wound every second day, the number of organisms per "microscope field" is carefully determined by a skilled observer and is recorded on a bacteria chart, which is kept with the patient's temperature and pulse chart. When the bacteria chart shows a "count" of less than one organism per field on three successive occasions, the wound is considered "clinically sterile," and suitable for closure by operative measures. We saw several cases where such closure had been carried out with success.

The making of these bacteriological observations and counts is essential if the surgeon desires to practise secondary closure of infected wounds.

The charts also afford a valuable index of the success of the antiseptic treatment of the wound. In the cases we saw there was almost invariably a rapid fall of the chart line from "infinity," or from a very high count, to under ten bacteria per field, and most of the wounds soon became nearly or quite "clinically sterile." In M. Chutro's clinic the treatment is carried out on rather simpler lines. In a large number of his cases no bacteria chart is kept, and smears are examined only once in ten days. M. Chutro does not practise closure of formerly infected wounds, and he is therefore not dependent upon a definite assurance that a wound is "clinically sound." He is satisfied if there is no suppuration in a wound, if it steadily heals, and if the patient's general condition is good and the temperature normal.

Provision has to be made against the patient's bed becoming wet from the fluid running out above or below the dressing, or soaking through it. We saw different means used to prevent this.

1. In some cases a large mackintosh sheet covered with a draw-sheet was placed beneath and far beyond the dressing, and the draw-sheet was changed as soon as it became wet. In some cases the outer dressing became so wet that it had to be changed between the surgeon's daily visits; this resulted from allowing an excessive amount of the antiseptic fluid to flow over the wound.

2. In M. Chutro's wards we saw large shallow zinc trays placed beneath the wounded limb or part of the body. The fluid that escaped into these trays was led through a tube into bottles beneath the beds. The patient's back or wounded limb was supported on a large rubber air-cushion. The men appeared to be quite comfortable, and assured us this was so. The wetting of the dressings causes really very little inconvenience when the amount of fluid flowing over the wound is well regulated.

3. We have found large pads of sphagnum moss placed beneath the wound a very simple and at the same time an effective means of avoiding this dampness.

It is recognized by all who use Dakin's fluid or esol that it sometimes causes irritation around the wound. MM. Tuffier and Guillot guard against this in all cases by covering the skin for some distance beyond the wound with a layer of gauze soaked in sterilized vaseline. M. Chutro only applies the vaseline when he sees evidence of irritation of the skin, and then he puts it on thickly by means of a sterilized wooden spatula. This difficulty is real, and must be guarded against. M. Chutro's plan is the simpler of the two, and is certainly effective. We did not see any serious consequences from this irritation of the skin.

In M. Carrel's clinic Dakin's fluid is invariably used as the antiseptic of choice. When a wound has become a superficial and healthy granulating wound, it is usually dressed with chloramine ointment, composed of chloramine 10 parts, stearate of soda 86 parts, and water 4 parts. The percentage of chloramine may be increased to 12 or reduced to 6. Experiments were being carried out to determine which of the many chloramines is the best to use for this purpose.

In M. Tuffier's clinic and in M. Chutro's clinic only Dakin's fluid is used in carrying out this treatment. M. Chutro, with a clinic of 300 military beds, into which he asks for the "worst cases" to be sent, uses no other antiseptic at any stage of the healing of a wound. When it has become quite superficial and is in the condition in which we saw chloramine ointment used by M. Guillot, M. Chutro covers the wound with a layer of wet gauze, upon this he lays a Carrel tube, and over that more wet gauze, and surrounds the part with the usual outer dressing. Many of M. Chutro's cases are very chronic and have been suppurating for months and are frequently complicated with necrosis.

In the Annel Hospital we saw three fluids used with Carrel's tubes—Dakin's fluid, eusol, and ether. We were assured that good results were obtained from each of them. One of the surgeons, M. Lefebvre, expressed a preference for ether. One advantage of ether over other antiseptics is that the outer dressing does not become wet and can often be left untouched for four days. On the other hand, ether is a costly antiseptic, and some of the patients complained of the intense cold its instillation caused. In this hospital the majority of the cases were recent wounds, and many patients arrived within a few hours of being wounded. Such cases are the least severe test of any antiseptic method.

Results.

It is evident that in estimating the value of the Carrel-Dakin treatment care must be taken to appraise quite separately the method of applying the antiseptic and the antiseptic employed. While convinced that the use of Carrel's tubes as we saw them employed is a very valuable means of applying an antiseptic fluid to a wound, we are not satisfied that Dakin's fluid is markedly superior to eusol, and we are prepared to find that other antiseptics can be used with advantage by the Carrel method.

The results of the Carrel-Dakin treatment as seen by us in a large series of unselected cases were strikingly good.

1. The bacteria charts usually showed a rapid fall in the number of bacteria present in the discharge. The more recent the wound the more rapid this fall. In some cases of long-standing infection, particularly in sinuous or pouched or irregular wounds in which there was physical difficulty in bringing the fresh antiseptic into contact with every part of the wound, the fall in the bacteria chart might be long delayed. The presence of a sequestrum or of a foreign body similarly delayed the sterilizing of a wound. M. Tuffier said: "I can sterilize any wound by this treatment." We saw many charts in which the number of bacteria in the smears examined was given as less than one per field (clinical sterility). An operation was often immediately followed for two or three days by a rise in the bacteria count and this was particularly observed where a layer of blood clot had been left in the wound; great care was therefore taken to arrest all oozing from a wound at the time of operation. Anaerobic bacteria were reduced in numbers as quickly as the aerobic, but streptococci were more resistant than staphylococci. We were told of a case in which an operation was carried out in a wound which was the seat of erysipelas, and the result was satisfactory.

2. We saw several cases where infected wounds had become "clinically sterile" under this treatment, and had then been closed by the surgeon, and had healed by primary union. In some of these cases cavities in bone due to comminuted fracture or to chronic osteomyelitis and necrosis had been filled with a graft of subcutaneous fat taken from the patient, the skin edges had then been undermined and sewn together over the graft. Primary union had been obtained and consolidation of the bone had occurred later on. Great stress was laid by all the surgeons we saw upon the necessity of demonstrating in the laboratory the "clinical sterility" of a wound before attempting its closure. Clinical evidence alone is not to be relied upon. Only wounds proved to be practically germ-free ought to be dealt with in this way. We think it desirable to lay special stress upon this point.

3. In one of M. Tuffier's wards we saw a series of cases of chronic empyema, nearly all of them resulting from gunshot wounds many months before admission. By Carrel-Dakin treatment "clinical sterilization" of the cavity had been obtained, and when this fact had been demonstrated M. Tuffier had raised the edges of the wound from the ribs, sutured them, and obtained primary union, although there was still a considerable cavity in the pleura unobliterated. We examined these cases, and found that they were well, with firmly healed scars. Post-pneumonic empyemata are treated in a similar way, and healing is often obtained, we were told, in two or three weeks.

4. We saw a large number of serious wounds from gunshot injuries, treated by the Carrel-Dakin method, in which there was no suppuration. Among these were many cases of compound fracture of the pelvis, femur, tibia and humerus, wounds of the hip, knee, ankle, and shoulder joints, as well as chronic osteomyelitis of various

bones. In M. Chutro's large clinic, for example, we only saw recognizable pus in two cases; in each of these cases the ends of long and deep wounds had been sutured, and tubes had been placed in the open central part. Suppuration had occurred at one end, and was treated by removing the sutures and putting more Carrel tubes into the wound. In cases of badly united fracture of the femur, with shortening and infected sinuses, M. Chutro did not hesitate to divide the bone to obtain proper alignment of the fragments. By heavy extension and Carrel-Dakin treatment of the wound he obtained a clean granulating wound and rapid consolidation of the bone.

5. The wounds granulated well; the granulations were even and florid, and, so far as we could judge, healing progressed rapidly.

6. The patients looked well, and were free from fever as soon as the bacteria count fell. They were free from pain, and made no complaint of the method of treatment. The change of dressing was generally quite painless, and the instillation of the fluid caused at most a sensation of coldness but no pain. We noticed that after operations in which bone had been removed, and tubes and gauze had been placed in contact with raw osseous tissue, they were not removed for some days (four days for the tibia, six for the femur), and in this way the pain caused by early removal was avoided. We saw one case where the change of the deep dressing in a wound of the ankle caused severe pain, necessitating on one occasion the administration of a general anaesthetic. This was said to be due to the exposure of the posterior tibial nerve in the wound.

7. The most striking evidence of the value of the treatment that we saw was a printed notice put up in a prominent place in M. Tuffier's wards, and to which he drew our special attention, as being the expression of his own opinion after a considerable experience of the Carrel-Dakin treatment. The notice is as follows:

Tout blessé qui supprime le droit d'en demander la raison à son chirurgien.

Objections.

Certain objections have been raised to this treatment:

1. It requires the personal attention of the surgeon in charge of the case to each individual patient. This undoubtedly lessens the number of cases that a surgeon can take under his care. M. Chutro estimated that fifty or sixty patients per diem was as many as a surgeon could properly attend to. As a set-off to this, it must be pointed out that patients gain considerably by being always dressed by the surgeon in charge of them.

2. The technique is more elaborate than that of most wound dressings, and, as we saw it carried out, entails a heavy strain upon the nursing staff. The dressing is, however, only changed once in twenty-four or forty-eight hours, and when once dressed, the wound requires very little attention for the rest of the time. If an automatic flushing system is employed, all the nurse has to do is to see that the reservoir is filled at stated intervals, that the bed does not get wet, and that the movement of the patient and the arranging of the bedclothes does not disturb the tube. We have found that it is quite practicable to carry out the system of treatment with two nurses only in attendance upon the surgeon, and that when once the routine is learnt, cases can be dressed very expeditiously; nurses state that the work of the ward is not heavier under this system than under others.

3. It has been alleged that the flushing of the wound every two hours with the antiseptic fluid is disturbing, or even painful, to the patient. We find that at the commencement of the treatment this may be so, but in a very short time the flushing does not wake the patient from sleep, nor does it cause anything more than a passing sensation in the wound when awake.

4. *Expense.*—We are not able to give a definite comparison between the actual cost of a series of patients treated by the Carrel-Dakin system and a similar series of patients treated by other means. Much of the equipment can be used for patient after patient. The rubber tubes can be cleansed and resterilized, and safely used again. The outer dressings oftentimes last a week, and as they are made of unbleached and non-absorbent wool, they cost very much less than dressings of similar size of absorbent wool. Care in the use of these dressings, and the supplementing of them by almost costless sphagnum moss pads reduces the cost very considerably, and we think must

make it less than some forms of dressing, particularly those involving the employment of large quantities of absorbent wool.

5. *Difficulty in Preparing the Fluid.*—Eusol is easily prepared, and in hospitals where large quantities are needed, it can be made fresh every day, and always be of its proper potency. Dakin's fluid is more difficult to prepare, and its preparation has to be carried out with great precision if its proper composition is to be maintained. We give as an appendix to this report the method of preparation recommended by one of our number, Captain Attwater. We do not feel able or called upon to state whether there is such proved superiority of Dakin's fluid over eusol as to justify its invariable use. It is important that these fluids should be protected from the action of light and of heat, but this is easily done.

6. These objections are one and all of small moment when compared with the proved advantages of the Carrel method of treatment. The prevention or arrest of infection of the wound, the greater rapidity of healing, more than repay for any labour or cost that the method involves.

7. If the system is adopted at casualty clearing stations and base hospitals provision must be made for the continuance of the irrigation of wounds during the transit of the patient from place to place. If the method is employed at all it should be employed in its entirety; it is not enough to introduce tubes into a wound and envelop the limb in a non-absorbent dressing, and then to send the patient away on a long journey where there may be no facilities for keeping up the instillation of the antiseptic fluid.

We are of opinion that the Carrel-Dakin method of treatment, if carried out thoroughly, is full of promise, and we believe that it will (1) diminish the dangers incidental to sepsis, including secondary haemorrhage, (2) hasten the patient's convalescence, (3) lessen the liability to stiff joints and cicatricial deformities, (4) enable the patients to leave the hospital with better general health than they otherwise might, and (5) where secondary operations become necessary, these operations are more likely to be free from septic complications than where some other system of primary treatment has been adopted.

Preparation of Solution.

In an appendix to the report Captain Attwater gives minute directions for the preparation of Dakin's solution in the manner suggested by Dr. Daufresne. These details, we gather, will be published in the *Journal of the Royal Army Medical Corps*.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Two torpedo-boat destroyers, H.M.S. *Mary Rose* and H.M.S. *Strongbow*, in charge of a convoy of Scandinavian food ships, were sunk by two heavily-armed German raiders on October 17th between Norway and Shetland. Most of the convoy were also sunk, only three vessels escaping. The great majority of the officers and men, of both destroyers and convoy, were lost, but a few survivors were picked up by a British patrol boat. Among those lost was Surgeon-Probationer Ivan C. C. Barclay, of H.M.S. *Mary Rose*. He was the youngest son of Mr. Charles Barclay, of Rosecraig, Cowdenbeath. Surgeon-Probationer I. M. Thomson of H.M.S. *Strongbow*, is reported saved, but severely wounded.

Killed in Action.

Surgeon Probationer G. Brown, R.N.V.R.

ARMY.

Killed in Action.

Major G. M. Hunt, M.C., Australian A.M.C.

Captain A. M. Fisher, R.A.M.C. (temporary).

CAPTAIN J. ALSTON, R.A.M.C.(S.R.).

Captain James Alston, R.A.M.C., was reported as killed in action, in the casualty list published on October 29th. He was educated at Dublin, took the diplomas of L.R.C.P.I. and L.R.C.S.I. in 1911, and joined the Special Reserve of the R.A.M.C. as a lieutenant on April 6th, 1914, being promoted to captain after a year's service.

CAPTAIN F. C. DAVIES, R.A.M.C.

Captain Frederick Charles Davies, R.A.M.C., was killed in action on October 17th, aged 33. He was the youngest son of William Davies, J.P., of Borth and Battersea, and was educated at Charing Cross Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1908; and at Cambridge, where he graduated M.A. in 1910, M.B. and B.C. in 1911, and as D.P.H. in 1912. He also took the M.R.C.P.Lond. in 1914. After filling the posts of house-surgeon, house-physician, and medical registrar of Charing Cross Hospital; of clinical assistant at the Great Ormond Street Children's Hospital; and of resident medical officer and bacteriologist at the West Ham Corporation Isolation Hospital, he became medical adviser to the Cambridge Insurance Committee, and county tuberculosis officer. He took a temporary commission as lieutenant in the R.A.M.C. on August 10th, 1914, in the first week of the war, and was promoted to captain on completion of a year's service.

CAPTAIN E. J. KERR, A.A.M.C.

Captain Eric John Kerr, A.A.M.C., was killed in action on October 4th, aged 25. He was the second son of Mr. John H. Kerr, Treasury, Melbourne, Australia, and was educated at Wesley College, Melbourne. He received his medical training at the Melbourne University, where he graduated M.B., B.S. in March, 1915. After filling the posts of resident surgeon and physician at the Melbourne Hospital he took a commission in the A.A.M.C. in January, 1916, and sailed from Australia in the following June. He leaves a widow and one child.

LIEUTENANT R. A. RAIL, L.D.S.

Lieutenant Richard Augwin Rail, L.D.S., Grenadier Guards, was killed in action on October 9th, aged 29. He was the youngest son of Mr. John W. Rail, of Wycroft, Kenilworth, Cape Town, and was educated at the South African College, at Charing Cross Hospital, and at the Royal Dental Hospital, taking the diploma of L.D.S. of the Royal College of Surgeons in 1911, after which he went into practice at Capetown. He came home to join the army in February, 1916, got a commission in the Grenadiers, and went to the front in July, 1916. He was well known in South Africa as a cricketer, playing as a member of the Western Province eleven.

Died of Wounds.

CAPTAIN H. GIBSON, R.A.M.C.

Captain Harold Gibson, R.A.M.C., died of wounds on October 17th, aged 33. He was the youngest son of Surgeon Lieut.-Colonel G. J. Gibson, R.A.M.C. (retired), born September 21st, 1884, and was educated at the London Hospital, taking the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1907. He joined the R.A.M.C. as a lieutenant on July 29th, 1907, and became captain on January 29th, 1911. He was acting as a temporary lieutenant-colonel when killed.

Captain F. B. Metcalfe, Australian A.M.C.

Captain J. R. Tillet, Australian A.M.C.

Wounded.

Lieut.-Colonel P. J. Hanafin, D.S.O., R.A.M.C.

Lieut.-Colonel C. W. Thompson, Australian A.M.C.

Major W. H. Rennick, Australian A.M.C.

Captain G. J. Baker, R.A.M.C. (temporary).

Captain F. L. Bignell, Australian A.M.C.

Captain G. A. Birnie, R.A.M.C. (temporary).

Captain G. Crashaw, R.A.M.C. (temporary).

Captain E. P. Dark, M.C., R.A.M.C. (temporary).

Captain T. Duncan, R.A.M.C. (temporary).

Captain T. Faris, New Zealand Medical Corps.

Captain F. W. Fay, Australian A.M.C.

Captain H. Foxton, R.A.M.C.(T.F.).

Captain H. A. Higginson, R.A.M.C. (temporary).

Captain J. Howard, R.A.M.C. (temporary).

Captain F. E. Keane, R.A.M.C. (temporary).

Captain J. A. Liley, M.C., R.A.M.C. (temporary).

Captain E. A. Lumley, R.A.M.C. (temporary).

Captain H. A. Macmillan, R.A.M.C.(T.F.).

Captain F. L. Newton, R.A.M.C.(T.F.).

Captain F. C. Pridham, R.A.M.C. (temporary).

Captain A. E. S. Pringle-Pattison, R.A.M.C. (temporary).

Captain F. W. Stone, R.A.M.C. (temporary).
 Captain W. A. Todd, R.A.M.C. (temporary).
 Captain F. E. S. Willis, R.A.M.C. (temporary).
 Captain H. F. Wilson, R.A.M.C. (temporary).
 Captain P. R. Woodhouse, M.C., R.A.M.C. (temporary).

Prisoner of War.

Captain K. Atkin, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Edwards, Henley Spencer, Private, Middlesex Regiment, eldest son of Dr. A. S. Edwards of Halling, Kent, reported as missing on October 23rd, 1916, now presumed killed on that date, aged 19.

Smith, Eric Drummond, Second Lieutenant Sherwood Foresters, only son of Dr. H. W. Smith, of Pleasley, near Mansfield, killed in action on October 4th, aged 19. He was educated at Margate and Nottingham High School. He joined the Inns of Court O.T.C. in September, 1915, obtained his commission in September, 1916, and died on the anniversary of his going to France.

Thomson, William Robinson Kitchen, Second Lieutenant Royal Garrison Artillery, eldest son of the late Dr. J. Thomson of Gateshead, killed October 15th, aged 31.

NURSES.

Sister E. M. Kemp, Territorial Forces Nursing Service, was reported as killed in the casualty list published on October 27th.

Staff Nurse Ella Kate Cooke, Q.A.I.M.N.S. Reserve, was accidentally killed at Alexandria on September 8th. She was the youngest daughter of the late Henry Cooke of Auckland, New Zealand.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SUPPLEMENT to the *London Gazette* issued on October 27th contains a list of rewards for gallantry and distinguished service in the field, which includes the following officers of the R.A.M.C.:

Awarded the Distinguished Service Order.

Temporary Captain John Caruthers Sale, M.C.

Awarded Bar to the Military Cross.

Temporary Captain Hugh Ross MacIntyre, M.C. (M.C. gazetted August 16th, 1917).

Awarded the Military Cross.

Temporary Captains Leslie Haden Guest, William Illewellyn Apin Harrison, William George Johnston, Robert Kennon, M.D., John Kirtton, M.B., Wilfred John Pearson, M.B.

Temporary Lieutenant Henry Marston Layard Crawford, M.D.

Temporary Quartermaster and Honorary Lieutenant Charles Elliot.

FOREIGN HONOURS.

Mr. H. S. Souttar, M.Ch., F.R.C.S., has received His Majesty's permission to wear the insignia of Officer of the Order of the Crown conferred upon him by the King of the Belgians in recognition of valuable services rendered.

NOTES.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.

The war establishment of a division of the United States army consists of 909 commissioned officers and 26,868 men; the medical department has 117 medical officers and 1,332 enlisted men. In the total of medical officers is included apparently 8 veterinary officers, so that the number of medical officers is 109, which is at the rate of one medical officer to 247. The medical personnel and equipment is in two parts: (1) The sanitary train, consisting of field ambulance companies, hospital companies, and camp infirmaries; (2) the medical department personnel attached to mobile line units such as regiments of infantry, cavalry, artillery, engineers, and signal corps battalions. Lieut.-Colonel W. W. Reno, from whose articles in recent issues of the *New York Medical Journal* we take this information, states that the sanitary train has 49 commissioned medical officers and 878 enlisted men, nearly all of them in four field hospital companies and four ambulance companies. The camp infirmary is simply a wagon load of supplies available for the emergency treatment of the sick in one-night camps and in peaceful situations, but it also furnishes surgical dressings and other medical equipment to troops on the line in time of war. The units of the sanitary train

are commanded by a medical officer, and the whole sanitary train by a division surgeon. The full strength of a regiment of infantry appears to be 103 officers and 3,652 men. The number of medical officers is four, one being a major; the number of non-commissioned officers four, and of privates 29. The medical personnel with regiments is under the immediate command of the colonel of the regiment, but the senior surgeon is in command of his medical personnel. At divisional head quarters are two lieutenant-colonels and a major. The duties with which the medical department are charged are: (1) Investigating the sanitary condition of the army and making recommendations in reference thereto; (2) advising with reference to the location of permanent camps and posts; (3) adopting systems of water supply and purification and the disposal of wastes; (4) caring for the sick and wounded; (5) making physical examinations of officers and enlisted men; (6) managing and controlling military hospitals; (7) recruiting, instructing, and controlling the enlisted force of the medical department and the nurse corps, and furnishing all medical and hospital supplies. The surgeon of every post or command supervises its hygiene and reports in writing to the commanding officer, who, in forwarding the report to the Adjutant-General, must state his reason for not accepting any recommendation made by the surgeon. In practice, however, it is found that a commanding officer seldom fails to remedy any defects pointed out to him. The Medical Department comprises the following branches: 1, the Medical Corps; 2, the Medical Officers' Reserve Corps; 3, the Dental Corps; 4, the Veterinary Corps; 5, the Army Nurse Corps (female); and 6, an enlisted force, supplying non-commissioned officers, male nurses, pharmacists, clerks, cooks, ward masters, surgical and bacteriological assistants, hospital attendants generally, drivers, chauffeurs, blacksmiths, farriers, mechanics, and other men needed to carry on the many activities of the Medical Department. From another source we learn that each American army in France, consisting of three army corps, will have a water regiment of six companies, and an engineer regiment of six companies for handling attacks by gas and liquids.

AMERICAN ORTHOPAEDIC UNITS.

Major Joel E. Goldthwait, M.R.C., U.S.A., has returned to Europe bringing with him from the United States forty-two medical officers who will be distributed through the British orthopaedic centres and later drawn for American orthopaedic hospitals in France. They will receive training in British hospitals while serving under the American officers who were members of the first orthopaedic unit brought over by Major Goldthwait in June last. When after this training they are drawn to the American service another group will be sent from the United States to take their place, and so on in successive groups. In this way a large number of positions will be filled for the work under the British Director of Military Orthopaedics by well-trained surgical assistants. The training of these younger men will fall upon the American orthopaedic surgeons, while at the same time they will help to supply Sir Robert Jones with a large staff to meet the expansion of the orthopaedic service. In addition Major Goldthwait is accompanied by three officers commissioned in the American Sanitary Corps who will be employed in the establishment and development of the American curative workshops.

CLASSIFICATION OF SOLDIERS.

An Army Council instruction has been issued fusing the medical categories B and C into a new category B. If it is proposed to send abroad men in categories lower than A, they will undergo a special medical examination to determine whether they are fit for service in North-west Europe only or in any overseas theatre of war. From November 1st all warrant officers, non-commissioned officers, and men serving at home will be classified in the new categories, and all soldiers classified C 1, C 2, or C 3 will automatically belong to the corresponding subdivision of the new category B.

The New Category A includes men fit for general service—that is to say, able to march, see to shoot, hear well, and to stand active service conditions. There will be four subdivisions: (1) Men actually fit for general service in any theatre of war; (2) recruits who should be fit for A (1) as soon as trained; (3) men who have previously served with an expeditionary force and who should be fit for A (1) as soon as hardened; (4) men under

19 who should be fit for A (1) or A (2) when they attain the age of 19.

The New Category B includes men free from serious organic disease and not fit for general service, but fit for service at home, or abroad if passed fit for service overseas. There are three subclasses: (1) Men able to march at least five miles, see to shoot with glasses, and hear well, and deemed to be fit for service in field units (at home only) and in garrison units or on duties of an analogous nature; (2) men able to walk to and from work a distance not exceeding five miles and to see and hear sufficiently for ordinary purposes, who will be employed in labour units or on garrison or regimental outdoor employment; (3) men only suitable for sedentary work or such duties as storemen, batmen, cooks, orderlies, sanitary duties, etc., or, if skilled tradesmen, at their trades.

There is a temporary category D for men temporarily unfit for service in categories A or B, but likely to become fit within six months, and meanwhile either in command dépôts, regimental dépôts, or in any units under or awaiting medical or dental treatment. At the end of such treatment a man will rejoin his original category until transferred either upwards or downwards by the medical officer or travelling medical board.

England and Wales.

FAILURE OF SANATORIUM BENEFIT IN LONDON.

It was reported to the London Insurance Committee on October 25th that over 500 insured persons suffering from tuberculosis were awaiting institutional treatment, and that this was the highest waiting list yet recorded. The number of beds available, all at present fully occupied, was 459, and the number of applications annually for institutional treatment was approximately 2,500. The Committee considered a report from its medical adviser, Dr. Noel Bardswell, upon the policy to be pursued with regard to institutional treatment, in which it was suggested that to maintain the waiting list at a workable figure, as the Committee was hampered by lack of funds, the policy should be to give to every person for whom institutional treatment had been recommended, and who was, in the medical adviser's opinion, likely to benefit from it to the point of restoration in some degree of the capacity for work, a minimum of four weeks' residence, the period to be extended if deemed desirable and possible. This course ensured that every patient who was capable of improvement had the opportunity of learning the principle of the treatment he should follow. As a means of safeguarding from infection those associated with the patients at home or at work, a course of education in a sanatorium, even if limited to only a few weeks, was of inestimable value; but, of course, the shorter the duration of institutional treatment, the more necessary it was to have an efficient system of after-care. A long waiting list defeated the object of sanatorium benefit in that early and curable cases not infrequently developed into cases of advanced disease while waiting for a bed. To admit patients within four weeks of acceptance, the waiting list should be about 150. One or two members expressed grave dissatisfaction with the proposed procedure, and thought it would be better to select from all the cases recommended those most likely to make a permanent recovery and to give them preference in the shape of several months' residence, the remainder to receive domiciliary or dispensary treatment; moreover, it was pointed out that the list was already the result of selection. Dr. Lauriston Shaw, vice-chairman of the Sanatorium Benefit Subcommittee, said that the period of four weeks was accepted by it rather as affording an opportunity of getting a clearer idea as to which were suitable cases and which were not than as offering treatment of much value. The Subcommittee endorsed Dr. Bardswell's suggestion with great reluctance as a means to an end, and the main Committee accepted the recommendation and decided to make a preliminary month's education and treatment the basis of its institutional recommendation.

LONDON COUNTY ASYLUMS.

The Asylums and Mental Deficiency Committee of the London County Council has approved the plan suggested by the Board of Control with regard to the provision to be made at asylums for disabled sailors and soldiers, patients therein who have been discharged on account of mental disorder due to or aggravated by war service. They will not be classed as paupers but as service patients, being placed on the register as such when

notice is received from the Ministry of Pensions. The cost of their maintenance is to be defrayed by the Government, in addition to which a special grant up to 2s. 6d. a week is to be made for extra comforts for patients able to appreciate them. The patients would be on the same legal footing as private patients. It was reported at the same meeting that a patient in the Colney Hatch Asylum had developed symptoms of leprosy and that the diagnosis had been confirmed by microscopical examination.

THE LIVERPOOL MEDICAL INSTITUTION.

The seventy-ninth session of the Liverpool Medical Institution was opened on October 25th by an inaugural address by the President, Dr. Charles J. Macalister. There was a numerous attendance of members, many of whom were in khaki and not a few on furlough from the front. An innovation was the invitation to ladies to be present. The subject of Dr. Macalister's address was "Professional Anecdotes," culled from his own experience. Judging from the applause of his audience, Dr. Macalister is to be congratulated on his departure from the beaten track that inaugural addresses are wont to follow. At a time like the present it is good for the medical profession, amid so much that is grave and serious, to enjoy the lighter side of medical experience. Certainly Dr. Macalister succeeded in entertaining his audience with many amusing and at times comical experiences that had fallen to his lot. Refreshments were provided and so afforded the opportunity of a conversazione. The evening terminated in a concert of vocal and instrumental music. The Misses Sheila and Elsbeth Macalister, daughters of the President, Mrs. Frank Jeans, Captains McFarlane and Llewellyn Morgan, Dr. Petlick and Mr. Brian Imlach were the executants. The topical allusions in Dr. Petlick's humorous songs were received with much applause.

ROYAL MEDICAL BENEVOLENT FUND.

Further contributions to the offertory at the annual medical service held in Liverpool on Sunday, October 14th, brought the amount up to £59 11s. 10d., and, after deducting the necessary expenses, the Royal Medical Benevolent Fund has benefited to the extent of £51. The committee, and especially the honorary treasurer, Mr. R. J. Hamilton, is to be congratulated on the success of their efforts, especially when so many charitable claims are being brought forward at this time.

Scotland.

OPENING OF THE WINTER SESSION, GLASGOW.

The period for matriculation at the University of Glasgow closed on October 25th, and though a few additional students may be enrolled the numbers are not likely to be materially altered. This year the number of men is about 650; on the corresponding day last year the number was 720. At present the only male students of medicine at the University of Glasgow are a comparatively small number approaching the completion of their course, a few who, being unfit for service or discharged from the army, are continuing their studies, and the new students whose course under present regulations will be interrupted by a call to military service when they attain the age of 18. The decision of the Ministry of National Service as to the demobilization of medical students now serving with commissions or in the ranks, is awaited with interest. The decision, it will be remembered, will be taken on the advice of a special subcommittee of the Advisory Committee. The number of graduates, students and alumni, now engaged directly on naval or military service is 3,172, and of these, 2,493 hold, or have held, commissions, 313 have been killed or have died of wounds, 489 have been wounded, and 33 are returned as missing or prisoners of war. The number mentioned in dispatches is 200. Two members of the university have received the V.C., 24 the D.S.O., 120 the Military Cross, and 11 decorations from the French Government. Of honours received by senior graduates, two have been made C.B., one K.C.M.G., and two C.M.G. The university staff is now reduced by war service to the lowest number compatible with supplying the necessary

avenues to degrees. The activity of the Officers' Training Corps continues; 1,400 of its cadets have gained commissions, of whom nearly a thousand are graduates or students. The number of women students matriculating at Queen Margaret's College this year is 760, as compared with 717 a year ago, and 619 in 1914. A considerable proportion of the women students are taking the medical course. Many women graduates and students are doing war work in Government offices, the Ministry of Munitions having claimed a number as medical officers, analytical chemists, superintendents, clerks, or welfare workers.

SCOTTISH NON-PANEL DOCTORS AND A MINISTRY OF HEALTH.

The annual meeting of the Medical Guild—an organization of non-panel practitioners for the purpose of opposing the National Insurance Act—was held on October 27th in the library of the Royal College of Physicians, Edinburgh, under the presidency of Dr. John Playfair. The principal topic under discussion was the proposal to create a Ministry of Health, and the Prime Minister's postponement of legislative action was approved. The President maintained that to rush such a measure through Parliament without due consideration and criticism, especially when so many medical men were absent on military service, would be most undesirable. This view was strongly supported by Dr. Frederick Porter (Edinburgh), Honorary Secretary of the Guild; Professor William Russell, President of the Royal College of Physicians, Edinburgh; and Dr. Duncan, President of the Faculty of Physicians and Surgeons, Glasgow. Sir David McVail, who spoke by invitation, said that there could be no doubt that an effort was being made to reduce the medical profession to a bureaucratic servitude, in which case its work and position would be so revolutionized that the profession as they knew it would no longer exist. Professor Russell, in the course of his speech, insisted that no such measure as a Ministry of Health ought to be proceeded with until the medical profession had been definitely consulted in the matter. He spoke of various schemes, such as that for a State medical service, which were being discussed in connexion with a Ministry of Health. A State medical service would mean the State servitude of the profession, while for the public it would mean no free choice in the selection of a medical man. As for the conversion of voluntary hospitals into State institutions he would oppose that to his last breath. The meeting unanimously decided that steps should be taken to maintain the freedom and independence of the medical profession by organization for mutual support and united action.

LECTURES AT GRETN.

A course of lectures arranged by the Chadwick trustees is being given at the Munition Factory Institute, Gretna. The first delivered by Professor Noel Paton, F.R.S., on October 26th, dealt with food in war time. He said that a shortage was certain because (1) the world's production was decreased by diversion of labour from the tilling of land to military purposes; (2) the supplies were limited by the isolation of such food-producing countries as Russia; (3) the importation of food was decreased by the diversion of shipping to military purposes, and its destruction by submarines, so that, for example, abundant supplies of wheat in Australia could not be brought to us; and (4) the demand for food had increased owing to the strenuous work that was being done. The increase of the cost of food was due to various causes and too much had been attributed to profiteering. As industrial products did not now go to pay for imported food, but were dissipated in munitions of war the credit of the country had suffered and the price of food from abroad had increased. Again, increased earnings had increased the demand for food and so tended to raise the price. This again led to further demands for increased wages, and thus, step by step, the price had been forced up. Generally speaking, down to May, 1916, the increase in the wages of all the organized trades had kept pace with the increase in the price of food. But those families in which the wages of the breadwinner did not rise above 30s. a week had suffered severely. The Government was striving to increase food production at home, but this would tell only in the somewhat distant future, and all that could now be done was to secure a fair distribution of food between all classes. Rationing, with all the expense and irritation of an army of officials, was

inevitable unless the individuals who made up the nation voluntarily conserved the food supply, especially by the avoidance of waste and of overeating made possible to large classes by the rise in wages. The next lecture at Gretna will be given on November 23rd, at 7.30 p.m., by Professor H. J. Spooner, of the London Polytechnic, on "Fatigue and the Worker: Causes, Effects, and Reliefs." The third lecture will be given by Sir John Stirling-Maxwell, Bt., on December 14th, at 7.30 p.m., on "Forestry as an After-war Employment."

Ireland.

OPENING OF THE WINTER SESSION, BELFAST.

The opening lecture was delivered at the Royal Victoria Hospital, Belfast, by Dr. Calwell, Physician to the Hospital, in the Edward VII Memorial Hall, on October 18th. He welcomed the students, old and new, to the practical half of their training when they first had to deal with men and women, and advised them to study the individual as well as the disease. The war marked one of the great decisive epochs in human history. Was the Prussian militarism to obtain mastery in Europe, or was a slowly widening democracy to rule for the benefit of the many? The duty of all was to give such help as they could to bring the conflict to a successful issue, to afford aid to those that had fallen, and to prepare by education for the large changes that would take place in the future. Although no compulsion was upon them, five of the full staff of the hospital were at the front; all the auxiliary staff who could go were or had been there. Many of their colleagues throughout the town and province had given up their private work. They were all proud, not only of those who had received honours, but of all who had voluntarily gone. Dr. McKisack proposed, and Lieut.-Colonel Mitchell seconded, a vote of thanks to the lecturer. Sir John Byers, chairman of the medical staff, in conveying it, referred to the work of an old student, Major Robert McCarrison, M.D., D.Sc., F.R.C.P., I.M.S., whose studies on the thyroid gland had advanced medical science; and on behalf of his old friends and teachers he sent him their warmest congratulations.

MATERNITY AND CHILD WELFARE.

In a note published last week on the war-time economy exhibition in the Belfast Art Gallery and Museum it was stated that in connexion with the exhibits illustrating various phases of welfare schemes a course of lectures would be given. The first of these, on the problem of maternal and child welfare, was delivered by Sir John Byers on October 23rd. He said that not only was there a falling birth-rate, but that far too many mothers and children were dying from preventable causes. In this war the very best blood of the empire was being lost, the flower of their manhood, the potential fathers of the next generation. In England and Wales the Midwives Act was passed in 1903, and the deaths from puerperal fever had been falling ever since. In Ireland matters were not improving, and a similar Act was required. Maternity and pre-natal clinics were required. Infant mortality in Russia was 254 per 1,000 births; in New Zealand, by a splendidly organized State and voluntary system, it had fallen to 50, and in the city of Dunedin to 40. In 1916 it was 91 in England, 97 in Scotland, and 83 in Ireland, but was 153 in Dublin and 113 in Belfast. In Belfast 1,067 children had died during the first year of life, or about one-sixth of all the other deaths; one-third dying from stated causes died in the first month. As many deaths occurred before birth as in the first year after birth. This proved the vast importance of looking after expectant mothers. Any scheme which did not embrace pre-natal care only faced part of the problem. Great progress had been made as regards environment after birth, but this was insufficient. This new work was being done in Great Britain, America, and New Zealand. Pre-natal departments at maternity hospitals were required, where expert advice and treatment were available.

DOCTORS OF MILITARY AGE AND POOR LAW MEDICAL APPOINTMENTS.

The Chief Secretary for Ireland has written to the Cashel Board of Guardians (co. Tipperary) stating that the Local

Government Board has informed him that it wrote to the guardians on May 2nd last calling their attention to the Board's circular of September 22nd, 1916, which dealt with the appointment of men of military age to vacancies in the Poor Law medical service. The Board pointed out that to allow such appointments would do a great injustice to young medical men whose sense of duty had made them offer their services in the R.A.M.C. and who, but for their absence on military service, would be competitors for these vacancies. The Chief Secretary concurs with the Local Government Board in the view it has expressed, and is not prepared to interfere with its discretion in the matter. In reply the guardians have pointed out to the Chief Secretary that they did not ask him to take any action that would deprive members of the R.A.M.C. of the opportunity of competing for the position of medical officer for the Fethard dispensary district when the war is ended. The vacancy, when it occurred, was duly advertised in the local and Dublin newspapers, and Dr. Stokes was the only medical man who offered his services. The district was previously known to him, as, with the sanction of the Local Government Board, he had done duty for the late Dr. O'Connell during the war, and having then acquired an acquaintance with the people and they with him, they naturally desired that his services should be retained. The guardians agree with the Chief Secretary that appointments should be left open for all young men who are at the front to become competitors for vacancies in all positions at the termination of the war, and therefore that such positions should not be permanently filled; they have asked only that Dr. Stokes may be appointed temporarily during the period of the war. The Fethard district is a large one, with an area of more than 29,000 statute acres and a population of close on 4,000 people, with Fethard town in the centre containing nearly 1,600 people, mostly of the labouring class, and Dr. Stokes's application being the only one before the guardians, it could not be expected that they would have so little interest or sympathy with the people of the district that they would leave it without a doctor to look after the interests of the people in the matter of health. There was no course open to the guardians except to appoint the only applicant for the position. At any time there was but the one doctor resident amongst the people of the district—the dispensary medical officer—and Dr. Stokes has his residence and practice, and is the only medical man at present in the district. The guardians have pointed out that he did not propose to give up his private practice and join the army at any time, and therefore his appointment to the charge of the district temporarily during the war in no way militated against the interests of the army, and would not prevent any others from competing for the position as soon as the permanent appointment is advertised after the war. There is no doctor living nearer to Fethard than eight miles, and this doctor has a town as well as a large district to look after, and could not take charge of both districts. The guardians conclude by expressing the hope that with this explanation of the circumstances Mr. Duke will consider the matter again with the Local Government Board.

ORGANIZATION OF NURSES IN IRELAND.

The Irish Nursing Board proposes to organize the nurses in Ireland so as to enable them to manage their own affairs and compile their own register. It hopes to standardize and improve the training of nurses, and to grant a certificate. Its affairs will be managed by an elected council.

Correspondence.

THE CURE OF INGUINAL HERNIA.

SIR,—I am interested in Lieut.-Colonel Hull's account of his method, though, beyond the fact that he makes an incision through the fibres of the external oblique, instead of splitting it from the apex of the external ring, the method is, in essentials, only the same as, I am sure, many others besides myself in children's hospitals have practised for many years.

The principle to be aimed at is that which Hamilton Russell laid down, that for the cure of a congenital

inguinal hernia the only thing which is necessary is the removal of the sac, and *the whole sac*.

The principle which Lieut.-Colonel Hull lays down is "to remove the sac at the highest possible level with the minimum disturbance." Now I have no doubt that with his experience he does remove *the whole sac*, but I am only writing this note to point out that for inexperienced operators this is not a sufficient guide. It is necessary to pull down the sac until a layer of extraperitoneal fat is seen surrounding it. This fat marks the junction of the sac with the parietal peritoneum, and the surgeon must transfix and ligature at this point or above it. The commonest mistake and the only cause of recurrence in children is to ligature below this point.—I am, etc.

London, W., Oct. 29th.

JOSEPH CUNNING.

SIR,—I have read Lieut.-Colonel Hull's able article on the cure of inguinal hernia with the greatest interest. He must certainly be allowed to speak with authority as a surgeon who is operating on 500 cases per annum. There are certain points in his paper, however, which have not been made quite clear, at least to me.

He mentions the presence of an abnormally long process of omentum as a feature of almost constant appearance, and considers it an important factor in recurrence. I cannot recall the experience of any other author which supports this, although the importance of lipomata has been pointed out by several. After a fair experience of the operation I could not say that I have found omentum by any means frequently in the sacs of men below middle age.

Colonel Hull makes a one-inch incision in the skin, and an opening of half an inch in the external oblique aponeurosis. The centres of these incisions are, I take it, just lateral to the line of the femoral vessels. He finds the sac as soon as he has opened the spermatic fascia. That is to say, he deals with typical conditions. I have not always been able to identify the sac so easily, particularly when confronted with the so-called infantile type, and not infrequently I have found the sac behind the elements of the cord.

It has not been my experience that a ligatured sac stump lies behind the *rectus* muscle.

The author states that, if necessary, the conjoined tendon can be stitched down to Poupart's ligament without enlarging the incision. He will remember that at the part of the canal where he is working the internal oblique and transversalis are muscular, and that the tendon lies a fair distance, relatively speaking, nearer the middle line. It must surely require most unusual dexterity to insert a needle through his tiny opening in the external oblique aponeurosis, thrust it adequately through the deep aspect of Poupart's ligament, and then get a firm grip on the rather distant conjoined tendon, to say nothing of the jeopardy in which the adjacent femoral vessels are placed by the manoeuvre.

He makes no reference to the value of his operation in direct hernia, a condition which must crop up every now and again in his large number of cases.

I am bound to admit that the points raised here do not affect the majority of cases, but they concern difficulties which cannot always be anticipated, and I regret that Colonel Hull did not enlarge upon them in his excellent article.—I am, etc.,

Glasgow, Oct. 29th.

CHARLES BENNETT, M.B.

GOLD-CROWNED TEETH AS A SOURCE OF DANGER.

SIR,—Under this heading a short article appears in your issue of October 27th. I heartily agree with the tenor of Mr. Green's communication, excepting that its inference is that teeth with pulp cavities containing the septic residue of necrotic pulps or septic material from whatsoever source owe their virulence to their being gold-crowned. This, of course, is not so. The serious affection of the patient's health arises because of the septic condition of the pulp canals in these "dead" teeth, which canals have either not been treated at all or have been for some reason unsuccessfully treated prior to the actual crowning. The gold crown is a superstructure merely, which does not affect the question. If the tooth had been filled with amalgam or cement or gutta-percha, the result would

have been the same. Of course, many crowns are defectively made and are objectionable as causing retention of food and micro-organisms about the gums; but this ill effect is trifling compared with that caused by a septic condition of the pulp canals. Micro-organisms in this situation (the pulp canals) penetrate through the unfilled apical foramina into the tissues of the alveolus and later on possibly of the jawbone more widely and into the attendant lymphatic glands, and possibly become diffused throughout the system in a general septicaemia. Therefore it is incumbent on the dentist either to extract "dead" teeth or to take the greatest care in treating their pulp cavities in the most careful and scientific fashion before either "filling" or "crowning" them.—I am, etc.,

London, W., Oct. 30th.

H. BALDWIN.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS.

SIR,—I am loth to enter into the correspondence on this subject, but for the sake of historical accuracy Dr. Nabarro's statements cannot be allowed to pass unchallenged.

To one like myself who is acquainted with the whole details it is certainly amusing to note that Dr. Castellani should have found a champion in Dr. Nabarro. The latter claims to be in "a unique position" to know the entire history of the proceedings. It so happens that I myself was, I will not say in a unique, but in a much more favourable position even than Dr. Nabarro, who, it must be remembered, knows nothing whatever in regard to the delicate negotiations and consultations which took place during the first few days after the arrival of Sir David Bruce and himself. I would ask Dr. Nabarro whether he does or does not believe the story which has already been published dealing with a conversation between Dr. Castellani and myself which took place a few minutes before the Commission landed from the steamer at Entebbe. If I am, to put it euphemistically, a dreamer of dreams, Dr. Nabarro's views may or may not be correct, but, if my story is a record of facts, it for ever destroys any claim which Dr. Castellani can bring forward to be the discoverer of the relationship which exists between trypanosomiasis and sleeping sickness.

When Dr. Castellani came across the trypanosome he quite overlooked its possible importance. He was at the time obsessed by the idea that he had traced the cause of sleeping sickness to a coccus which he had isolated, and he had already been publicly announced, rather prematurely as it turned out, as the discoverer of the cause of the disease. It is noteworthy also that up to the time of Sir David Bruce's arrival he had made no attempt to follow up the clue presented by the presence of trypanosomes in a few of the cases examined by him. Only a few days before the Commission arrived I myself saw Dr. Castellani much distressed at what he described as the unfair attitude of the Royal Society in refusing to publish his original paper on the coccus.

He bitterly resented the coming of another Commission to confirm his work. His first intention had been to leave Entebbe by the returning steamer the next day, and he told me that he would refuse to give the Commission any information or assistance. After meeting Sir David Bruce he eventually parted with his information as to the trypanosome, which a few days previously had been observed by Dr. Baker in a case of sleeping sickness. When Dr. Castellani saw what importance Bruce attached to the observation his faith in his own coccus began to wane, and he expressed the wish to remain with the Commission, but his refusal to work with his present champion, Dr. Nabarro, placed Bruce in a most awkward position. Personally, knowing all the details, I am of opinion that Sir David Bruce was much too long suffering, for, Dr. Nabarro being a member of the Royal Society's Commission, Dr. Castellani's attitude was, to say the least of it, most unreasonable.

Eventually a *modus vivendi* was arranged, and it was agreed that Dr. Castellani should remain for a short while, and that he should take home the first interim report on the work of the Commission. As regards that report Dr. Nabarro's imputations are unworthy. It was written, as I know, by Bruce, and embodied the results of the investigations, not of Castellani alone, but of the whole Commission, assisted, I may say, by the medical staff at Entebbe. Sir David Bruce most generously acknowledged

the debt he owed to Dr. Castellani for having drawn his attention to the presence of trypanosomes in some cases of sleeping sickness, and that sums up the whole of Castellani's contribution to the elucidation of the subject.—I am, etc.,

R. U. MOFFAT, C.M.G., M.D.,
Late P.M.O. Uganda.

London, W., Oct. 11th.

ONE POOL ONE AGREEMENT.

SIR,—Under the new regulations non-panel practitioners are to be allowed to participate in the present common pool without signing the common agreement which is attached to it. The pool up to now has been dealt with solely on a capitation basis, but these non-panel men are to have a special agreement to enable them to participate in this pool solely upon an attendance basis.

The question arises here whether the pool can be used for this double purpose—that is, allowing for an attendance basis for one class of men and a *per capita plus* attendance basis for another class of men. This question will more forcibly arise when the final lading out of this pool takes place. After all charges for attendance, etc., have been paid out of it the panel doctors will as usual share between them the capitation shortage or depletion from which the non-panel doctors are absolutely exempt. If there is to be a special agreement, surely there should be a special pool created and kept entirely separate from the other pool, in which both panel and non-panel men can participate upon an attendance system of payment by both of them signing the special agreement which attaches to such special pool.

What objection there can be to a special pool created apart from the common pool I cannot see, unless the object is to play off one system of payment against another system and thus to confuse the whole issue to the detriment of panel practitioners. To one common pool there must only be one common agreement.—I am, etc.,

Stalybridge, Oct. 28th.

ADAM FOX.

The Services.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

Officers' Benevolent Branch.

THE following donations of £3 3s. and upwards were received for the Officers' Benevolent Branch from July 1st to September 30th, 1917:

	£	s.	d.
Meat and Allied Trades Committee, per Red Cross and Order of St. John	...	5	0 0
R.A.M.C. Charities, Blackpool	...	20	0 0
Lieut.-Colonel C. Mansell Moullin	...	5	5 0
90 Field Ambulance (Officers' donation)	...	52	10 0
Captain M. Dixon, per Major Newton Pitt (1,000 francs)	...	36	4 8
R.A.M.C. Dépôt, Blackpool (Officers' donation)	...	5	15 6
Captain M. Dixon (100 francs)	...	3	12 1
M. H. G. F.	...	100	0 0
Colonel D. Hepburn, C.M.G.	...	20	0 0
		£249	7 3

Relief Branch for Widows and Orphans of N.C.O.'s and Men.

The following grants were received for the Relief Branch during the quarter ending September 30th, 1917:

	£	s.	d.
Half of cheque from No. 2 Division, France	120	10	0
Lieutenant J. Byrne	...	1	1 0
Captain J. C. Neil	...	1	0 0
Regimental Institutes, R.A.M.C. Dépôt, Blackpool	500	0	0
No. 11 General Hospital	...	20	0 0
R.A.M.C. Companies, Egypt	...	3	0 0
No. 11 Field Ambulance, half of cheque to R.A.M.C. Fund	...	3	13 6
R.A.M.C. Charities, Blackpool	...	55	18 3
From R.A.M.C. Fund, half of cheque for 5,456 francs	...	100	0 0
99 Field Ambulance	...	52	10 0
Codford Training Centre, Blackpool	...	5	5 8
43rd General Hospital, Salonica	...	50	0 0
J Corps Rest Station, France, 1916-17, per Colonel White	...	11	18 0
Queen Mary's Military Hospital, Whalley	...	50	0 0
No. 4 Stationary Hospital, part of cheque to R.A.M.C. Fund	...	11	0 0
No. 41 General Hospital, Salonica	...	27	0 0
No. 25 Motor Ambulance Convoy, per Captain Stringer, 1,500 francs	...	54	10 10
		£1,067	7 3

The Secretary of the Funds is Lieut.-Colonel E. M. Wilson, R.A.M.C., 124, Victoria Street, S.W.

EXCHANGE.

DOCTOR under Scottish Command. War Office, wishes to exchange post with doctor under London Command.—Address, No. 3750, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Obituary.

JOHN GORDON SHARP, M.D. EDIN.,

LEEDS.

DR. GORDON SHARP of Leeds died there in the early morning of October 16th with tragic suddenness; he had been at work on the previous day.

John Gordon Sharp, who was 55 years of age, was a native of Keith, Banffshire, Scotland. He graduated M.B. Edin. in 1891 and M.D. in 1896, and had studied also in Manchester, Paris, and Berlin. He won the Milner-Fothergill Gold Medal in Therapeutics (University of Edinburgh), and was awarded the Hunterian Society's Medal, 1910, for an essay on ergot. He made many important contributions to medical journals on pharmacological and other subjects, medical and non-medical. He was a member and foreign corresponding secretary to the Therapeutical and Pharmacological Section of the Royal Society of Medicine.

Dr. Sharp went to Leeds in 1895 and spent the whole of his medical career in that city. He was an active member and at one time chairman of the Leeds Division of the British Medical Association, and also a research student of the British Medical Association and of Owens College. He had been honorary physician to the Leeds South Dispensary and honorary medical officer to the Beckett Home, Meanwood. Although over military age and not in robust health, Dr. Sharp did twelve months' military service with the R.A.M.C. in South Shields and Clipstone camp, and for the past year and up to the day before his death had done military work at Chapeltown Barracks, Leeds.

Dr. Sharp had decided views on the place of alcohol in therapeutics, and by his writings and lectures did much good work for the cause of temperance; his was the strenuous endeavour of a modest, honest, and conscientious man. For many years he was secretary of the Leeds Branch of the British Medical Temperance Association.

Dr. Sharp leaves a widow and two daughters; a brother, Colonel A. D. Sharp, C.M.G., is now in France on military service.

He was buried at Lawnswood Cemetery on October 19th: the day was a perfect October day. Patients, friends, and men representative of the various activities of the city showed their respect and their appreciation of his civic worth by their presence at the last rites.

Universities and Colleges.

PARLIAMENTARY REPRESENTATION OF UNIVERSITIES.

THE scheme for university representation in Great Britain contained in a schedule to the Reform Bill proposes to increase the number of university representatives in Great Britain from seven to ten, and that three members should be allotted to the Scottish universities voting as a single constituency. The voting would be on the proportional representation system, each elector having one transferable vote. The Business Committee of the General Council of the University of Glasgow has put forward a scheme under which there would be three constituencies, each returning one member—namely, Edinburgh, with 12,654 voters on the register at January 1st, 1915; Glasgow with 9,307, and Aberdeen and St. Andrews with 6,965 (Aberdeen 5,000, St. Andrews 1,965).

UNIVERSITY OF EDINBURGH.

AT a meeting of the University Court on October 22nd it was reported that £2,000 had been received towards the fund of £4,000 offered to the University by some friends of women's education to help to meet the expenses incurred in the introduction of women students to classes in the faculty of medicine.

At the half-yearly meeting of the General Council of the University on October 26th it was reported that 5,000 members of the University were now serving in the forces, and 368 were known to have been killed or died. It was resolved that a Chair in German should be established after the war provided that an endowment sufficient to yield an income of £800 was obtained. The Principal expressed a strong opinion that no professor of any subject in the University should be asked to accept a salary of less than £800 a year. The Finance Committee reported that the number of women students had increased this year as compared with last, and added that it was significant that the increase was in the faculties of science and medicine.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary meeting of the comitia was held on October 25th, the President, Sir Frederick Taylor, Bt., occupying the chair.

Members.

The following candidates having passed the required examination were admitted as members:

J. J. Conybeare, M.B. Oxon, D. E. Fenwick, M.B. New Zeal., J. G. Greenfield, M.B. Edin., Helen M. M. Mackay, M.D. Lond., L.R.C.P., W. S. Sharpe, M.D. Durh., L.R.C.P., J. C. Tull, M.D. McGill.

Licences.

Licences to practise physic were granted to 89 candidates who had conformed to the by-laws and regulations and passed the required examinations.

The Preliminary Examination.

A report from the committee of management recommending modification of the regulations for the preliminary examination was further considered and adopted. The chief difference between the new regulations and those previously in force is the omission of Latin as a compulsory subject.

Recognition of Schools.

King Edward VII Grammar School, Southampton, and Lancing College were added to the list of institutions recognized by the committee of management in chemistry and physics, and Bootham School, York, was recognized for instruction in biology also.

The Committee of Reference.

The President reported on the proceedings of the Committee of Reference under the Military Service Acts during the past six months.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examinations indicated:

FINAL EXAMINATION.—R. Pollok, A. Bissemer, H. Wildeboer, J. B. Minford, F. G. Pailthorpe, G. N. Groves, C. C. Magee, Agnes E. Keen, H. G. Smith, B. M. Lyman, R. Quesada-Jimenez, I. Davies, L. P. Samarasingha, C. V. Samwell, Phoebe Foott, R. D. Howat, D. McK. Black, G. P. de Silva, C. D. Pullan, *Medicine*: J. L. West, Arukatti Patubendigo Frederick Abey-suriya. *Surgery*: A. Parker, W. G. Wilson. *Midwifery*: S. A. Faulkner, Indrarayana Borrah, A. E. W. Sandelson, Arukatti Patubendigo Frederick Abey-suriya, C. R. C. Moon, A. P. McLeod, A. Parker. *Medical Jurisprudence*: H. W. Howatson, Lizzie R. Clark, T. H. J. Douglas, D. A. Walpole, C. E. S. Ruchman, J. Boyd, C. R. C. Moon.

The following have been admitted Diplomates in Public Health: Annie R. McKail, Ella F. Pringle, J. L. Owen.

Medical News.

THE Minister of National Service has appointed Mr. J. Seymour Lloyd, C.M.G., a member of the Parliamentary Bar, to be Director-General of Recruiting and the Rev. J. R. McLean, a minister of the Presbyterian Church, to be Deputy Director-General.

DR. WOODS HUTCHINSON began a course of three public lectures, arranged by the Chadwick trustees, on "The part of hygiene in the European war," on Wednesday last. The remaining lectures will be given on Thursday, November 8th, and Wednesday, November 14th, at 3.30 p.m.

THE demonstrations of specimens of inflammation and gunshot injuries, to be given at the Royal College of Surgeons of England by the Pathological Curator, Professor S. G. Shattock, F.R.S., on Mondays, Nov. 5th, 12th, and 19th, at 5 p.m., will be open to medical students and practitioners; first aid and ambulance students desiring to attend will also be admitted.

THE French public has long been asking why, if the British soldiers in France could have periodically a bath and change, their own could not. After the commanders of units, the engineers whose duty it was to supply huts and pipes and taps, and the commissariat who controlled the water, soap, and linen, had fumbled with the matter for months which ran on into years, somebody had the bright idea that as the medical department was responsible for the health of the troops it would be logical to hand the bath question over to it. Within a very short time each division was provided with a *section d'hygiène corporelle*. Each possesses a movable hut containing three rooms, the first an undressing room, the second a douche room, and the third a dressing room. There is a disinfectant, a drying hut, and three store tents. The staff consists of three non-commissioned officers, three stokers, and ten orderlies, including a hairdresser and pedicurist. When the man reaches the dressing room he finds clean underclothing ready for him and his uniform dried and stoved. The men pass through at the rate of forty in twenty-five minutes.

Letters, Notes, and Answers.

Authors desiring reprints of their articles published in the **BRITISH MEDICAL JOURNAL** are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the **BRITISH MEDICAL ASSOCIATION** and **JOURNAL** are:

1. **EDITOR** of the **BRITISH MEDICAL JOURNAL**, *Aitology, Westrand, London*; telephone, 2631, Gerrard.
 2. **FINANCIAL SECRETARY AND BUSINESS MANAGER** (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
 3. **MEDICAL SECRETARY**, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the **British Medical Association** is 16, South Frederick Street, Dublin.
- The address of the **Central Medical War Committee** for England and Wales is 429, Strand, London, W.C.2; that of the **Reference Committee of the Royal Colleges in London** is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the **Scottish Medical Service Emergency Committee** is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

M.D. desires to find a print of a full-length figure of St. Luke, suitable for the centre light of a painted window.

MR. CHARLES H. GREENWOOD, F.R.C.S. (Ripon), asks for recent experience in the use of metallic colloids in the treatment of cancer.

INCOME TAX.

A TERRITORIAL MEDICAL OFFICER inquires whether he can deduct two-thirds of the rent of his house, which he "used" for the purpose of his profession. It has not been used as such since August 4th, 1914.

"* We fear not. If the house is no longer used for professional purposes the proportion to be deducted as representing the part occupied for the purpose of the profession is apparently nil. The only argument in favour of the allowance that occurs to us is that the house is in fact serving the purpose of keeping our correspondent's name before his former clients, but only a very small proportion of the rent could in any case be attributed to that purpose."

LETTERS, NOTES, ETC.

SALE OF COCAINE ON PRESCRIPTION.

A CASE which, it was stated, the Home Office authorities regarded as being one of considerable public importance came before Mr. Denman, the Marlborough Street magistrate, on October 26th, when Mr. William Cooper, of the firm of Roach, Pope and Son, chemists, of St. James's Street, was summoned for selling cocaine in a manner which contravened the Defence of the Realm regulations.

MR. H. G. MUSKETT, the prosecuting solicitor, read the regulations as consolidated to September 30th of the present year, and said that the material conditions governing the sale of cocaine were (a) that it must be supplied on and in accordance with a written prescription from a duly qualified medical practitioner, and dispensed by a legally authorized person; (b) that the prescription must be dated and signed by the practitioner with his full name, address, and qualifications, must be marked "Not to be repeated," and must specify the total amount to be supplied; (c) that the cocaine must not be supplied more than once on the same prescription, and (d) that the prescription must be marked with the date on which it was dispensed. It was also required that the prescription should be kept upon the premises of the dispenser and be open to inspection by an authorized person. The summonses in this case related to two sets of incidents occurring in June and August last. It was found on visiting the defendant's premises that the records of the sales were kept in a manner which did not fulfil the requirements of the regulations, but the more important matter related to the form of the prescriptions. The first of the two prescriptions failed to comply in every material respect with the regulations just referred to. It was initialed only by the doctor; it did not bear his name, address, or qualifications, nor the words "Not to be repeated." He did not suggest that the prescription, apart from its form, was improper, but a person having only the slightest knowledge of chemistry and of the properties of the drug might have given it. The second case related to a 2 per cent. solution of atropine and cocaine. In this case the record again was faulty, and on inquiring for the prescription the Home Office official was told that there had been no written prescription, but that the drug had been dispensed upon a telephone message from the doctor; subsequently, however, the defendant discovered a written prescription, which was in order in that it bore the name, address, and qualifications of the doctor, but it did not bear the address of the person for whom the drug was prescribed, and it fell short of what was required under the regulations by omitting the date on which it was in fact prescribed, and the words "Not to be repeated" were absent from the face of the document. It was thought right to bring this prosecution with a view to driving home the importance of these regulations.

MR. C. H. KIRBY, for the defence, said that the two main provisions of the regulations were, first, that the cocaine should not be dispensed except upon a doctor's prescription, and, in the second place, that steps should be taken to prevent a person getting the prescription made up oftener than was authorized by the doctor—that is to say, more than once on the same prescription. These regulations had been complied with by the defendant, who did, in fact, supply the preparation in both cases upon a doctor's prescription and himself retained the prescription. It was true that the prescriptions themselves were defective, but—although this did not relieve the chemist of responsibility—the person mainly responsible for that was surely the doctor, and in neither instance was the doctor summoned. In the case of the prescription bearing only the doctor's initials, the doctor was well known to the defendant. The prescription was not marked, "Not to be repeated," but the defendant effectively prevented it from being repeated by retaining it in his possession. The quantity supplied was one fluid drachm only of the oil of cocaine, a preparation containing castor oil. The cocaine was supplied in so small a quantity and in such a form that it was very unlikely that anybody would consume it. In the second case the prescription also was retained by the chemist, so that the omission of the words "Not to be repeated" did not seem to be of more than technical importance. The address of the purchaser was not given but was easily ascertainable from the doctor, whose name and address in this case were on the prescription, and whom the defendant knew well. The defendant had committed technical irregularities, in excuse for which he pleaded pressure owing to shortage of staff. With regard to the incident of the telephone, a doctor would occasionally telephone what he was prescribing, and ask for it to be ready when the patient called; the drugs were not handed out until the prescriptions were received.

The magistrate said that nobody could doubt the importance of the regulations being strictly adhered to, and he for one had had it brought home to him very closely during the last year. In this case there had obviously been negligence and carelessness. Chemists more than any other class of persons should make themselves acquainted with every regulation, because they were placed in a position in which non-compliance might result in grave harm. He fined the defendant £25 on each of the two cases, and costs totalling to £4 10s.

A TOO-PUNGENT MOUTH-WASH.

M.D. LOND. writes: I should like to be allowed to furnish my testimony as to the great efficacy of thymol solution as a mouth and teeth wash. I formerly was much troubled with the formation of tartar and a tendency to pyorrhoea alveolaris. My dentist, a well-qualified man, used many applications, including potassium permanganate, hydrogen peroxide, iodine, etc., without effecting a cure. From the time the first paper on the subject appeared in the **JOURNAL** I have used the thymol solution night and morning, and all trouble has long passed away. It is most simple to use, and quite inexpensive. I simply put about a drachm of the thymol crystals at the bottom of an 8-oz. bottle, and keep filled up with cold water. I take a mouthful and stir it about round the teeth with a soft toothbrush. Some of the original drachm of thymol is still at the bottom of the bottle after three months' use (cost 6d.), showing the extreme dilution of the saturated solution. I have never experienced any burning or unpleasant effects, nor have any of the many persons to whom I have introduced this simple but most effective remedy. All speak in the highest terms of it, including the above-mentioned dentist, who wrote to me a letter of thanks for drawing his attention to it. Probably there may be an impure thymol occasionally on the market, which may have some acrid property. The pure thymol occurs in colourless crystals.

The saving of expense, too, is great. People who had been spending perhaps pounds on mouth-washes and tooth pastes can now with a minimum of trouble accomplish much more effectively their purpose at a purely nominal expense. If introduced among the poor, it would, I think, create a revolution in the condition of the teeth of poor children.

HAEMATEMESIS AND MELÆNA NEONATORUM.

DR. D. OWEN WILLIAMS (Glandyfi) writes: The treatment of the case described by Dr. Marriott reminds me that the late Dr. Dobie of Chester said that he had treated successfully a baby suffering from melæna, soon after birth, by simply giving it a few drops of liquid extract of ergot. The baby has long ago attained manhood.

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The Bradshaw Lecture

ON

MISPLACED AND MISSING ORGANS.

DELIVERED BEFORE THE ROYAL COLLEGE OF SURGEONS
OF ENGLAND, NOVEMBER 8th, 1917.

BY

SIR JOHN BLAND-SUTTON, F.R.C.S.,
SURGEON TO THE MIDDLESEX HOSPITAL.

*Thou knowest not . . . how the bones do grow in the womb
of her that is with child.*—Eccles. XI, 5.

THE monotony of order and regularity is impressed on us early in the study of anatomy. The eagerness with which students draw the attention of demonstrators to abnormalities they find, when dissecting, is notorious. Constancy of position is not a virtue of viscera; but it is amazing that in ninety and nine bodies out of a hundred the abdominal organs fall into their proper places during fetal life.

Until the main features of the development of animals were closely investigated, variations in the position of the

detected in radiographs of the spine, and it is often associated with spina bifida. Half-vertebrae have been found in fishes, snakes, calves and rabbits. Embryology has disclosed many secrets concerning missing organs: some parts true to the impress of heredity appear in the embryo and disappear with the gradual perfection of the fetus. Parker, studying the development of the green turtle, noticed that the embryo possessed ten more somatomes than were represented by vertebrae in the adult. Seven were suppressed in the neck and three in the tail. This suggests for turtles ancestors with longer necks and tails than existing forms. There can be no doubt that if turtles were dissected as thoroughly as they are made into soup many examples of supernumerary cervical vertebrae would be found among them, in spite of the specialization that exists in the vertebral elements of the Chelonian neck. The best known example of a missing vertebra occurs in the sea-cow or manatee. As all students of human osteology know, this mammal has six, instead of seven, cervical vertebrae. Kükenthal discovered another curious feature in this weird mammal: the fetal manatee has a thick coating of rudimentary hair, but the skin of the adult animal is, like that of the whale, almost hairless. The abundance of hair on the fetal manatee indicates that manatees had ancestors as furry as seals. Long ago, John Hunter noted that whales and sea-cows, mammals living entirely in the water, could derive no advantage from hair, but they have an immense quantity of subcutaneous fat which is a worse conductor of heat than water. When the ancestors of the manatee took to water they lost their hair but gained fat. Embryology furnishes evidence concerning kinship and descent. Our thoughts may be turned in this direction when we eat

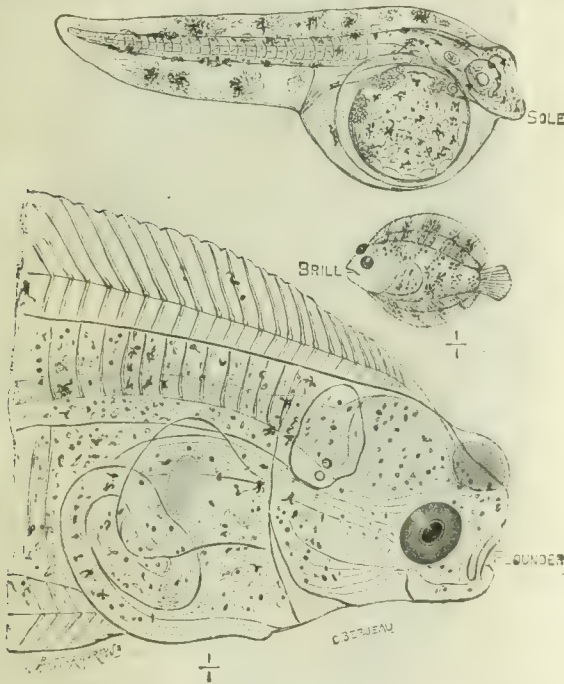


FIG. 1.—Larva of the sole, brill, and flounder.
(J. T. Cunningham.)



FIG. 2.—A calf of 2½ months with its heart in the dewrap.

viscera aroused curiosity, and must have been as ill understood as the reasons for the bilateral symmetry of the body. In the case of bilateral organs, such as the eyes, ears, teeth, kidneys, ovaries, and bones of the limbs, as well as the opposite halves of median organs like the brain, tongue, bladder, and uterus, the symmetry is astounding. Although there are minor variations in bilateral organs, the general likeness in shape is so close that the ability to distinguish between right organs and left organs is an examination test for estimating the diligence of students in practical anatomy. The bone that fascinated me most is the stapes. It is the smallest bone in the skeleton, and thoroughly justifies its name. The right and the left stapes are so like each other that it is difficult to tell one from the other. They are as nearly alike as a pair of stirrups. He who doubts this should examine the unique collection of auditory ossicles in the Museum.

Not the least interesting feature of anatomical research is the detection of additional skeletal elements. It is not uncommon to find an extra vertebra in the lumbar set, or in the coccyx. Excess in number is no disadvantage, but occasionally half a vertebra is missing. When this happens it causes tilting of the spine. A study of available specimens shows that this anomaly may occur in any region of the spinal column. Such deficiency can be

a flat-fish. Sole, plaice, brill, dab, flounder, and halibut when first hatched are symmetrical and transparent; they have an eye on each side and swim in a vertical position. Later the fish flattens, and the facial portion of the skull twists in such a way as to bring the eyes to the upper surface. The hinder part of the skull that contains the brain does not share in the twist. Sometimes a sole is found with an eye on the white or "blind" side. Holt described an example in 1894. The larva of a flat-fish, so transparent when alive, is only rendered visible by the metallic brilliancy of the eyes, which shine through the transparent tissues like metal beads (J. T. Cunningham). The alteration in the position of the eye influences the mode in which the little fish swims. For instance, in the flounder (Fig. 1) the left eye projects above the edge of the head on the left side. The fish in this condition swims on its edge, slightly inclined to the left side. During the whole of the change, from a bilaterally symmetrical to a flat fish, the inclination from the vertical in swimming is proportional to the degree of asymmetry of the eyes.

A CERVICAL HEART.

Many mammalian organs migrate during embryonic and fetal life, and some of the changes in their position are as extraordinary as those of the eye of flat-fishes. Early in

the study of human anatomy this matter comes forcibly to our notice when we study the recurrent course of the inferior laryngeal nerve, and realize that its unusual course is due to the transit of the heart from throat to thorax. There is nothing quite so fascinating as watching the pulsating embryonic heart of a chick lying clear of the body cavity, then to trace its gradual enclosure, translation, and final imprisonment by the completion of the walls of the body cavity. Occasionally the heart fails to reach its normal place, and is detained in the neck, an embryological accident not uncommon in calves. The clinical features of such an anomaly are striking. A calf (Fig. 2) was born near Montrejeau (1902), and its owner sought the advice of Bourdelle on account of a globular pulsating swelling in its dewlap. The swelling, which was as big as a cocoon, became soft and flaccid, then hardened suddenly, and sensibly diminished in volume. These changes happened regularly seventy times per minute synchronously with the pulsation in the arteries. There was no difficulty in recognizing the supposed tumour as the heart. The calf, which did not appear to suffer inconvenience from the anomalous position of its heart, was killed in order that a complete anatomical examination could be made. The details are given with great care in the *Revue Vétérinaire*, 1902. The thoracic cavity was much smaller than usual, partly due to an abnormally forward position of the diaphragm, which was also displaced by an unusually large liver. A cervical heart is a rare anomaly, but I will now describe something rarer.

AN INTRATHORACIC STOMACH.

The diaphragm is a muscle peculiar to mammals, and the long course of the phrenic nerves arouses curiosity.

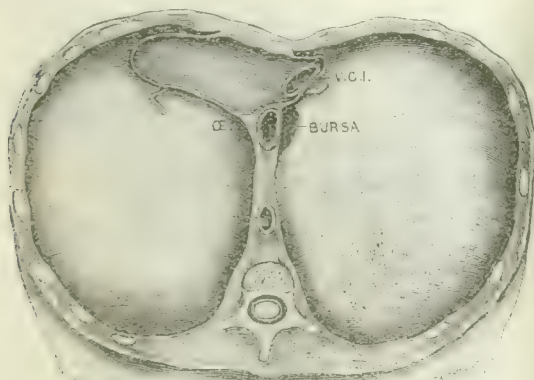


FIG. 3.—The thoracic surface of the diaphragm, showing the position of the infracardiac bursa in a human fetus. (Broman.)

In the embryo, the thorax and abdomen form a common cavity, as in amphibians and reptiles. This pleuro-peritoneal cavity is divided by the diaphragm into thoracic and abdominal cavities. The precise manner in which the diaphragm arises is not easily appreciable, and this muscular septum is liable to some gross defects. Deficiency of the left half of the diaphragm has often been recorded, and few pathological museums are without an example.

A child with a partial diaphragmatic hernia may survive its birth and attain adult life, but in the majority of patients with diaphragmatic hernia that come under the observation of surgeons the lesion is traumatic. Imperfections of the diaphragm allow the intestines and stomach to intrude into the thoracic cavity, and without the help of x rays it would be difficult to diagnose such a condition with certainty. To-day the stomach requires a section in textbooks of surgery to itself, and anomalies in the position of the stomach are of practical interest. I had an opportunity (1917) of studying an intrathoracic stomach presenting unusual features. A spinster, aged 26, complained of gastric disturbance of such severity as justified an examination with x rays and an opaque meal. The radiographs disclosed the shadow of a body above the diaphragm, displacing the heart to the left. Two radiographers of experience agreed that the intrathoracic shadow represented a stomach lying above the diaphragm. The patient's discomfort justified operation. The parts were exposed by a median supra-umbilical

incision, but no stomach was visible. Then I found a cleft in the diaphragm on the right side of the oesophagus from which small intestine emerged. On introducing my finger I found the stomach lying in a pouch extending into the thorax. I withdrew the stomach; it was of normal size, but had very thick walls, and on being released at once slipped out of sight into the pouch. The limits of the pouch were clearly indicated on the radiographs. The patient recovered from the operation, but suffers occasional discomfort and attacks of vomiting. Her digestive disturbances have not been relieved, nor aggravated by the interference. The pouch occupied by this vagrant stomach has an embryologic history. The region of the abdomen known as the lesser bag of the peritoneum is, for the Swedish anatomist Broman, the omental bursa. In the embryo it extends into the thorax on the right of the oesophagus. In the fetus a small pouch exists in this situation—the infracardiac bursa. In adults it may be detected as a narrow slit (Fig. 3). Man, in common with other members of his class, has two pleural cavities; some monkeys possess a third that lodges the odd or azygous

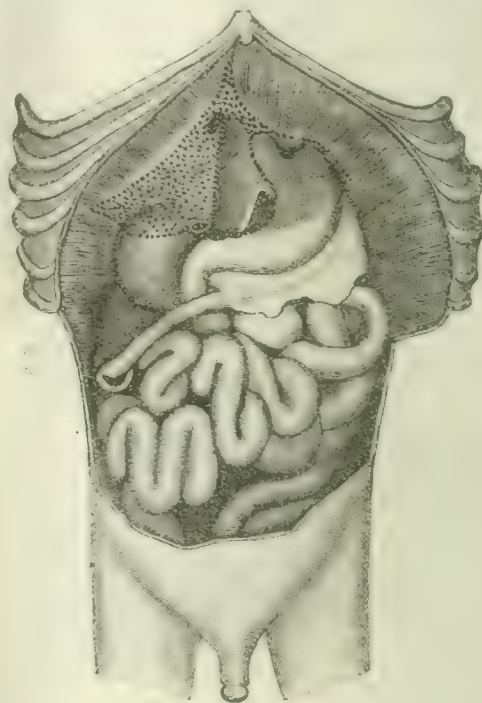


FIG. 4.—Intestinal tract of a human embryo 6 cm. long. The liver has been removed. (Broman.)

lobe of the right lung; Simpson found one in a man (1807). The infracardiac bursa of the fetus represents the third pleural cavity. It was a cave in my patient and hid the stomach.

THE UNDESCENDED CAECUM.

Under normal conditions the caecum occupies the right iliac fossa, and in many, especially women, it dips into the right half of the pelvis. The changes which take place in the disposition of the intestines, great and small, during fetal life are well known to anatomists. These movements lead to and end in the complicated arrangement of the peritoneal folds that cause despair to the novice in human anatomy.

In a large number of mammals the whole intestinal tract from the middle of the duodenum to the end of the colon is slung on a common mesentery. This is the arrangement found in the human embryo; it occasionally persists in adults, and leads to some remarkable displacements of the caecum that cause a very fatal form of intestinal obstruction. In the early embryo the caecum does not exceed in circumference a contiguous coil of ileum; even at this stage it is defined by the vermiform appendix (Fig. 4) and lies in contact with the under surface of the liver. Gradually enlarging, it descends to the normal position in the right iliac fossa. It is a common condition to find the caecum completely invested with peritoneum, and almost as mobile as a small ovarian cyst. Occasionally the caecum is retained in the fetal position, immediately under the liver.

The alarming frequency of septic disease of the vermiform appendix leads surgeons to study keenly variations in the positions of the caecum and anomalies connected with its descent, for these determine the final situation of the appendix. Experience in the operating theatre teaches surgeons that the vermiform appendix may lie in any position between the under surface of the liver and the floor of the pelvis. I have on several occasions found its tip touching the gall bladder. When the appendix is retrocaecal, it often lies in contact with the kidney. I have carefully studied the retrocaecal appendix, not only on account of the difficulty that sometimes attends the diagnosis of appendicitis when the appendix lies behind the caecum, but also to ascertain the causes which lead to this position. It admits, I think, of the following simple explanation. In many of the cases in which the appendix lies vertically behind the caecum its tip is firmly fixed

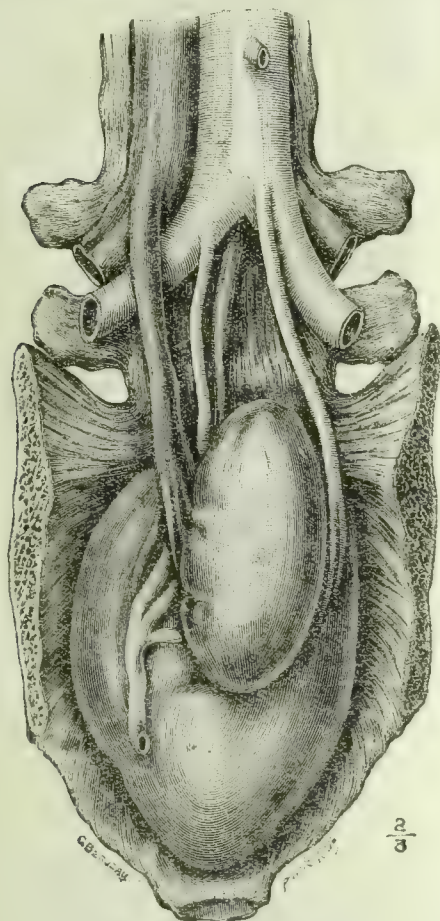


FIG. 5.—Pelvic kidney; from a man.

near the liver. Thus it happens, if the tip of the fetal appendix is anchored, it cannot descend with the caecum into the iliac fossa, but the descending caecum gradually lengthens the appendix. This will explain the fact, familiar to surgeons, that a retrocaecal appendix is often abnormally long, straight, and lacks a mesentery. Occasionally I have found the tip of a retrocaecal appendix so firmly fixed to the peritoneum in the loin that the caecum, though it has descended into the iliac fossa, has had its blind end turned upwards to the liver. In such a case the caecum is suspended by the appendix. The mechanism by which the caecum migrates is associated with that determining the descent of the testes and the ovaries. Non-descent of the sexual glands is often associated with an undescended caecum, and those ill understood movements, or readjustments, of the peritoneum that occur at a late period of fetal life.

THE PELVIC KIDNEY.

Some of the changes in the position of abdominal viscera are almost romantic. The extraordinary movements culminating in the descent and extrusion of the

testicles were detected by Haller in 1755; John Hunter described the process thoroughly in 1762, and left little for subsequent anatomists to discover. It is not generally appreciated that the kidneys undergo a marked translation during fetal life. Many years ago, whilst making a *post-mortem* examination of a man, I found one of his kidneys in the hollow of the sacrum (Fig. 5); it received its blood supply from the right and the left common iliac arteries. I have seen a kidney in this situation in a woman; it was regarded before operation as a distended Fallopian tube. When the pelvic organs were exposed in the course of the operation a curious set of anomalies appeared. The uterus was of the unicorn variety and had a right ovary, tube, and broad ligament. The left side was smooth and round, and lacked appendages of every kind, including the round ligament. The right kidney was normal in position and shape. This woman conceived after the operation and was delivered without difficulty, in spite of the kidney in the hollow of the sacrum.

A pelvic kidney may become hydronephrotic, and it has happened that a gynaecologist, unaware of this anomaly, removed such an organ under the impression that it was an ovarian cyst. The retention of a kidney in the hollow of the sacrum admits of an explanation.

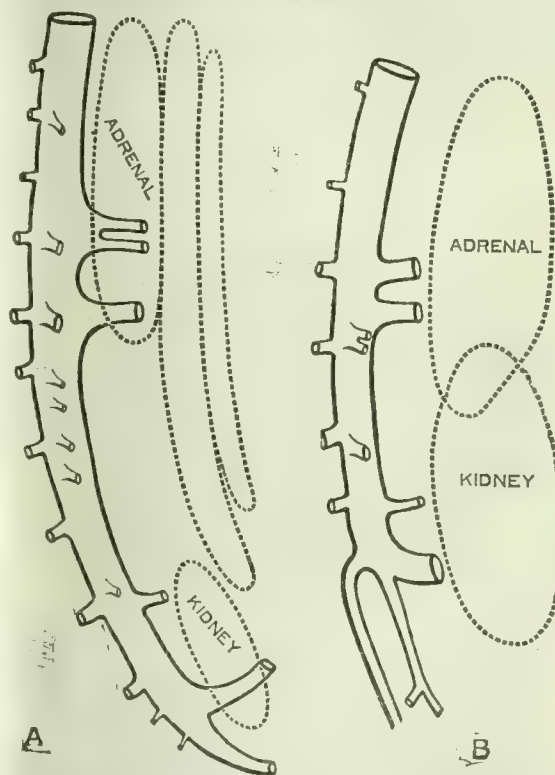


FIG. 6.—Diagrams to show the varying relations of the adrenal and kidney in the human embryo. (Broman.)

The position of the kidney in the human embryo is influenced by the size of the adrenal. During intrauterine life the adrenals are large and conspicuous. In the first half of the second month the adrenal is double the size of the kidney and the two organs are widely separated (Fig. 6, A). Then the kidney grows faster than the adrenal. At the end of the second month they are equal in size, and subsequently the kidney becomes the more conspicuous organ. The relationship of the kidney to the iliac arteries (Fig. 6, B) in the embryo explains the occasional occurrence of a pelvic kidney in, or near, the pelvis.

The close proximity of the kidneys in the pelvic region of the embryo helps us to understand the origin of the common anomaly known as horseshoe kidney, in which the two kidneys are more or less intimately joined by their lower poles, and the ureters usually lie in front of the renal isthmus. In one example I have seen both halves of such a kidney hydronephrotic and the isthmus passed across the pelvis below the promontory of the sacrum.

The large size of the adrenal in the human embryo is due to the preponderance of the cortex over the medullary portion (T. R. Elliott), and this is in some subtle way,

correlated with the development of the cerebrum. The hypertrophy of the adrenal cortex in embryonic life is a feature peculiar to human fetuses, and if the cerebrum fails to develop, as in anencephalous human fetuses, the proportions of cortex and medulla are like those of other mammals. It is said that Morgagni (1723) knew of this

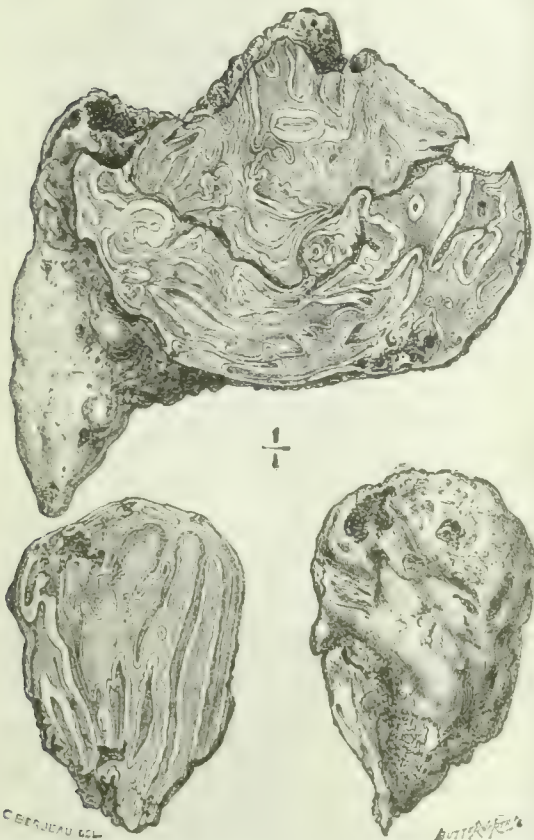


FIG. 7.—Head of a mare with a sinus leading to some mastoid teeth. The drooping lip shows palsy of the facial nerve. The teeth are shown below, two in section. (From *Tumours*, 6th ed.)

correlation between the cerebrum and the adrenals, but I have failed to find the statement in his Letters.

Although I have collected half a score examples of pelvic kidneys in men and women I have failed to obtain any evidence of pelvic kidneys in other mammals. This may be used as additional evidence that the caudal displacement of the kidney in the human embryo is due to the predominance of the adrenal cortex.

SPECIFIC ORGAN-FORMING SUBSTANCES.

The correlation between the cortex of the adrenal and the cerebrum leads us to the consideration of what are known as specific organ-forming substances. This may be exemplified by an experiment on the developing eye. The chief features in the formation of the eye of a vertebrate animal are well known. The essential nervous elements of such an eye are furnished by the optic vesicle, an outgrowth from the brain. The lens begins as a circumscribed thickening (or plakode) of the surface epiblast, which is received into the hollow formed by the invagination of the optic vesicle. Lewis, in the course of some remarkable experiments performed on tadpoles, cut off the optic vesicle, and pushed the amputated organ under the skin to a new place; no lens was formed in the normal position, but a lens-like structure developed from the skin situated over the optic vesicle.

This specific organ-forming influence can be studied in the poultry yard. Hens have only one ovary and oviduct



FIG. 8.—Ear of sheep with an accessory ostium and tooth.

—the left. The right ovary and duct are missing. Often the absent oviduct is represented by a vestige attached to the cloaca. In winter the left ovary is small and insignificant, and the oviduct a mere thread. In spring the ovary is the most conspicuous organ in the abdomen, and the oviduct becomes enlarged, convoluted, and resembles intestine in size and appearance. It is reasonable to believe that some specific secretion, formed in the ovary, stimulates growth and tissue formation in the oviduct, and the vestigial condition of the right oviduct of birds is correlated with the absence of the corresponding ovary. The influence of glandular activity on tissue-production is remarkable. No one has seen an eye without an optic nerve, or a gall bladder without a liver, a ureter without a kidney, or a uterus without a sexual gland. I have seen and described a uterus in a boy, but there were testes associated with it. There is a side issue connected with the missing ovary in birds that is worth mention. From very ancient times men and women have believed that the right ovary furnishes boys and the left ovary girls. Many medical men believe it to-day; the tradition is deeply rooted; it has no foundation. As hens have only one ovary, the left, those who believe this tradition must tell us "where the cocks come from" (Blackler).

MASTOID TEETH.

Thirty-five years ago my curiosity was aroused by some strange teeth lodged in the mastoid region of a horse's skull. The specimen is preserved in the museum of the Veterinary College at Alfort, near Paris. The horse was dissected in the college, and the teeth were described by Professor Goubaux in 1849. On the skull is written, "Supernumerary molars in the temporal region of a horse." I re-examined this skull and some other examples of mastoid teeth when I revisited the museum in 1917. From the day that I first examined these misplaced teeth, impacted in the mastoid portion of the temporal bone, my interest in them remained unabated. Teeth in this situation are not novelties. I have examined a score of such specimens. The presence of mastoid teeth is indicated by a sinus at the base of the ear (Fig. 7), from which purulent and mucous fluid issues. This leads to an examination and the detection of the teeth. Sometimes one tooth is present, lodged in the attic of the tympanum, a fact that has given colour to the erroneous impression that the sinus and the misplaced tooth arise from imperfect closure of the branchial pouch from which the tympanum is derived. Occasionally several teeth are present; they are invariably ill-formed, and two or more teeth may be blended, forming a mass resembling an odontome enclosed in a bony capsule embedded in the mastoid region of the skull. Such dental conglomerates contain enamel, dentine, and cementum in a complex jumble. The dental mass sometimes bulges into the cranial cavity, and if the sinus becomes septic the horse dies from meningitis. The facial nerve is sometimes involved in the Fallopian aqueduct, and leads to facial palsy.

Veterinary surgeons remove mastoid teeth in a summary manner. They enlarge the sinus, ascertain the position of the tooth, and remove it either with forceps or a chisel and mallet. The cavity is stuffed with antiseptic gauze and allowed to heal.

In 1890 I obtained some new light on these curious teeth. Dr. John Evans of Aberdare sent me a sheep's

at a meeting of the Pathological Society, London, caused comment and vague speculation. Many years elapsed before I got any clear light on this specimen, and the clue gradually came from a study of double-headed animals.

BICEPHALOUS ANIMALS.

The teratological collection in this museum is the finest in the world. It was founded by John Hunter, who took a keen interest in monsters, not from curiosity, but as part of a great scheme showing the various phases of life. This collection includes monstrous beans, cucumbers, and apples; eels and salmon, carp and shark, crabs and lobsters, lizards and snakes, sparrows and pigeons, chicks and ducklings, kittens and pups, lions and lambs, hares and rabbits, sheep and rams, cows and calves, monkeys and men. Many are so misshapen that we may, with Job, ask who gendered them. The most extraordinary specimen is the skull of a double-headed child obtained from Bengal (Fig. 9). Mr. Shattock regards it as the most wonderful specimen in the museum, and he is a competent judge. The remarkable history of the unfortunate child is given at length in the catalogue.

Hunter noted that some malformations are common in certain genera of animals. Double-headed horses, oxen, and sheep are common. During the last thirty years I have examined a hundred specimens in museums, dissecting rooms, and penny shows.

In 1877 Gurlt published some observations on malformations among domesticated animals and figured the head of a lamb with incisors lodged in a diminutive but unmistakable mandible, and a tongue of corresponding size. The mandible, teeth, and tongue were associated with



FIG. 9.—The skulls of a double-headed child, aged 4 years. (Museum, Royal College of Surgeons.)



FIG. 10.—Head of a cross-bred Devon ox with an accessory head attached to its throat. A cane passed through the accessory mouth entered the normal pharynx.

ear (Fig. 8) with a fistula corresponding in situation with the sinus in the mare. Near the orifice, and associated with it, there is an incisor tooth, in shape indistinguishable from the normal incisor of a lamb. The neck of the tooth is surrounded with mucous membrane (gum), and its root occupies a bony socket; the whole is lodged in a fold of skin beset with black papillae. This fold of skin resembles in every feature the lower lip of a lamb. The rest of the head had been lost, probably eaten. The ear, when shown

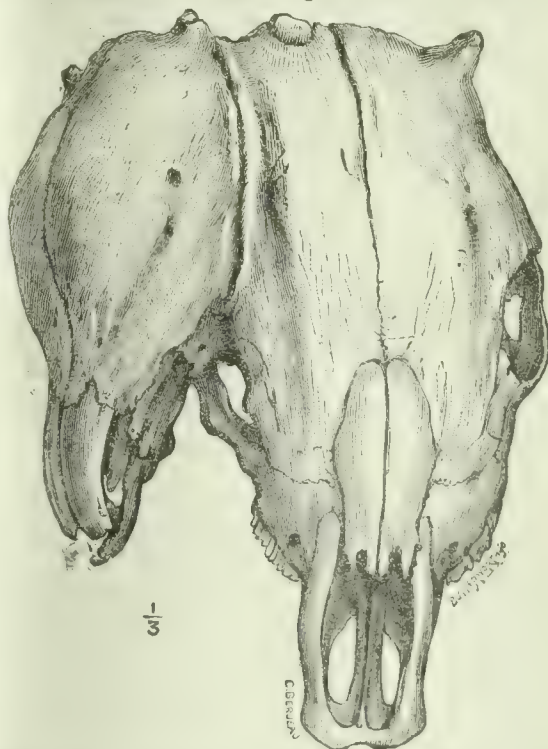


FIG. 11.—Calf's skull with an accessory skull attached in the mastoid region. (Museum, Royal College of Surgeons.)

a fistula opening into the normal pharynx of the lamb. When the animal drank, some of the fluid escaped through the fistula. A similar condition is shown in Fig. 10, except that the subject is a cow of the Devon breed. This cow

was exhibited in a travelling show. Attached to the neck is a mandible with teeth and tongue; an orifice associated with the tongue led into the cow's pharynx. A study of this and similar recorded examples leads me to endorse Gurlt's opinion, that these cervical teeth, mandible, and tongue are remnants of an accessory head and the fistula represents the mouth of the rudimentary head. The museum contains some admirable examples of bisphenous skulls of calves. These double skulls are remarkable from the constancy with which they are confined in the mastoid region. A useful specimen shows a well-formed skull, with one less perfectly developed, firmly fused to it in the mastoid region (Fig. 11).

The critical study of a large number of such skulls leaves no escape from the conclusion that mastoid teeth and an auricular sinus in horses, like a cervical ostium and teeth in a sheep or an ox, are remnants of an accessory or parasitic head. *Mastoid teeth are memorials of a lost individual.*

Teeth are conspicuous and easily recognized. They develop and calcify during fetal life into resisting structures and serve as useful signs. This is illustrated by a monstrous pig I dissected and added to the Teratological Gallery in 1888. The pig in external appearance is double in all parts except the head and neck. I made a complete examination of the head and found a pair of fused maxillae impacted between the normal jaws, and felt convinced that an accessory mandible existed somewhere about the pig's head. At last I found a rudimentary parasitic mandible, with teeth hanging like a polypus in the pharynx, and attached by a narrow pedicle to the base of the skull. It is the oddest example of a misplaced organ that has come under my notice.

If Professor Keith accepts my explanation of the origin of mastoid teeth, he will realize that they are misplaced in the Dental Collection. Their proper place in this museum is the Teratological Gallery.

THE MICROSCOPIC EXAMINATION OF THE BRAINS OF TWO MEN DEAD OF COMMOTIO CEREBRI (SHELL SHOCK) WITHOUT VISIBLE EXTERNAL INJURY.*

[WITH SPECIAL PLATE.]

BY

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The examination of the brains of two cases of death from shell shock without visible injury and without punctate haemorrhages indicative of gas poisoning is of interest for several reasons. So far as I know, it is the first description that has been given which serves to explain (1) sudden death in shell shock, and (2) the clinical symptoms which persist for some time after the commotion of the brain in non-fatal cases.

I am indebted to Lieut.-Colonel T. R. Elliott and Professor Arthur Keith for sending me the brains, and to the officers whose names are mentioned for the clinical notes and the notes of the *post-mortem* examination.

CASE I. Clinical Notes.

In this case the man developed, according to a note furnished by Captain J. London, a degree of nervousness on the *Somme* which he never lost, but was able to control for six months. Later he was in an area which was subjected to an intense bombardment, during which, as far as can be ascertained, no gas shells were used. This lasted about four hours (February 22nd, 4 p.m. to 8 p.m.). Although he remarked to another man that he "could not stand it much longer," he did not give way until the following day, twelve hours later, when perhaps six shells came over (February 23rd, 8 a.m.).

He was not buried nor gassed. One shell burst just behind his dug-out—namely, 10 ft. away—in the morning, but many must have been as near the previous day. Early symptoms were tremors and general depression. The later symptoms (February 22nd) were coarse tremors of the limbs, crying (February 23rd), inability to walk or do anything. He would not answer questions—very like the hysterical manifestations of melancholia. The pupils were dilated. Captain London states

that he was rather busy with some wounded at the time, and did not make a detailed examination.

A note by Captain Francis A. Duffield, R.A.M.C. (S.R.), states that the man was admitted to the field ambulance in the evening in a state of acute mania, shouting "Keep them back, keep them back." He was quite uncontrollable and quite impossible to examine. He was quieted with morphine and chloroform, and got better and slept well all night. In a later note Lieut.-Colonel J. F. Crombie, in command of the field ambulance, stated that the patient had at least two hypodermic injections of morphine while in the ambulance. Next morning he woke up apparently well, and suddenly died.

Necropsy.

The following is a report by Captain A. Stokes, R.A.M.C. (Mobile Laboratory), on the *post-mortem* examination, made on the afternoon of the day of death:

There were no marks of external violence on the body other than some small scratches on the anterior chest wall.

Thorax.—The lungs were oedematous, and in the substance of the lower lobe of the left lung there was a considerable haemorrhage. The right lung, except for oedema, was normal.

Heart.—Enlarged, and the right side dilated. The muscle was good, and there was no valvular lesion.

Abdominal Cavity.—Normal. There was no pathological change in the stomach, oesophagus, intestine, or great intestine. The liver was normal in size, and was somewhat congested. The spleen was normal. The kidneys were small, but showed no gross change. The urine contained neither sugar nor albumin.

Skull.—There was a slight bruise on the scalp, in the frontal region. The brain was extremely congested, and on each side of every superficial vessel there was an ecchymosis. Therewere a number of minute punctiform haemorrhages at the terminations of the smallest vessels on the surface of the brain. The whole brain was soft but not markedly oedematous. The cerebro-spinal fluid appeared to be blood-tinged. There was considerable ecchymosis on each side of the great sinuses of the skull. There was no large haemorrhage found, and no small intracerebral petechiae. There was no gross lesion of the viscera, which would have been a cause of death; but though I have never seen a *post-mortem* examination on a man who has died of "shell shock," I consider the condition of the brain is consistent with that diagnosis.

MICROSCOPIC EXAMINATION OF THE BRAIN OF CASE I.

The brain had been preserved in Kaiserling's fluid, and it was not in very good condition, but seeing that it was placed in this fluid less than twelve hours after death, it is probable that the portions examined yielded satisfactory material for microscopic investigation.

The portions of brain selected were prepared for section by the paraffin method of serial sections. The dyes used to stain the sections were as follows: (1) Haematoxylin and eosin, (2) Van Gieson, (3) thionin, (4) polychrome and eosin. The sections were 5 μ in thickness and were mounted, after staining, in Canada balsam.

Cerebrum: Top of Ascending Frontal Convolution—Leg Area.—The veins are congested both in the meninges and in the substance of the grey and white matter. There is subpial haemorrhage here and there owing to rupture of the dilated congested veins. There are no punctate haemorrhages observable. The perivascular spaces of the arterioles, capillaries, and venules are dilated, also the perineuronal spaces are distinctly seen, some being apparently connected with the perivascular spaces. In some of the sections empty collapsed vessels can be discerned in places. The general appearance suggests deficiency of blood in the arteries and capillaries, with engorgement of the venous system. A condition very similar to that observed in experimental anaemia in animals produced by ligation of both carotids and vertebrals. There is some degree of chromatolysis of the cells. The Betz cells are the easiest, on account of their size, to recognize this change, and Fig. 1 shows the early chromatolysis of these psychomotor neurones.

The pole of the first frontal shows marked congestion of the vessels and some subpial haemorrhage from dilated congested veins. Many of the arterioles and capillaries are empty and collapsed, and there is the same appearance of dilatation of the perivascular sheaths and perineuronal spaces. The pyramidal cells also show early chromatolytic changes.

Internal Capsule.—There is general congestion of veins, and the small vessels appear to be either empty and collapsed, or contain less blood than normal. Some of the vessels show haemorrhage into the sheath. (Fig. 3.)

Corpus Callosum.—The small vessels are congested and dilated, some have ruptured into the sheath, other small vessels have ruptured into the tissue. There are no typical punctate haemorrhages such as are seen in gas

* The expenses connected with this investigation were defrayed out of a Government grant of the Board of Control.

poisoning, which are due to hyaline thrombosis of terminal arterioles.

Pons.—There is a marked congestion of veins and some of the smaller veins have ruptured, giving rise to haemorrhage into the sheath; blood corpuscles are also seen extravasated in the adjacent nervous tissue. There are small haemorrhages in the white matter (Fig. 3). There is dilatation of the perivascular sheaths and perineuronal spaces together with collapsed and empty vessels or partially empty vessels. The haemorrhages, here as elsewhere, appear to be of recent occurrence. Nearly all the cells show some degree of early chromatolytic change.

Medulla.—Sections only of the medulla at the point of the calamus scriptorius were made, as the upper part of the medulla was rather damaged. In the anterior median fissure a vessel had ruptured, and there were free corpuscles in the leptomeninges. All the veins on the surface of the medulla were congested. In serial sections the ruptured vessel entering the anterior median fissure and penetrating the median raphe could be followed, and here it was seen to have ruptured into the perivascular space (Fig. 4), and blood corpuscles are seen extravasated into the adjacent tissue. The perivascular and perineuronal spaces are seen dilated both in the medulla and pons (Fig. 7). The cells of the medulla show early chromatolytic changes as a rule. The cells of the vago-accessorius nucleus (Fig. 5) show much more chromatolysis than the adjacent cells of the hypoglossal nucleus (Fig. 6). These nuclei are distant about 2 mm. from the ruptured vessel in the median raphe.

Cerebellum.—Sections stained with thionin and safranin show very unequal staining of the Purkinje cells with the basic dye (Fig. 10). This condition is very similar to that described by Crile in the case of "a soldier who had suffered from hunger, thirst, and loss of sleep; had made the extraordinary forced march of 180 miles from Mons to the Marne; in the midst of that great battle was wounded by a shell; lay for hours waiting for help, and died from exhaustion soon after reaching the ambulance."

Summary of Histological Changes.

There is a generalized early chromatolytic change in the cells of the central nervous system. This change varies in intensity. The cells most affected are the small cells in which the basophil substance has partly or almost disappeared. In the larger cells the Nissl granules are smaller and not packed so closely together as normal. The small cells of the medulla and pons are slightly swollen, and the nucleus is large and clear. This change is present in some of the large cells, but it is less evident. This change indicates a relative degree of exhaustion of the kinetoplasm, assuming that the amount of the basophil substance is an index of biochemical neuropotential. The Nissl granules are not present in the neurone during life, but they disappear altogether in a cell that (prior to death of the whole body) has been so injured as to decay and die. Granted this premiss, then, it may be assumed that the cells of this man are in a state of commencing nervous exhaustion, some nuclei of cells show the changes more markedly than others—for example, the cells of the vago-accessorius nucleus.

The vessels of the pia arachnoid membranes of the brain are congested, and there are scattered subpial haemorrhages of microscopic size almost everywhere.

In the white matter of the corpus callosum, the internal capsule, the pons, and medulla there are seen congested veins and haemorrhage into the sheaths of these vessels, with occasionally extravasation of blood corpuscles into the adjacent tissues.

CASE II.

Clinical Notes.

Captain Duffield reported that information obtained from the medical officer attached to the unit in which the man, a gunner in the Royal Garrison Artillery, was serving, was to the effect that he was sitting in a corrugated iron hut, fifty yards from some boxes of cordite cartridges, when a shell landed and exploded them. The man became unconscious at once; his breathing was stertorous; his body showed no signs of wounds.

On the same day he was removed to a dressing station and thence to a casualty clearing station; in the evening of that day he died. The medical officer there stated that the patient was absolutely unconscious, and could not be roused. His breathing was stertorous and slow; the pupils were equal and reacted to light; knee-jerks were difficult to obtain. He died shortly afterwards, and at the *post-mortem* examination the brain was removed, placed in spirit, and dispatched.

MACROSCOPICAL APPEARANCE OF BRAIN.

On the upper surface of the cerebellum, and upon the temporo-sphenoidal and left orbital lobes there was superficial haemorrhage. On cutting up the pons, oval patches of blood-stained tissue were seen as large as one-sixth by one-quarter inch; whether this is simple staining of haemorrhage cannot be determined until a microscopical examination has been made. Portions of the mesencephalon and pons were taken for microscopical examination; the medulla oblongata was not sent.

MICROSCOPICAL EXAMINATION.

Post-parietal.—Meninges: Marked congestion of all vessels of the surface of the brain with extravasation of blood into the soft membranes. In the grey matter of the cortex the perivascular spaces are dilated throughout, and the vessels, capillaries, veins, and arteries are for the most part empty. In the white matter no punctate haemorrhages are seen; there is marked dilatation of the perivascular spaces; the capillaries, veins, and arteries are empty. In the cortex there is dilatation of the perineuronal spaces, which in many instances may be seen communicating with the perivascular spaces (see Fig. 8).

Ascending Frontal.—Stained with thionin. The large pyramidal cells show pretty marked chromatolysis without swelling of cell; some of the Betz cells show commencing breaking up of the tigroid bodies; smaller pyramidal cells show undoubted swelling of nucleus and loss of pyramidal shape (very similar to that observed in experimental anaemia in animals) with varying degrees of chromatolysis. As a rule, the smaller the cell the more marked is the change (Fig. 9).

Orbital Lobe.—On the under surface there is extensive extravasation of blood into the substance of the brain and on the surface, and there is very marked dilatation of the perivascular spaces everywhere. The cortex is in a measure destroyed in one place; very marked dilatation of perineuronal as well as perivascular spaces, which intercommunicate.

Corpus Callosum.—There is much congestion of vessels, and many have ruptured into the sheath, forming long, irregular branching, haemorrhagic extravasations, but no sign of punctiform haemorrhage. Betz cells seem rather shrunken than swollen in the *ascending frontal*.

Temporal Lobe.—Shows remarkable dilatation of the perivascular spaces, and there is a big globular haemorrhage, and much scattered haemorrhage into the substance of the brain.

OPINIONS OF FRENCH AND GERMAN AUTHORS REGARDING "SHELL SHOCK" BY WINDAGE.

Many discussions have taken place by French and German neurologists regarding the question of organic changes occurring in the central nervous system as a result of *vent du projectile*, or windage. According to Léri, a true commotion appears only to be produced at a proximal distance of some ten metres from great projectiles. The finding of groups of men dead in the last attitude of life, in closed spaces such as the German "pill boxes" and concrete dug-outs, and the proven fact that enormous forces of compression and decompression are generated by the detonation of high explosives in great shells, aerial torpedoes, and mines, has lent support to the view that mere proximity to the explosion is sufficient to cause organic changes in the brain and spinal cord by the compression and decompression of gases the result of the detonation of the explosive and of the atmospheric air; altogether apart from actual concussion caused by violent contact with solid materials, such as sandbags or the earth forming the walls of a dug-out, which may at the same time cause burial or partial burial, unattended by visible evidence of injury of the body sufficient to account for symptoms of cerebral or spinal concussion. The patient is rendered unconscious and his mind is a blank concerning what happened, in a true case of commotio cerebri; consequently he is unable to say whether he had or had not been concussed by the sand or earth. In the two cases under consideration there was no history of burial.

Undoubtedly the vast majority of non-fatal cases of shell shock are more emotional in origin than commotional, and occur especially in subjects of an inborn neurotic or neuropathic temperament; but the two conditions may be associated. Both Léri and Meige emphasize

the fact that commotional symptoms are not influenced by psychotherapy. They also point to the fact that in cases where organic changes have occurred the cerebro-spinal fluid withdrawn by lumbar puncture exhibits macroscopic or microscopic evidence of blood, indicating that haemorrhage had occurred.

In Case I Captain Stokes noted at the *post-mortem* examination that the fluid was blood-stained, and the microscopic findings of ruptured vessels explain this.

Léri states that the subjects of commotion are generally depressed, asthenic, aboulie, and often more or less confused mentally; they present almost constantly, even in light cases, pronounced disturbances of voltaic vertigo. They often suffer with bleeding from the ear, or nasal or vesical haemorrhage. Roussy and l'Hermitte admit that in rare cases "*vent du projectile*" may cause organic changes.

Robert Bing gives a review of the German opinions upon nervous accidents determined by the near explosion of a projectile. He points out that Vogt and Gaupp, who have occupied themselves with "*Granat Kontusion*" (bomb contusion), are far from accepting the exclusive psychogenic rôle in the development of this syndrome. Gaupp insists particularly upon the relations which exist between the initial symptoms presented by these patients and the rapid succession of atmospheric compression and decompression which takes place at the moment of the bursting of the projectile. The existence of labyrinthine lesions, almost regularly in this class of case, is in support of this opinion (Schultze and Meyer).

In Von Sarbo's numerous publications upon the subject there is a tendency to view these cases from a uniform point of view. For him the general mass of observations do not permit the diagnosis of organic changes in the usual sense of the word, nor that of psychoneurosis. He believes micro-structural alterations occur, but which are not equivalent to the molecular changes of Charcot. He includes in the micro-structural changes meningeal oedema, microscopic haemorrhages, transitory paralysis of vessel walls, and contusion of nuclei and centres. In the initial period these lesions may give rise to some discrete symptoms of organic disease; later they are manifested by functional physical and psychological symptoms. Bing remarks that the pseudo-neurasthenia of arterio-sclerosis supports this view. It is interesting to note that the haemorrhages into the perivascular sheaths of vessels observed in Case I resemble in some respects those seen in arterio-sclerosis.

Oppenheim's view of traumatic neuroses had few supporters at the congress at Munich. Clarence Farrar sums up thus the work of a German psychiatrist:

"Aschaffenburg examined soldiers in Flanders who had been exposed to shell fire in the trenches but had escaped unscathed and were apparently well. The examinations took place in most cases within twenty-four hours after leaving the trenches. Of 74 men so examined, 67 showed unmistakable signs of localized organic lesions of the nervous system, although not as a rule of a serious nature. A second examination a week later showed that some, but not all, of these phenomena had disappeared. Here were cases, therefore, in which an organic basis was present but no traumatic neuroses had developed. Aschaffenburg gives the result of his experience in these words:

"In assuming organic changes as one of the consequences of shell explosion I do not thereby agree with Oppenheim that the nervous symptoms are to be attributed to these changes. On

the contrary it is to be noted that the most exaggerated hysterical cases which develop after exposure to shell firing are the ones which exhibit organic symptoms least of all."

Hypotheses regarding the Lesions of "Commotion."

Two hypotheses have been put forward to explain organic lesions by "commotion":

1. Compression of the gas and atmosphere, so that the cranium and spine is struck, as it were, by a solid body and the vibration is transmitted through the bony structures to the cerebro-spinal fluid and thence to the brain and spinal cord, causing a molecular disturbance of the delicate colloidal structures of the neurones, particularly those of the nuclei in the floor of the fourth ventricle, where the fluid is most abundant, and where it acts as a water cushion upon which the vital cardio-respiratory centres rest.

2. Compression is followed by a corresponding decompression, causing the liberation of bubbles of gas in the blood and tissues leading to embolism.

Probably both the forces of compression and decompression act in producing vascular disturbances in the central nervous system, causing arterio-capillary anaemia and venous congestion.

COMMENTARY.

In Case I, of which I have described the histological changes, it may be observed that there was a condition of mania during life; this maniacal excitement may be correlated with the marked venous congestion of the cortex, the microscopic subpial haemorrhages, and a certain degree of scattered arterio-capillary collapse and emptiness. This, however, could not be held responsible for the suddenly fatal termination; the haemorrhage into the sheath of a fair-sized vessel (see Fig. 4) in the median raphe of the medulla and the generalized congestive venous stasis, with a condition of exhaustion of the cells of the vago-accessorius nucleus (as shown by the almost complete disappearance of the Nissl granules (see Fig. 5) as compared with the cells of the adjacent hypoglossal nucleus), coupled with the

condition of the heart found *post mortem*, may explain the sudden death.

The cerebral anaemia, as shown by collapsed and empty arterioles and capillaries with dilated perivascular and perineuronal spaces (see Figs. 7 and 8), is similar to the appearances in sections of brains of animals that have been killed within a few days after ligation of both carotid and vertebral arteries. The veins are congested similarly, but the capillary anaemia and chromatolytic changes would possibly explain many of the symptoms of sufferers with true shell shock—namely, headache, giddiness, amnesia (anterograde as well as retrograde), dizzy feelings, lack of power of attention, and fatigue—stupor, inertia, mental confusion, terrifying dreams—symptoms which are generally met with in recent cases.

There is, in both Cases I and II, a general, though as a rule not marked, chromatolytic change indicative of a lack of kinetoplasm in the neurones of variable degree. This may hypothetically, but with reason, be regarded as an expression of a fall in the general store of neuro-potential of the central nervous system. The cells of Purkinje of the cerebellum show especially a complete or partial loss of the basophil substance.

The vascular changes are microscopic and widespread; there are no punctate haemorrhages of the white matter, such as I have described in gas poisoning, and which are due to a hyaline thrombosis of terminal arterioles. The

DESCRIPTION OF SPECIAL PLATE.

DR. F. W. MOTT.

FIG. 1.—Betz cells of leg area. There is commencing chromatolysis of varying degree. The Nissl granules are not so closely packed together as in normal cells. The nucleus is larger and clearer than normal. Magnification 300.

FIG. 2.—A small vessel cut longitudinally in the internal capsule. The vessel is filled with blood corpuscles; the perivascular sheath is seen dilated and filled with red blood corpuscles. Magnification 193.

FIG. 3.—Haemorrhages into the white matter of the pons. Magnification 82.

FIG. 4.—Haemorrhage into the sheath of a vessel in the median raphe of the medulla. Magnification 136.

FIG. 5.—Cells of the vago-accessorius nucleus at the level of the calamus scriptorius. Observe the marked chromatolysis and eccentric position of the nucleus. Compare the same with Fig. 6. Magnification 343.

FIG. 6.—Cells of the adjacent hypoglossal nucleus, showing early slight chromatolysis. Magnification 343.

FIG. 7.—An arteriole breaking up into capillaries with dilated perivascular space. This space is in communication with the perineuronal space around the nerve cells. Magnification 257.

FIG. 8.—Section of cortex, Case II. Dilated perivascular space around collapsed arterioles and capillaries. Dilated perineuronal spaces. Magnification 322.

FIG. 9.—Cortical cell from Case II, showing swelling and chromatolysis of cytoplasm and clear swollen nuclei. Magnification 343.

FIG. 10.—Section of cerebellum, Case I, stained with polychrome and eosin. Note the Purkinje cells are not all similarly stained. Two are stained faintly with the basic dye; the remaining ones are stained with the acid dye indicative of a chemical change. Magnification 214.

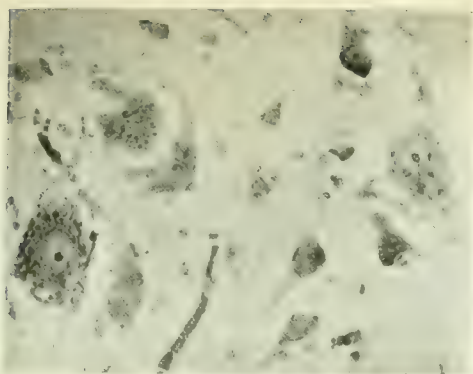


FIG. 1.

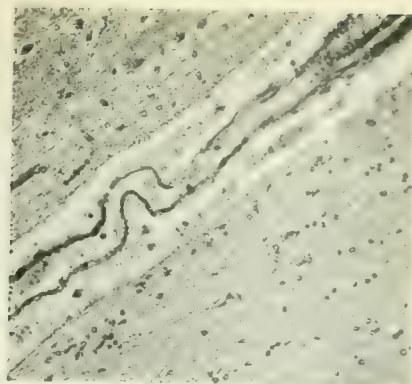


FIG. 2.

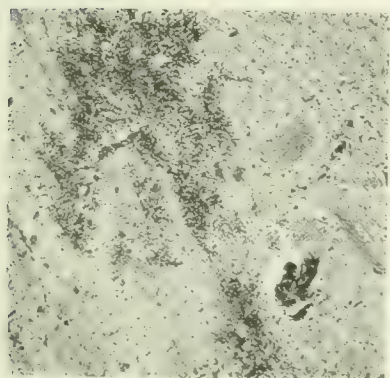


FIG. 3.

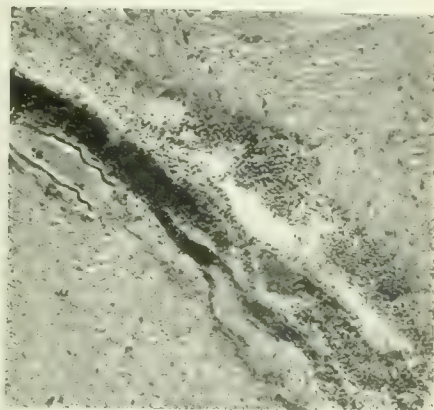


FIG. 4.

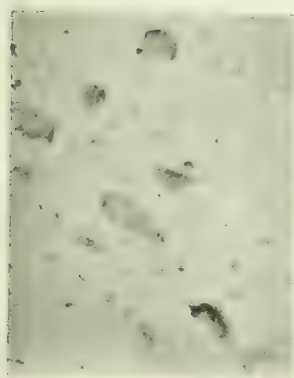


FIG. 5.

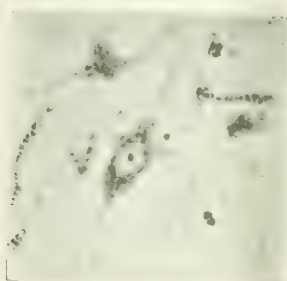


FIG. 6.

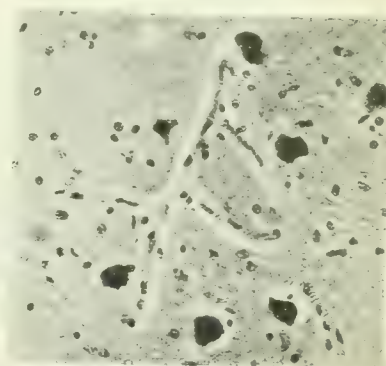


FIG. 7.

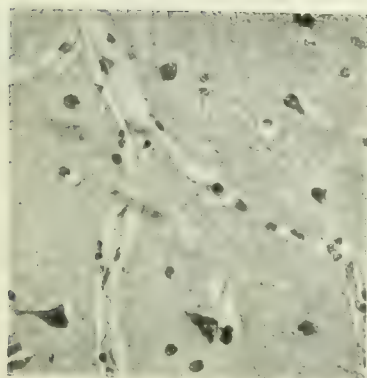


FIG. 8.

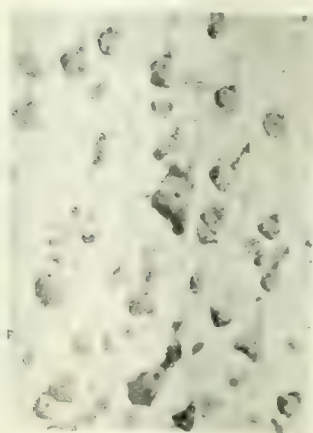


FIG. 9.



FIG. 10.

CAPTAIN S. M. CONE: PATHOLOGICAL FINDINGS IN NERVES FOLLOWING WAR INJURIES.



FIG. 1.

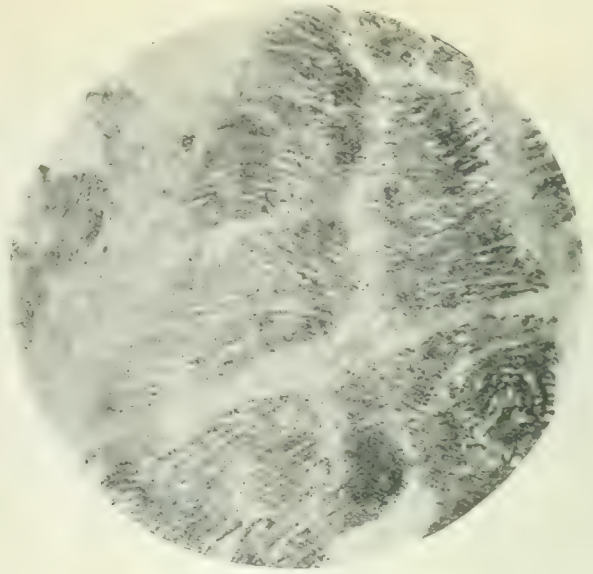


FIG. 2.



FIG. 3.

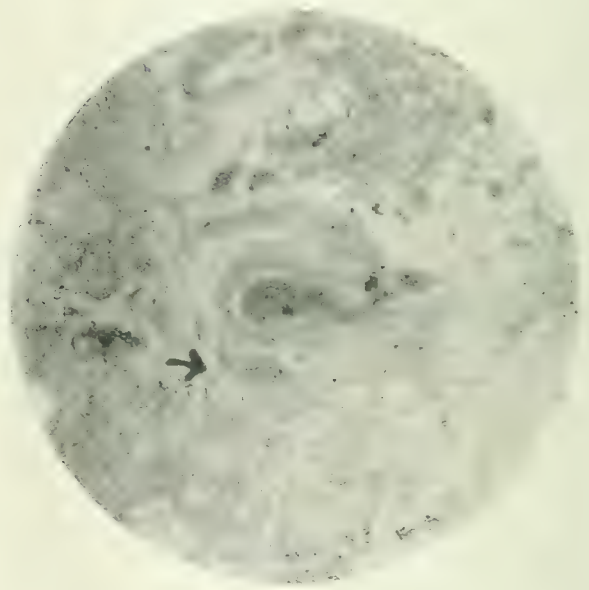


FIG. 4.



FIG. 5.

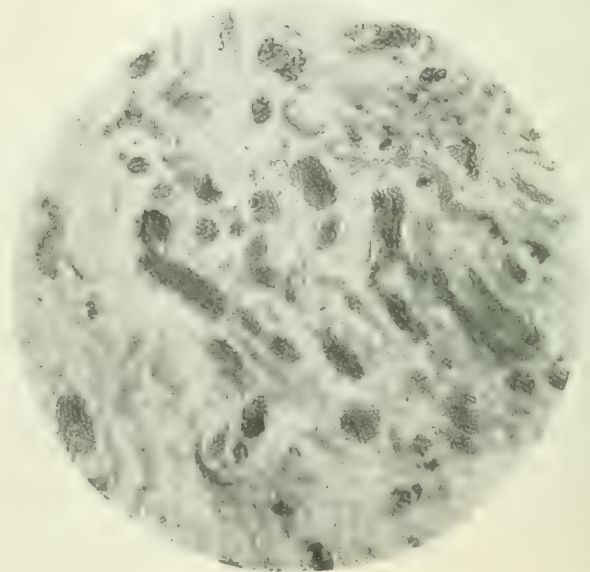


FIG. 6.

haemorrhages are into the dilated perivascular sheaths (see Figs. 2 and 3). In the corpus callosum the networks of capillaries and small vessels show fractures and escape of corpuscles into the tissues. The microscopic changes in the brain confirm in every way the opinion expressed by Captain Stokes when he made the *post-mortem* examination that he was dealing with a case of shell shock.

In Case II the extensive haemorrhage on to the under surface of the orbital lobe without visible external injury is of interest. The force of the explosion must have been enormous. What happened to the man when it occurred we do not know. The cortical, arterial and capillary vessels were empty, the perivascular sheaths were in many places dilated and filled presumably with cerebro-spinal fluid (see Fig. 9). The cortical neurones are swollen up, the nuclei are large and clear; the basophil substance is diminished in amount, a condition very like that observed in the cells of the cortex of an animal in which experimental cerebral anaemia had been effected. Owing to the brief clinical and *post-mortem* notes this case is of much less interest than Case I.

I am unable to find in the literature at my disposal any description of the microscopic changes in the brain of soldiers dying from commotio cerebri without visible external injury.

Mairet and Durante have exposed animals to the compressive and de-compressive forces generated by detonation of high explosives. They found scattered through the brain and spinal cord minute haemorrhages caused by the rupture of small vessels. The blood is found in the lymphatic sheaths. The vessels most commonly ruptured are those which have the least support by solid tissue; in fact the description of their findings closely corresponds with that in the above cases.

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PRELIMINARY REPORT ON THE PATHOLOGICAL FINDINGS IN NERVES FOLLOWING WAR INJURIES.

[WITH SPECIAL PLATE.]

BY

CAPTAIN SYDNEY M. CONE, M.O.R.C., U.S.A.

From the Alder Hey Military Orthopaedic Hospital, and the Thompson-Yates Laboratory, University of Liverpool.)

THE incentive to the work I am doing on nerve pathology comes from Colonel Sir Robert Jones, who has placed the extensive material from the Alder Hey Military Orthopaedic Hospital in my hands. The University of Liverpool and Professor Ernest Glynn, Captain R.A.M.C.(T.), have given me every facility and aid in prosecuting my studies, and I am greatly indebted to them.

This is only a preliminary report of work covering three months' service at the hospital, and is produced principally because I feel I can give some material assistance to other workers along these lines by presenting the staining reagent which, after three months' work, I finally found to be most satisfactory. Without a good stain for axis cylinder and medullary sheath one cannot do nerve

work in the laboratory. Many of the stains require unusual experience before they can be used satisfactorily. I tried Stroebe's stain without success. In order to make use of it Kennedy had to use the aniline blue for twenty-four hours. Bielschowsky's axis cylinder stain required several days and did no contrast staining; maybe it had to be done over again. It was most useful early in my work, as was also a modification of Howell and Huber's picric acid haematoxylin method. The stain I have to give workers in nerve pathology is one based on a technique I used in Heidelberg when working on nerve degeneration in Kühne's laboratory in 1895. It brings out the axis cylinders in distinct relief as pink covered by a thin line of purple-black—the medullary sheath "neuro-keratin framework" faintly tinged purple-black—the red blood cells brown, the nuclei pink, muscle deep red, connective tissue unstained, or a very faint pink.

Where the axis cylinders are just formed they always have a purple appearance. Not infrequently fine lines 1 to 2 μ in width are seen among the wider fibrils, the finer ones appearing deeper stained than the wider ones because of the pink centres of the fuller-grown fibres. These forming axis cylinders may be easily picked out in adhesions as purple lines against a very faint pink connective tissue background. There are modifications in the structure of the axis cylinders and nerve fibres in denser connective tissue, but the staining reaction remains unmodified. In one specimen of unusually dense connective tissue formation in the proximal end of an excised nerve the axis cylinders were very irregular, varicose, and of a rough outline by turns,

yet the purple border about the pink central tendril was present. Some of the larger fibres showed a vacuolated appearance, in which case the vacuoles were outlined by a fine blue-black stain. Tinel refers to this in "stump neuromas" as a *gonflement* of myelin.

As a rule, the fully developed nerve shows the axis cylinder "capped" at regular intervals by a pyramidal purple material deeply stained against the axis cylinder, and fading away gradually. Tinel speaks of this appearance as "bearded" or "prickled with thorns," and refers it to deeper silver impregnation at these points—the incisures of Lantermann.

Technique.

The specimens are hardened in 10 per cent. (or, according to some laboratories' computation, 4 per cent.) formalin and then carried through the alcohols to ether and absolute alcohol and celloidin. Although thin sections are preferable, good results are obtained with 20 μ thick sections.

The section is washed in water, placed in carbol-fuchsin fifteen minutes, momentarily in water, 1 per cent. osmic acid five minutes, water two minutes, watery safranin 50 per cent. one minute, acid alcohol 1 per cent. two minutes, 95 per cent. alcohol five minutes. Absolute alcohol and oil of cloves are now used alternately until the section appears deep pink but translucent; it is then placed in xylol for two minutes and mounted in Canada balsam.

Advantages.

The great value of seeing the nerve fibres distinctly outlined against connective tissue, cell proliferation, and blood vessels will be appreciated at once by those who examine tissue from the great number of excised "nerve callus" masses of war surgery.

In our experience we have had so far more than one hundred cases to examine. We have sectioned the excised nerves at proximal end, distal end, middle, and adhesions, including muscle and fat. We have had old operations to go over in some of which Cargile membrane, fascia wrapping, or veins had been used. In one case a rabbit's nerve had been used as a graft. This material was stained in about twenty-five different ways before the above-described method was adopted. The only method that approached satisfaction was that of Bielschowsky.

Method of Examination.

Some of the notable observations in my work have been the irregularity of growth of new fasciculi of nerves in the proximal end of the nerve about the old parallel running fibres, as far as the bulbous enlargement at the wound. There is invariable infiltration of the nerves with blood, new formed capillaries within and about the nerve, and little evidence of round-cell infiltration (most of our nerves were injured over eight months earlier). Connective tissue formation of varying density both within and about the fibres is the rule. The peripheral end always shows a great cellular proliferation with elongated spindle-shaped nuclei, usually arranged in little clumps and interlacing, running in various directions, resembling the arrangement of nerve fibrils in the bulbous enlargements in the stumps we have examined. In some of these we found axis cylinders well stained; in others repeated staining failed to show fully formed nerves.

The method of operating on these old torn nerves has been pretty definitely outlined, and is done in the same way at most of the base hospitals where the paralysed are treated some months after the original wound has healed.

The nerve is exposed with careful regard to all anatomical relations—adhesions relieved by sharp dissection in a line parallel to the fibres. Blunt dissectors are used when adhesions are pretty well localized to the immediate seat of nerve tear or cut, where a bulbous enlargement is usually seen. The work on the denser adhesions about this point is facilitated by raising on the dissecting elevators the freed portion of the nerve at the proximal and distal side of the bulbous mass included in adhesions. When the nerve in its continuity can be raised free of adhesions so much of it is excised as will leave greyish-pink moderately soft nerve ends. Here it is cut through and sutured with chromicized catgut. These sutures, about four in number, pass through the outer sheath. It may be necessary to stretch the ends, transplant the nerve, and use an approximation suture which passes through the entire thickness of the nerve. The limb is placed in a position giving greatest relaxation to the nerve and muscles. Occasionally one meets with a case where relief of adhesions alone is deemed sufficient. There are cases where longitudinal incisions through the swollen injured part have been made. Cargile membrane, fascia, or muscle covering are used to protect the area of suture from future adhesions.

Observations and Results.

The material removed at these operations has been placed at my disposal since June 14th, 1917. I have used formalin as a rule as hardening agent, but picric and osmic acid have also been employed. Material from both ends, mid-portion (this is usually the bulbous part), and adhesions were examined in various ways and by different stains. Glycerin mounts were made of teased specimens, in which case the picric acid hardening and carbol-fuchsin-haematoxylin staining were most satisfactory. Howell and Huber recommended the picric acid-haematoxylin (Boehmer's) method. In fact, I find this haematoxylin most useful in the study of the cell proliferation. We invariably found good old nerve fibres in the proximal end, but very often these were intertwined by a mass of new young tendrils in small fasciculi and many young capillary blood vessels coursing in various directions about them.

In some cases no fibres at all were seen at the bulbous enlargement, but this was very rarely the case. As a rule old connective tissue, sometimes sclerotic in character, was found here, but even in this well-stained axis cylinders, single and in fasciculi, were detected (Tinel).

Wherever young fibrils were found there was a great cell proliferation. The distal end was always quite cellular, the nuclei of the cells, as a rule, were elongated and staff-shaped. In fact, the cellular areas here and in the bulbous portions frequently gave the appearance of a leiomyoma such as we so frequently find in the body of the uterus. Tinel calls such cellular areas gliomas. In a number of our cases we found quite a great many fasciculi of well-formed young nerves with axis cylinders in the distal end.

The adhesions invariably contained cellular young nerves, some with a faint line of myelin covering the axis cylinder,

others grown to adult age and well protected by medullary sheath and sheath of Schwann.

My examinations of nerve bulbs from stumps corroborate Thomson and Kennedy's findings. I find more good fully formed nerves than connective tissue and an unusual proliferation of the cells of the sheath of Schwann, called by Tinel, von Bungner, and others, neuroblasts.

For those who wish to read the best that has been written on the subject of regeneration and degeneration of peripheral nerves, I would refer to the bibliography in articles written by Howell and Huber, von Bungner, Alexis Thomson, Kennedy, Stroebe, and Luciani's *Human Physiology*, vol. iii, translated by Welby.

The very recent book by J. Tinel, *Les Blessures des Nerfs*, published by Masson et Cie., 1916, gives a brief but comprehensive surgical pathology of injured nerves. My findings are in accord with his regarding the contents of the bulbous injured parts. He names the swelling a neuroma when it is made up of regenerated nerve fibres, such being usually found in the proximal (central) end. It is a pseudo-neuroma when it is made up of a thickening of the enveloping tissue by haemorrhage, fibrous tissue and proliferation of the neurological elements. This is usually found on the swelling of the peripheral end. He names these proliferating cells from the sheath of Schwann neuroblasts, with von Bungner, S. Meyer, and Kennedy.

Gluck thinks that there are real large protoplasmic ganglion cells among the sheath of Schwann cells, which are responsible for the formation of the new fibril.

I find great numbers of these neuroblasts in adhesions and at both ends, but particularly in the distal end—so numerous, in fact, that I can well understand why Tinel should use the term glioma for such cellular areas of the "pseudo-neuroma."

Tinel definitely states that the regenerating nerve always proceeds from the central end, using the old sheaths for a pathway and attracted by the "neurotropismus" of the proliferating cells of the sheath of Schwann. This neurotropismus or chemiotropic influence referred to by Langley and Anderson, and admirably worked out experimentally by Forssman, is not an uncommon explanation of the influence and only part played by the distal end.

Some say that the distal end produces good nerves autogenetically, others believe that they grow up to a certain stage and only form well-developed axis cylinders when brought in communication in some way with nerve centres; and here we have another use of the cells as expressed by Tinel, Mott, Halliburton, and Edmunds consider the activity of these neurilemma cells to be nutritional in nerve repair.

I will go quite fully into the various views about new nerve growth, as borne out by my pathological material, in a later, fuller communication.

ADDENDUM.

I wish to add to the above a description of some interesting microscopic findings which are of assistance in interpreting conditions as seen in the stumps of nerves, adhesions, and the nerve callus. In staining the specimens, the safranin used as described above is omitted; it is not an essential part of the staining method.

Ranvier described what he called "renflements biconiques"; Tinel writes of nerves "barbelé" or "hérissée d'épines"; von Bungner, Stroebe, and others have disputed about the incisures of Lantermann. Stroebe even denied that neurokeratin is in the medullary sheath. Arndt, with Kuehne, Kuhn, Joseph, and Tuckett, arrive closer to our pictures when they speak of a neurokeratin sheath and myelin framework, "a sheath-like element stained with acid fuchsin" which surrounds the axis cylinder. Ranvier was not very far away when he wrote of a colloid material about the axis cylinder at the constricting node. However they look upon the axis cylinder in its relationships to the medullary sheath, there is no question but that most histologists have kept them distinctly separate. The above-named physiologists, through the neurokeratin material, worked to varying degrees by the different men into the framework of the medullary sheath and immediate surroundings of the axis cylinder, blended them into a more harmonious connexion.

It is to demonstrate this connexion that my stain is especially adapted. I have referred above to the fine single and double lines of purple (more accurately called

mauve) about even the smallest axis cylinders. This is due to the neurokeratin contents of the youngest fibre.

Two histological points are to be noted even in the youngest fibrils of adults or embryo; one is the cones, barbs, *renflements biconiques*, or whatever they be called, and the other is the so-called vacuoles, *gonflements* of myelin moniliform appearance of the fibrils, due to the neurokeratin framework. They show so clearly with my neurokeratin stain that the photographs I am preparing will speak better than words.

There is one fact that should be noted, however—that is, that stretching or compressing a nerve draws out this neurokeratin support into cone-shaped form, leaving the point finely drawn out along the axis cylinder, which it ensheaths, and the base toward the sheath of Schwann, each cone being from 10 to 40 μ long, depending on the amount of stretch. The base appears more deeply stained—not so; it is merely that, being at the wider attachment, there is a greater amount of it stained at the point viewed; this masses the pigment.

There are a number of interesting points that one can explain, and work is now in progress to put a correct interpretation on many long and acrimoniously discussed questions.

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THREE CASES OF MELAENA NEONATORUM SUCCESSFULLY TREATED BY THE INJECTION OF WHOLE BLOOD OR BLOOD SERUM.

By ROBERT HUTCHISON, M.D., F.R.C.P.

THERE is, of course, nothing new in the treatment of the haemorrhagic disease of the newly born by the injection of human blood or blood serum. It was introduced, I believe, by J. E. Welch in the year 1910, and many successful cases have been recorded since, especially in America. In this country, however, it does not appear to be very generally known yet, so it seems worth while to put on record the three cases described below, which occurred consecutively.

CASE I.

A female child, aged 2 days. The day after birth began to pass blood from the bowel; no haematemesis nor bleeding elsewhere.

On admission the child was blanched and profuse melaena was present. The same evening 5 c.cm. of human serum obtained from the blood of a patient with erythraemia was injected *sub cutem*. Next day there was a small attack of epistaxis but no further bleeding from the bowel, and the child was discharged a week later apparently well.

CASE II.

A male child, aged 4 days. Two days after birth several haemorrhages from the bowel took place, the last just before admission. The child was well nourished but pale and slightly icteric. Two hours after admission 5 c.cm. of serum, obtained from the same patient with erythraemia as in the first case, was injected under the skin of the back. Six hours later the

child looked much better and only one further slight attack of bleeding had occurred. Next day the stools were normal and three days later the child was discharged.

CASE III.

A male child, aged 30 hours; a healthy-looking well-developed child of normal colour. Blood was noticed in the first action of the bowels after birth and four tarry stools had been passed since. There had been no haematemesis. The napkins showed typical melaena of considerable amount. On the afternoon of admission 8 c.cm. of whole blood furnished by the ward sister were injected into the subscapular region. In the next twenty-four hours there were four more small tarry stools, after which the haemorrhage ceased, and the child was sent home well three days later.

How the serum acts it is impossible to say with certainty, but it seems probable that it supplies some constituent which is lacking in the infant's blood and which is essential for clotting. I used human blood or blood serum in all the cases described, but normal horse serum or antidiphtheritic serum would probably do as well.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE TECHNIQUE OF NERVE SUTURE.

THE device here described may be strongly recommended for revivifying the neuromatous ends of divided nerves. It is simple, cheap, and effective. The essential point is the use of a safety razor blade, held in a pair of Halsted artery forceps, for division of the nerve. The blade—as supplied for a Gillette or other brand of safety razor—must be gripped quite firmly by the forceps, when it will be found more satisfactory than the sharpest scalpel. This device is used extensively at the orthopaedic centre, Blackrock, by Colonel Wheeler, who now prefers it to any other type of instrument for this purpose. The technique is as follows: The neuromatous end to be freshened is grasped by its fibrous sheath by two artery forceps clipped directly opposite one another, and the end of the nerve is divided by the razor blade until the brush-like ends of the healthy funiculi appear. A catgut suture is then inserted, and the two ends are approximated. The second suture is then inserted, and the first is cut. In like manner the other sutures are inserted, and the nerve ends are brought together accurately, and, if possible, the funiculi themselves are placed in apposition. The advantages of the razor blade are: (1) A sharp edge can always be obtained; (2) the nerve fibres can be cut horizontally with the least bruising of the structures. This device, therefore, seems worthy of bringing to the notice of neurological surgeons in other stations. Incidentally, I might add that the employment of tissue, such as Cargile membrane, etc., has been given up, for, as far as can be judged, it increases rather than diminishes the subsequent fibrosis near the sutured nerve.

J. McCULLAGH, M.D.,

Temporary Captain R.A.M.C.; Assistant Surgeon, Blackrock Centre.

PARAFFIN AND BISMUTH FOR GASTRIC ULCER.

I HAVE found a mixture of bismuth subnitrate and liquid paraffin of use in the treatment of gastric ulcer. The bismuth salt may be rubbed up with ordinary liquid paraffin to form a smooth cream. It is taken thus without producing much nausea, and with increasing tolerance.

The liquid paraffin is a good vehicle for bismuth, undoing its constipating effect. The patient is more comfortable, and less flatulent than when taking bismuth alone.

The action of the combination may be supposed to resemble that of bipp in the treatment of external wounds. The special electrical effects of paraffin on wounds, mentioned in your issue of October 20th, are unfamiliar ground to me. Apart from that, the combination deserves a trial.

Holmes Chapel, Cheshire.

LIONEL JAS. PICTON.

AN official statement has been published denouncing the bad treatment of Italian prisoners by the Austrians. Their food is altogether insufficient for the maintenance of health. The conditions in concentration camps with regard to the accumulation of prisoners and the exhausting labour demanded are extremely bad, and the amount of sickness and the mortality extremely high.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

THE autumn meeting of the Dorset and West Hants Branch was held at Bournemouth on October 17th, when the President, Dr. T. HOWARD, was in the chair.

Neurasthenia and Allied Conditions.

Dr. F. C. FORSTER, in opening a discussion on neurasthenia psychasthenia, shell shock, and allied conditions, said that neurasthenia is a complex of symptoms induced by nerve exhaustion and associated with, if not actually causing, a change in nutrition. It is nearly always due to a combination of mental overwork and worry. It is the mental shock that accompanies a physical injury which gives rise to traumatic neurasthenia or shell shock. The most prominent symptoms common to nearly all cases are: depression, lassitude often combined with restlessness, insomnia, loss of power of concentration, failure of memory, headache, abnormal sensations in different organs, dragging pains, palpitation, and loss of appetite and vitality. The importance of excluding organic disease as a causative factor was pointed out and illustrated by the following case: A gentleman, aged 45, had broken down apparently under the strain of financial and air-raid worries, and had been advised a rest cure. He had all the usual symptoms of neurasthenia, but, in addition, an area of tenderness and rigidity was found in the epigastric and right hypochondriac regions. A skiagram taken after a bismuth meal showed the necessity for exploration, and the case proved to be one of malignant disease of the duodenum. The keynote of the management of these cases is to induce "self-forgetfulness," to do away with the inertia, to improve the *moral* by encouraging independence, and to adjust the patient's life. In acute cases a suitable nursing home is imperative, and the chief essential is to procure sleep. For this gentle massage (effleurage or some of the softer stroking movements) is helpful and a pack and warm bath useful adjuncts. If drugs are necessary, chloralamide is better than paraldehyde or bromides. For the general excitation, monobromated camphor with conium is useful. The acute stage over, a short Weir Mitchell course (two to three weeks), followed by occupation with some interesting hobby, is better than a prolonged rest cure. Interest in life is needed, and at this stage tonics, physical, psychical, and mental, may be of the greatest use. Drugs are better avoided. Suggestion in its various forms is of undoubted value. Static electricity for pure neuroses and high frequency for cases of high tension and deficient metabolism are helpful. Finally, change of air and climate and, more important, change of mental or psychical environment are essential. One of the leading points in the treatment was illustrated by the following case: An officer in the Royal Flying Corps met with shell shock. After some weeks' treatment abroad he was transferred to an officers' hospital in this country. Two months later he was sent to a hospital for nerve disorders, then a month later to a convalescent hospital, and finally, as he was still going steadily downhill, to a nursing home for six weeks' rest cure. Gaining no benefit, he was eventually invalided out of the army. When seen his condition was pitiable. He was wasted, wracked with insomnia alternating with terrifying dreams, hopeless as to any improvement, a prey to vague terrors, afraid to be left alone, and devoid of any confidence in himself or others. Evidently in this case the first thing to do was to restore self-confidence and prove to him that he was capable of some sort of work and so make him increasingly dependent on his own efforts. He was found a suitable occupation and made to depend for the necessities of life on his own work. Under this régime he rapidly improved and was soon able to rejoin the army. The case emphasizes the point that a much earlier return to work will be far more beneficial to many neurasthenics than the prolonged stereotyped rest cures in a nursing home, which engender in the patients a spirit of dependence on others rather than on themselves.

In the discussion which followed, Dr. MACDONALD laid stress on the importance of some suitable occupation instead of a prolonged rest in a nursing home, and spoke

of the danger of sending men back to the front too soon after a nervous breakdown. Dr. JOHNSON SMYTH drew attention to the importance of distinguishing the various forms of the disease. He distinguished (1) the pure neurotic, who may have a raised blood pressure; (2) the neurotic with a neurasthenia engrafted—here we often find a low blood pressure and a subnormal temperature; (3) the neurasthenia following severe illnesses, as fevers, etc.; this is as a rule easily curable by rest, diet, massage, and mental diversion. Dr. FOWLER, speaking of electrical treatment, said he used either static or high frequency. Dr. SIMMONS drew attention to the frequency of neurasthenia after operations and accidents. Dr. E. BOND spoke of the beneficial effect of "war work" on female neurasthenics and of the difficulty there would be after the war in finding suitable occupation for this class of patient. Dr. HUMPHREY DAVY drew attention to the great difficulty of treating neurasthenia in old patients. Dr. LE FLEMING thought it was all-important to increase the weight of these patients. He drew attention to cases in which a neurasthenia was grafted on some gross nerve injury or lesion and the importance of disentangling the symptoms due to the organic and functional trouble in these cases. He emphasized the value of "suggestion" treatment and quoted a very successful case treated in this way.

Certification of Patients for Asylum Treatment.

Dr. HUMPHREY DAVY then read a paper on this subject, drawing special attention to the following points: In many cases of suicide in which the verdict is temporary insanity, pre-existing aberration of mind exists, suicide being the last act of the mental breakdown. Delay in certifying is due to difference of opinion as to the stage at which the patient should be certified. Some doctors look for the existence of delusions or acts of violence as absolutely necessary before certifying. It is important to bear in mind the two great divisions of insanity: (a) Moral; (b) intellectual. Moral insanity may exist with a fair amount of intelligence and freedom from delusions. Delay in certifying may result in a curable case becoming incurable. The following conditions should be noted for guidance in a suspected case: The patient's personal symptoms and family history; record of any special stress; history of alcohol, syphilis, diabetes, malaria, epilepsy, gastro-intestinal disorders, etc. The periods of puberty, climacteric, and senility should be specially watched, and such symptoms inquired into as sleeplessness, frontal headache, inability for mental work, egotism, fear of persecution, loss of weight, failure of memory, or change in the patient's general aspect. Lastly, neurologists would do well to include in their curriculum one year of resident asylum practice.

Reports of Societies.

ANAESTHETICS IN MILITARY HOSPITALS.

At a meeting of the Section of Anaesthetics of the Royal Society of Medicine on November 2nd, the President, Mr. GEORGE ROWELL, being in the chair, Lieut.-Colonel J. F. W. SILK, R.A.M.C., opened a discussion on anaesthetics in home military hospitals.

SELECTION OF ANAESTHETIC AND METHOD.

Chloroform pure and undiluted was, he said, to be avoided when possible. The mortality was high even with skilled anaesthetists. In about 55 per cent. of the deaths reported the anaesthetic given was chloroform. It was of value in many cases, especially when given diluted with ether and by the open method.

For short cases three methods of anaesthesia were suitable: (1) Local anaesthetics, perhaps not used as often as might have been expected before the war; (2) nitrous oxide; (3) ether, which should be given preferably by the open method.

The preliminary injection of morphine and atropine should be almost a matter of routine. Sometimes hyoscine was added to the mixture. If ether was to be administered atropine should always be given, as it dries up the mucous secretion. Instead of the orthodox hour before the operation, he gave the injection half or even a quarter of an hour before, and it should be given in the anaesthetic

room rather than not at all. He advised morphine $\frac{1}{4}$ gr. and atropine $\frac{1}{100}$ gr. For the mask he preferred gauze to lint. When time was no object ether should be used from the beginning, otherwise it was best to begin with a mixture of chloroform and ether. To hasten induction he often began with ethyl chloride dropped on an open mask, or used ether in a Clover inhaler. McCardie's drop bottle had as advantages that the amount could be easily regulated, and the bottle was not easily broken. He now used a nasal tube passed back into the pharynx, which ensured a free airway even if the jaw muscles became stiff, and the tube could not be occluded even if the epiglottis and tongue fell back. Most hospitals were provided with Clover inhalers, and he had suggested McCardie's proportion of one drachm of chloroform to each measure of the inhaler; he preferred the open method. Less chloroform and more ether had been given in home hospitals than in the past year, with increased safety to the patient.

Anaesthetics in Special Cases.

In *shock* he thought too much morphine could not be given, but it should be avoided in septic cases, and in patients with malaria or with heart trouble. In these cases chloroform also should be avoided. As little anaesthetic as possible should be given, and it should be diluted with oxygen which could be bubbled through the ether. Nitrous oxide was valuable, but the apparatus militated against its use and he was not satisfied with the anaesthesia produced. Warm ether was of advantage in these cases. Continuity and regularity were great points in success.

In *intracranial cases* morphine was unnecessary, and here also very little anaesthetic should be given. He preferred chloroform, as it lowered venous congestion.

In *empyema* the mortality was severe. For these cases he preferred intratracheal methods, and thought that the patients should be concentrated in the better equipped hospitals where this apparatus was used. Otherwise he preferred chloroform and oxygen.

In *spinal cases* the patient had to lie on his face, and the chest was consequently compressed so that the anaesthetic had to be pumped into him, and venous congestion was always present. He thought chloroform and oxygen the most desirable anaesthetic.

In *orthopaedic surgery* spinal anaesthesia was not used as much as might have been expected. Nitrous oxide was often used, and acted well when given with ether, but venous congestion should be avoided; warm ether produced this.

In *plastic surgery* of the face and allied conditions the chief difficulties were caused by the blood and mucus which collected in the mouth and pharynx; there was also the difficulty of manipulating the anaesthetic with a fixed or very mobile jaw. In the majority of cases exceptional methods were necessary, and of these he mentioned four: (1) The *intratracheal*, which was not necessary in all or even in the majority. (2) *Intubation* was little known in this country, but had many advantages; it was easy to introduce Kühn's tube, which could be packed with gauze round the pharynx, thus preventing blood from entering. (3) *Rectal oil-ether* method. In this there were two important points: (a) The patient should have morphine and atropine before, and (b) the anaesthetist should himself see that all remnants of oil-ether were washed out of the rectum. (4) *Method of position*. In this the patient sat bolt upright, and anaesthesia was produced by passing oxygen and chloroform or other vapour through a nasal tube. This method had been in use for over a year at one of the principal facial hospitals, and so far no fatality had occurred.

Ether bronchitis used to be put down to exposure, but that explanation would not hold. In some places it appeared endemic, in others epidemic, whilst in others it was absent when it might have been expected to have occurred.

DISCUSSION.

Mr. BELLAMY GARNER said that the nasal air tube afforded an important method of overcoming a difficulty. Apart from the adoption of the mouth prop the only other suggestion was tracheotomy. He thought the mouth prop should always be used.

Dr. J. BLONFIELD said that he had learnt to appreciate the intratracheal method in plastic surgery.

Major H. D. GILLIES said that, by Colonel Silk's advice, he had adopted the sitting position, and also intratracheal methods. In plastic surgery an anaesthetist was needed who could give every known form of anaesthesia. It was often impossible to use the intratracheal method owing to the form of injury. The sitting position had the advantage that the tongue and jaw tended to fall forward. Nitrous oxide and oxygen had given good results. Each case had to be considered from the anaesthetic point of view. The intratracheal was the ideal method if it could be done. Kühn's tube was a good substitute, but the large apparatus in the mouth was a disadvantage. Chloroform and oxygen given through the nasal tube, with the patient in the sitting position, had given good results.

Dr. F. E. SHIRWAY said that he always induced anaesthesia with chloroform and ether on the open mask and then continued with ether. He did not agree with Colonel Silk's opinion that too much morphine could not be given in cases of shock. Morphine was a depressant, reduced temperature, lowered blood pressure, and diminished excitability, thus producing a condition similar to shock. When shock had developed he thought that morphine should not be given in larger doses than one-sixth of a grain, or a quarter of a grain at the outside. In empyema he preferred ether or warm ether. Light anaesthesia was very necessary. In facial cases he preferred intratracheal ether, and in only 6 per cent. was he unable to pass the catheter. The advantage to the patient was the absence of post-operative vomiting. Sickness could not be avoided after chloroform in the sitting position. Oil-ether by the rectum was occasionally a very valuable method, but he doubted if it were free from danger on account of irritation of the lower bowel. Mr. Page had suggested less ether, but Major Gillies found that less than the amount recommended by Gwathmey was not enough.

Captain H. EDMUND G. BOYLE objected to the use of chloroform for the induction; a mixture of ether or gas and ether should always be used. He did not agree that the apparatus militated against the gas and oxygen method. Speaking of plastic surgery, he said that he had anaesthetized twenty-three cases with oil-ether by the rectum and had tried to change the dosage. He now used paraldehyde 1 drachm, olive oil 2 oz., and ether 4 oz. He had had no cases of irritation of the rectum. He thought the mouth prop should always be used, but that there was no need for the nasal tube.

Mr. PERCIVAL P. COLE said that very well-trained anaesthetists were necessary for plastic operations on the face. He thought it was rarely impossible to pass the tube. Kühn's tube was not so good, as the operations usually lasted a long time, and the physical exhaustion produced in the patient by breathing through Kühn's tube was marked. This did not occur with the intratracheal method. Vomiting was rare.

Colonel SILK said, in reply, that the oil-ether method required care. He had never had a case of rectal irritation. In shock he recommended a quarter to half a grain of morphine. He was pleased to find that the meeting was so thoroughly in accord with his condemnation of undiluted chloroform for routine use in military hospitals.

Dr. H. R. PHILLIPS demonstrated an apparatus for administering oxygen with ether and chloroform. The oxygen, contained in two cylinders, was passed through hot water contained in a copper tank, and thence through the chloroform or ether, or through both.

YALE UNIVERSITY has lately received gifts amounting in the aggregate to £72,478. The largest single donation was one of £20,000 from Mrs. E. H. Harriman for the Harriman Fund for Obstetrics in the medical school.

THE mites which infest cheese have been studied by Nellie B. Eales in the zoology department of University College, Reading. There are four species, all of which will attack Cheddar, and three Stilton, but their habits and life-history are very similar. They go through the usual stages of egg larva, nymph, and adult. They can live through the winter in crevices in boards or walls, are not destroyed by ordinary washing, but can be quickly killed by carbon bisulphide. Experiments prove that they may be carried from one cheese to another by flies and moths. The loss caused by them is considerable, being estimated at about 3 per cent. of the total value of the cheeses. Although they chiefly attack the kinds of cheese mentioned, they will attack old samples of other sorts.

Reviews.

THE SECRETION OF URINE.

DURING the last few years the literature on the functions of the kidney has increased to such an extent that even those engaged in research find it difficult to keep in touch with all parts of the subject. It is not surprising, therefore, that Professor CUSHNY has had to read through more than six thousand pages of varied quality before writing his monograph on *The Secretion of Urine*.¹ In this small volume the different views on renal function are presented and discussed, and the facts on which those views are founded are set down apart from the discussion, "so that they at least may remain, whatever theory of kidney activity may survive."

Professor Cushny does not accept the theory that the constituents of the urine are secreted by the vital activity of the epithelium of the capsule and of the tubules. The theory advocated by him, and called by him the modern theory, is that with which his name is associated in the textbooks. He adopts Ludwig's view that the capsule acts as a filter, allowing all the constituents of the plasma to pass through it except the proteins, and that this filtrate is concentrated by reabsorption during its passage along the tubules. He, however, differs from Ludwig as to the way in which reabsorption is effected, for whereas Ludwig explained it as a passive diffusion, Professor Cushny holds that it is an "active absorption" entailing the expenditure of energy by the cells. The constituents of the plasma, according to him, fall into two main groups: (1) Substances, such as urea and sulphates, which are excreted in the urine as long as they are present in the blood; and (2) substances, like dextrose and chlorides, which are excreted only when they reach a certain threshold value in the plasma. The "threshold bodies" of this latter group are capable of absorption by the tubule cells in proportions determined by their normal values in the plasma, while the "no-threshold bodies" are rejected and escape by the ureter.

Briefly, the function of the kidney is defined as "the filtration of the non-colloid constituents (of the plasma) through the capsule, and the absorption of Locke's fluid through the tubule cells."

For the arguments in favour of this theory the reader must be referred to the book, in which all the important facts ascertained about renal activity are discussed in connexion with it.

The book is well arranged and full of information and suggestive ideas. It contains some useful diagrams, and there is a good bibliography. Even those who do not accept Professor Cushny's theory must admit that he has rendered great service by collecting and setting down so ably in this small volume the facts of renal secretion.

TWO GERMANS IN PARIS.

DR. CABANÈS, who is a diligent explorer of historical by-ways, has devoted the greater part of his most recent volume, entitled *Une Allemande à la Cour de France*,² to Elizabeth Charlotte, great granddaughter of James I, and niece of Sophia Duchess of Hanover, the mother of George I. She became the second wife of Monsieur, brother of Louis XIV, whose first wife had been Henrietta, daughter of Charles I. She was the daughter of the Elector Palatine, and in France was commonly called the Princess Palatine. She wrote to her relatives in Germany an immense number of very long letters, many of which have been printed, and it is from these that Dr. Cabanès has constructed his story. In spite of her lofty connexions she was a very gross person. The functions of the large intestine and the accidents that may attend its activities were a source of unflinching interest to her. Nevertheless she resented the frequent purgations and copious clysters

which, like the periodical bleedings, were the medical fashion of the day. Her remedy for most ills was to go for a long walk, and she rode to hounds in her early days. Apparently the King, his family, and his mistresses all had bad teeth, and no doubt pyorrhoea, for their mouths offended the senses of sight and smell. The court ate too much, and some of them drank too much, which may help to account for the purging and bleeding. Table manners were primitive; the fork was being introduced, but the Princess resented the innovation. "I have never," she wrote, "eaten with anything but my knife and my fingers." Fashions change, and it is now considered to be not quite good manners to eat pudding with a spoon, yet Mr. Gladstone once said that in his youth a fork was never used for this purpose; still it must have been a curious sight to see the Princess consume her favourite dish of smoked sausage and sauerkraut with fingers and knife. Was it fingers or knife that went into her mouth? She denounced some other innovations, as, for example, the use of tobacco by women, whether as snuff or in a pipe. Apparently the fashion of using snuff was well established among women in her day, and that of smoking a clay pipe not unknown. One of the many engravings Dr. Cabanès reproduces shows three fine ladies smoking churchwardens in an arbour. The Princess Palatine thought such women disgusting—stinking was her word—but held that women who did not wear corsets were on the road to ruin; which recalls Byron's opinion that a lady who waited could hardly hope to retain her virtue. Dr. Cabanès's essay contains much out of the way information, not a little of it medical, but we will mention only one other matter, though it may be more generally known than we suppose. During the last years of his life Louis XIV, gouty and otherwise crippled, did not care to try to walk; the wheeled chairs made for him became for a time popular with his courtiers, and seem to have been the forerunners of the bath chair.

In another essay Dr. Cabanès gives an account of Dr. Koreff, an enigmatic character, born in Silesia, M.D. of the University of Berlin, and reputed Austrian spy in Paris. He seems to have acquired a practice among fashionable women to which neither his skill, his manners, nor his appearance entitled him, and to have wormed or forced his way into the literary society of the Restoration and the reign of Louis Philippe. He won the confidence of Talleyrand, who said of him that he knew everything, even a little medicine. Talleyrand's daughter looked on him as a charlatan, others declared he was an abortionist, and the courts in 1837 found him an extortioner by awarding to him and one Wolowski 24,000 francs without costs in place of the 400,000 francs they had demanded for attending the Countess of Lincoln. Altogether Koreff, whether a spy or no, was an unsavoury person.

The volume also contains two short essays on Frederick the Great's minor accomplishments in the way of playing the flute and physicking himself and his friends, and on the manner of his death.

NOTES ON BOOKS.

CAPTAIN CHIODI'S practical manual of prophylaxis and disinfection³ for the use of the Italian army is a sound and sensible little book on military sanitation that should be of service to medical officers in the field. Being written in Italian, it is likely to be studied, alas! by but few British readers, and so will not receive an extended notice here.

The second edition of Baillière's *Popular Atlas of the Anatomy and Physiology of the Female Human Body*⁴ is an excellent specimen of British lithographic art. It should prove of great service to nurses, masseuses, and lectures on first aid, home nursing, and the like, to whose attention it may be cordially recommended. The explanatory letterpress leaves nothing to be desired.

¹ *The Secretion of Urine*. By Arthur R. Cushny, M.A., M.D., LL.D., F.R.S. London: Longmans, Green, and Co. 1917. (Med. 8vo, pp. xi + 241; 35 figures. 9s. net.)

² *Une Allemande à la Cour de France. La Princesse Palatine. Les Petits Talents du Grand Frédéric. Un Médecin Prussien, espion dans les Salons Romantiques*. By Dr. Cabanès. Paris: A. Michel. 1916. (Cr. 8vo, pp. 393; 85 gravures. Fr. 3.50.)

³ *Manuale Pratico di Profilassi e Disinfezione*. By Dott. Valfredo Chiodi, Capitano Medico. Milano: Ulrico Hoepli. 1917. (Fcap. 8vo, pp. ix + 196; 32 figures. L.4.50.)

⁴ *Baillière's Popular Atlas of the Anatomy and Physiology of the Female Human Body*. With descriptive text by Hubert E. J. Biss, M.A., M.D. Cantab. Second edition. Plates by Georges M. Dupuy, M.D. London: Baillière, Tindall, and Cox. 1917. (4s. net.)

In the *Prevention of Disease*⁵ Dr. WINSLOW has written a popular treatise on how to keep well and to avoid falling into disease. As is said in the preface, written by Dr. Charles H. Mayo, preventive medicine is in the ascendant nowadays. Much has been done to promote longevity by public health laws; Dr. Winslow's book may be recommended as an exposition of the laws of health for the individual.

⁵ *The Prevention of Disease. A Popular Treatise.* By Kenelm Winslow, B.A.S., M.D., Attending Physician to Seattle City Hospital and King County Hospital, Washington, etc. Philadelphia and London: W. B. Saunders Co. 1916. (Demy 8vo, pp. xv + 348; illustrated. 7s. 6d. net.)

THE PROPOSED MINISTRY OF HEALTH.

At a meeting at the Royal Institute of Public Health, on October 31st, Major the Hon. WALDORF ASTOR, M.P., delivered an address on "Health Problems and a State Ministry of Health."

The chair was taken by the Right Hon. H. A. L. FISHER, M.P., Minister for Education, who said that by degrees a public health conscience was being created in this country, and with the quickening of such a conscience there came the realization of the overlapping and confusion of functions which at present existed in the administrative departments dealing with health subjects. It was necessary to review all the agencies existing for the promotion of public health, and, if possible, to co-ordinate them into a more effective and economical system. The child came into the world under the aegis of the Central Midwives Board and the Lords of the Privy Council; a month or two after birth it received the care of voluntary associations who might or might not be subsidized either by the Board of Education or the Local Government Board; from a tender age up to 14 the child was under the supervision of the school medical service, which in its turn was controlled by the local education authorities and the Board of Education. All this time the Local Government Board had been exercising what constitutional lawyers called a residual sovereignty over the health of the child, and this came into evidence should the child be the victim of infectious disease. At 16 the child passed under the control of the Insurance Commissioners; if at work in a factory he was medically supervised by the Factory Department of the Home Office, unless it was a munition factory, in which case he came under the Ministry of Munitions. If disabled in the war, he was dealt with by the Local Pensions Committees and the Pensions Ministry, and, finally, if a pauper, his health was the solicitude of the Poor Law authorities. Mr. Fisher was not of opinion that a system was necessarily condemned by the fact that it entailed a certain amount of overlapping and confusion of functions. Administration was a very rough business, and no system, however scientifically controlled, was really adequate to meet all the casualties of human life. But there were limits to overlapping, and these in the sphere of public health had been overstepped.

Major ASTOR, in the course of his address, said that if a perfect State scheme were awaited, no beginning would ever be made. A comparatively small step forward in 1917 would be worth more than a profound consideration during the next year or two of ideals and theories unaccompanied by action. The first thing required was a central health department; the second, reform in the local areas. The disentangling of the spheres of labour of the sanitary and local education authorities, the boards of guardians, and the insurance and pensions committees was a problem which would become much easier when the great majority of these bodies could look to one common head. The creation of a new Ministry was theoretically the cleanest course, but he was inclined to accept the view that it was important to build upon the tradition and experience of an existing department. He trusted that the prejudice created by the Poor Law associations of the Local Government Board would not prove an insuperable obstacle, and he suggested that the Board be rechristened Ministry of Public Welfare and Local Government. If once such an amalgamation were established, the disentangling process could go forward, and the health powers of other departments be transferred gradually to the reconstituted ministry; ultimately the non-health functions of the Board could be given over to another department,

or the health section could break away and become independent. An attempt at co-ordination was evidently necessary. Mere consultation between departments was too often a euphemism for a protracted battle, resulting in inaction and disappointment. The existing overlapping at the centre was more responsible for the conditions of preventable disease and mortality than the lack of powers or an unwillingness to use them. He pleaded for such re-organization that existing powers could be exercised to the best advantage, and afterwards it would be possible to discuss at leisure what, if any, new and enlarged responsibilities should be assumed by the State.

In the discussion which followed, Mr. KINGSLEY WOOD, Chairman of the London Insurance Committee, urged the need for establishing a totally new Ministry to consolidate step by step the health functions of the Government, and expressed the belief that the substantial agreement which the Prime Minister had indicated as the condition of acceptance was being approached.

Dr. ALFRED COX said that long ago the medical profession, as represented by the British Medical Association, had endeavoured to get rid of the state of affairs to which the Minister for Education had called attention. The Association had considered the latest proposals for a Ministry of Health very carefully of late, and was taking steps to get in touch with other organizations in the hope of arriving at some understanding. He preferred the title "Ministry of Health" to "Ministry of Welfare" as being more simple and descriptive. Any proposal merely to take the Local Government Board and call it by another name would be looked upon askance by the great majority of the medical profession. Another thing upon which, he thought, the medical profession would lay a good deal of stress was the extension of domiciliary attendance, which, to be adequate, should develop the germ already in the insurance scheme so as to give every man a family doctor and admit him to the best specialist and institutional treatment of all kinds. He hoped also that in any Health Ministry which was set up nothing would be done, such as the starting of a whole-time State service, which would prejudice the large number of medical men at present out of the country.

Dr. J. HOWARTH, M.O.H. for the City of London, defended the Local Government Board, which, he said, had done more for the improvement of the community than any other department, and never had its activities been more pronounced than during the last ten years. It suffered, however, from an innate conservatism and the absence of some driving force. He suggested that it should be a real Board, not, indeed, of whole-time men such as had been appointed on the National Insurance Commission, nor of men elected by societies to promote some particular end, but of men of broad views, who should serve for five years, and should be overseers of the administration, advisers to the Minister, and educators of the public. The risk attaching to the setting up of absolutely new machinery would in that case be removed.

Sir BERTRAND DAWSON said that public opinion was ripe for some change, and professional opinion as well. Personally, he would rather have a Health Ministry, but, after all, it was the thing that mattered, not the form. If the proposal was to be a success it was necessary to unite the medical profession in its support. The Insurance Act appealed to the interests of the profession, but it never satisfied their ideals. He believed that the medical man of the future would be more concerned in promoting health than in curing disease; the treatment of disease in the home was becoming increasingly impracticable. Diagnosis and treatment had become team work, and the teams had to be formed and educated. He looked to an organization of preventive and curative medicine which would be a complete whole, from the big teaching hospitals and institutions at the centre to the village clinic at the periphery.

Dr. H. B. BRACKENBURY said that practically the whole profession distrusted the Local Government Board; the projected Ministry, whether organized on the basis of the present Board or not, should be a Ministry of Health, and that only. Dr. SMITH WHITAKER and Lieutenant-Colonel SPRINGTHORPE (Professor of Hygiene, Melbourne), also spoke, and Major ASTOR, in reply, said that doubtless they all seemed to be going to the same goal, but by different roads; there was some danger, however, lest they should be going on parallel roads and never meet.

British Medical Journal.

SATURDAY, NOVEMBER 10TH, 1917.

FLANDERS WEATHER.

IN recounting the gallant capture of Passchendaele village by the Canadians last Tuesday the correspondent of the *Times* spoke of himself as looking across a wilderness of mud and shell holes, and told how, having seen the signal rocket go up indicating that the village had been entered about 9 a.m., he spent much of the rest of the day in getting home, for, he wrote, "the covering of even a few miles of this shell-hole morass, with intervals of threading duckboards and slushing along the mud-swilled roads, is a matter of some hours." The sentence quoted may serve to remind us of the difficulties the Army Medical Service has had to meet in evacuating the wounded, during the last couple of months especially. Nevertheless we believe it to be correct to say that the field has usually been completely cleared within twelve hours of the beginning of each stage of the offensive, with the possible reservation that wounded men who have crept for shelter into isolated shell holes or dugouts may not be found until later.

The nature of the ground and the broken weather have combined to make the work very trying. The physical conditions, which, as was shown by accounts we published at the time, were very troublesome in the battle of Arras, have been reproduced in an aggravated form during the recent fighting further north. All the war correspondents refer to the difficulties of the Flanders advance owing to the state of the ground, and their accounts have been effectively supplemented by some of the pictures in recent issues of the illustrated weeklies. They give a good idea of the water-logged shell-pitted surface of the western side of the Passchendaele-Messines ridge; but some imagination is needed to realize the depth and stickiness of the mud and the amount of twisting and winding imposed on stretcher-bearer parties by the dangerous depth of many of the pools. But for the use of corduroy tracks and duckboard paths rapid clearance of the field of action would, as things now are in Flanders, be practically impossible, and even with their help, courage, endurance, and a strong sense of duty are necessary to its successful achievement.

In organizing lines of evacuation the permanent roads must be supplemented by temporary tracks. A corduroy road is built up of baulks of timber about 9 in. broad and 4 in. thick, laid side by side and clamped to longitudinal baulks of timber by iron riveting pins. Such roads are among the first signs of extending civilization in Canada, and colonial troops show special skill in laying these tracks rapidly. The duckboards are constructed on the same principle as the wooden gratings often used in sculleries and laundries. They consist of slips of board about 2 in. wide, fixed at intervals of an inch or two on longitudinal laths. They are made in sections, and can easily be shifted. In trench warfare, as was fully explained in illustrated articles published in recent issues of the *JOURNAL*, it may be possible for stretcher-bearers to get the wounded along the trenches—which, as a rule, are floored with duckboard—to the head of the evacuating line, but when there has been an advance the wounded may

have to be got across more or less open country, where there may be no paths, or only very rough tracks. The strain upon the bearers is very severe, and it may be necessary to employ as many as eight bearers to carry a single patient a couple of miles. If the R.A.M.C. officers in such circumstances had none but the ordinary regimental stretcher-bearers and the bearer sections of field ambulances at their disposal, it would be impossible to "clean up" the field of action quickly. But this fact has been more and more recognized by army commanders since Festubert, some two and a half years ago, and extra men are detailed to act as bearers. When the carry is long the distance is divided up and relay posts established, at each of which there is a squad of stretcher-bearers. Each squad having taken its burden to the nearest relay post hands it over to the next squad, and returns to the post whence it started. The first relay posts receive their wounded from a varying number of regimental aid posts with which they are in touch, and the last relay squad takes its stretcher burden to a place at which horse-driven or motor ambulances can be brought up and loaded, or to which light wheeled ambulances, or stretcher carriers running on tramways can be brought; these types of light ambulance have been illustrated in the *JOURNAL* (June 2nd and August 18th). This part of the zone of combat being within the sphere of the field ambulance, the relay posts will usually be in charge of the field ambulance medical officers. Walking cases finding their way to the rear by the corduroy roads or other tracks mentioned, are at certain points deflected to places where they can be picked up by vehicles of various sorts which can be made available for the purpose.

It is obvious that men engaged in transporting the wounded from the regimental aid posts to the head of the evacuating line may have to traverse areas exposed to shell fire and to the attacks of snipers and even of machine-gun parties, and such risks may not be over when the organized evacuating lines have been reached. Apart from the risk, the labour is extremely severe, since a man whose uniform is soaked in mud and water is a heavy burden; duckboard sections are apt to be very slippery and may become displaced, and corduroy roads afford very uncertain footing unless freshly swept clean of mud by heavy rain. This will help to explain why neither the French military authorities nor our own have ever agreed with the popular idea that the rank and file of the medical services can safely be recruited, to more than a small extent, from men who are physical weaklings. The French army regulations for the guidance of recruiting officers, in fact, specifically lay down that men for the *Service de Santé* must be chosen from those deemed fit for general service of all kinds. The exhausting character of the work also explains the practice, in both armies, of withdrawing field ambulances for rest, and replacing them by others at the close of any heavy offensive. In a heavy offensive on a short front it may be necessary to employ several field ambulances or their French equivalents to work together in this advanced part of the zone, but in that case the need for withdrawal is not diminished, but affects a larger number of units.

The way in which the wounded after reaching the advanced dressing stations are taken further to the rear has often been explained, and though it has been improved it has not, we believe, altered in principle. Stretcher cases usually continue their journey in motor ambulances, walking cases either in lorries or in trucks on broad or narrow gauge lines. The

objection to the use of such lines is that ambulance vehicles upon them may be subjected to long delays, and in any case do not usually travel nearly so fast as a motor ambulance on a decent road. The steam tractors used on the narrow gauge lines are protected by steel plating, but they seem rather apt to get off the line, which is, of course, when first put down roughly laid, and this must involve delay. The stretcher-carrying lorries on trench tramway lines and their continuations, which have been illustrated in previous issues, are very useful. The lines are very like those to be seen in the neighbourhood of any quarry in this country, and consist of light steel rails bolted together by small fish-plates.

Given similar terrain, the general principles on which evacuation of the wounded is carried out cannot vary very much, but the details have to be worked out separately for each section. This responsibility falls upon the D.D.M.S. of the army corps, who must consider beforehand what arrangements will best meet the situation that may be expected to result from the operations the divisions of his corps are about to undertake. Among the considerations he has to keep in mind are the general lie of the ground and the state of its surface, the number and condition of the permanent roads, corduroy tracks, or duckboard paths by which it is traversed, the number and availability of the trench tramway lines, and the selection of places where car-loading points or advanced dressing stations can be established, as well as the distance of the objective from the assembly trenches and the jumping-off point. His arrangements may at any time be disturbed by the destruction of a portion of a tramway or the heavy shelling of a section of an evacuating line, or, again, by the occurrence of a large number of casualties at an unexpected point.

The aim of a D.D.M.S., as also of A.D.M.S.'s of divisions and of all medical officers in front of the casualty clearing stations, is to secure rapidity in the removal of casualties, so far as is consistent with the well-being of the patients; and in view of possible interruption or accumulations it becomes the duty of a D.D.M.S. of a corps in action to duplicate his arrangements as far as possible, so that when one line of evacuation fails or becomes encumbered another shall be immediately available. The D.M.S. of the army engaged is not only responsible generally for all these arrangements, but also for the placing and organization of the casualty clearing stations, so that they shall be sufficiently numerous, sufficiently officered, and suitably placed in relation to the evacuating railways. Foresight and a capacity for minute attention to details of organization are necessary to secure success in evacuation work, especially under such conditions as have been prevailing in Flanders recently. Hardly less important is it that the men chosen for such positions as D.M.S., D.D.M.S., and A.D.M.S. shall be capable of winning the ready co-operation of the combatants with whom they are brought into contact, and of maintaining the right spirit among their own subordinates; events up to the present demonstrate that in the task of selecting such men, and of making them feel that boldness of design, coupled with careful attention to detail and energetic action, will always meet with his support, Sir Arthur Sloggett has been singularly successful. Much the same remarks might be made of the work on the lines of communication and at the bases, but with this we are not for the moment particularly concerned. It is practically unaffected by the weather conditions at the front or the nature of the ground on which the recurring actions are fought.

TUBERCULOSIS INSURANCE IN THEORY AND IN PRACTICE.

CRITICISM of English institutions by experts from other parts of the empire is always welcome and often refreshing. Opportunities for study of such institutions from within are rare. An appointment as tuberculosis officer to the borough of Middlesbrough has given such an opportunity to Dr. H. A. Ellis, who, with thirty years' experience of tuberculosis in Australia, is able to approach the subject without any preconceived notions as to the perfection of home methods. His official reports for the last two years have been commented upon from time to time.¹ At the recent annual meeting of the National Association of Insurance Committees he read a paper containing an interesting analytical summary of results achieved in proportion to the amount of money expended. Dealing only with insured cases, he asked how the limited funds provided by the Insurance Acts could be applied so as to achieve the best possible results. It is admitted that the amount at present provided is only sufficient to enable a part of the work to be carried out.

Approaching the subject from a purely business point of view, and ignoring for a time the humanitarian side, he showed that money spent on incurable cases is doubly wasted. The patient receives no lasting benefit, and is of no economic value to the community. The same sum might have enabled a curable case to recover health and economic usefulness. The authorities of Middlesbrough have acted upon these lines with most satisfactory results. Since the introduction of the system of priority for early cases, the percentage of success in the restoration of working capacity has been raised from 26 per cent. in the years 1913-14 to 69 per cent. in 1915-16. By a calculation made from the actual figures it was shown that with a wage-earning capacity of 30s. a week, the wage value during the first two years was £2,730, attained at a sanatorium cost of £1,008, whereas during the latter period, curable cases alone being treated, a wage value of £2,574 was obtained at a cost of £370. Grants for extra nourishment always loom large in tuberculosis accounts. As applied to advanced cases such grants yield no return, but they are of actual economic value when judiciously used to aid real recovery.

Dr. Ellis recorded very gratifying results from domestic treatment. Even in the least satisfactory environment the recuperative power possessed by many incipient consumptives, he said, was remarkable, and in most cases the patients were willing and anxious to carry out directions. The possibility of sanatorium treatment as an alternative doubtless operates in favour of obedience to the rules laid down for home treatment. Dr. Ellis, however, did not lay so much stress upon unsatisfactory environment as upon careless habits of life, and working overtime or under stress of recent illness. Home treatment was mainly directed against these three factors, but especially against overtime. In the vast majority of instances it was found that the natural resistance of the individual, rightly guided, was a sufficient protection against the progress of the disease. Turning to the study of the death-rate from tuberculosis for the borough of Middlesbrough, he emphasized the fact that the great majority of deaths occurred shortly after notification, and that the rate became lower among notified cases with each succeeding year. In the three years since January, 1914, there were 205 deaths of insured persons, and of these no fewer than

¹ BRITISH MEDICAL JOURNAL, October 7th, 1916, and July 14th, 1917.

158 occurred within a year of notification, and 115 of them during the first six months. The acute tuberculous affections of childhood and youth under 16 years of age were not included in these statistics.

It seems clear that far more stringent application of the notification rules is called for, and probably in very many boroughs other than Middlesbrough. Possibly the system which is in vogue in some districts, of diagnosing tuberculosis only after detection of bacilli in the sputum, may be responsible for some of the delay in notification. If so, it calls for prompt alteration, as it effectually lessens the patient's chance of real recovery. Early diagnosis, although it may entail expense and may sometimes prove incorrect, is essential for success in the great majority of cases. Up to the present time there has not been sufficient co-ordination of method, either of treatment or of statistical information. A reform of the present system of notification is needed to render it complete and effective. Under a uniform system of reporting it would be possible to make more practical distinction between home and sanatorium cases, and much more accommodation in sanatoriums would doubtless be available if this were done. Comparison of results also would enable some idea to be formed of the actual return in proportion to expenditure.

Some form of central control is needed not only to check individual extravagance but also to direct available funds into the most useful channels. Dr. Ellis considers that the cumbrous machinery which has been employed up to the present time to deal with tuberculosis, consisting of the Local Government Board, the county councils, the borough councils, and the Insurance Committees, local and central, is not fitted to cope with such a many-sided problem; he advocates the establishment of a permanent committee, consisting of business men as well as experts. His outspoken comments upon the whole subject deserve very careful consideration.

MEDICAL ASSESSORS.

An order has been made which provides generally that the functions of the Army Council in relation to the work of tribunals shall in future be undertaken by the Minister of National Service. Military representatives have now become National Service representatives, and directions will be issued to them that in dealing with cases before tribunals they must have regard to the need of men not only for the army, but also for other urgent national requirements. Special medical boards have ceased to exist. The Local Government Board, which is now responsible for the work of appeal tribunals and medical assessors, has issued two pamphlets¹ containing rules and notes for their guidance. The rules deal with the re-examination and grading of men for military service, and the notes with the functions of appeal tribunals and medical assessors. They provide that any man may apply to the appeal tribunal within a stipulated period of time (five days) against his grading by the National Service Medical Board, or if he has applied to the National Service Medical Board for a re-examination and has been refused, against that refusal. The appeal tribunal, if satisfied that he has made out a sufficient case, may authorize him to be re-examined by their medical assessors. Medical assessors will be appointed at eleven centres in England and Wales by the Local Government Board, and at three centres in Scotland by the Scottish Office. The centres in England and Wales are Newcastle-on-Tyne, Leeds, Sheffield, Manchester, Liverpool, Birmingham, Norwich, London, Bristol, Exeter,

Cardiff. Each appeal tribunal or separate section of an appeal tribunal in England and Wales will be associated with one of the groups of medical assessors. In order to simplify procedure it has been provided that all applications must be made directly to the appeal tribunals. Local tribunals will not have authority to consider applications for medical re-examination or to refer men to medical assessors, but they will have power to adjourn the hearing of a case in order that the man may apply to be re-examined by the National Service Medical Board. It is intended that the medical assessors shall have the use of the premises and clerical staff of the local National Service Medical Board. The premises must afford ready facilities for consultations between the medical assessors, and reasonable privacy for the men examined, as well as a good waiting-room. The Advisory Medical Board for England and Wales, appointed by the Local Government Board in consultation with the Central Medical War Committee and the Minister of National Service, will act for the two departments, which in this way will hope to keep in close touch with the medical profession. The Local Government Board will consult the Advisory Board on all important medical matters, and will refer to it any important medical question raised by medical assessors. The constitution of the similar Board for Scotland is announced elsewhere in this issue. Before a man is finally graded his case must be considered by at least three medical assessors and his grade settled in consultation. One of the medical assessors in each group will be formally appointed as the medical assessor in charge. It is pointed out that a man who has made application for re-examination will usually base his claim on certificates from private medical practitioners, and due regard must be paid to such certificates by the appeal tribunal and the medical assessors. The certificates will assist the assessors by indicating matters to which their examination should be particularly directed, but their value will depend on the extent to which they state matters of fact as distinct from mere expressions of opinion. Before examining a man the medical assessors must obtain from the Assistant Director of Recruiting the medical history sheet of the man prepared by the National Service Medical Board, and when the medical assessors have decided on a man's grading they will record their findings on the medical history sheet, stating their reasons if the grading by the National Service Medical Board is altered. Medical assessors are advised that they will doubtless find it advantageous in some cases to consult, either personally or by letter, the chairman of the National Service Medical Board by which the man was originally graded. In order to prevent personation medical assessors are directed when necessary to require a man to sign his name in their presence, and to compare it with his previous signatures on his grade card and the counterfoil and on his registration certificate, and also to check the height and other identification particulars on his medical history sheet. The executive officer of the medical assessors will be secretary or clerk of the appeal tribunal; under the executive officer there will be a clerk in charge, who will obtain the medical history sheet as soon as he receives the authority from the appeal tribunal for the medical re-examination of a man. There should be no avoidable delay in summoning a man, and notice should be sent to him at least three clear days before the examination. It is expected that twenty will, on the average, be examined at each session, and more should not be summoned.

STATISTICAL WIREPULLING.

Many of our readers have been favoured during the last few days with a pamphlet written by Dr. Walter R. Hadwen and circulated by the British Union, under the title, "Registrar-General's Statistics: some interesting figures showing how and why certain important diseases have increased or decreased during the last fifteen years."

¹(R. 156 and R. 157.) London: His Majesty's Stationery Office. Price 1d. each.

The "British Union" is the British Union for the Abolition of Vivisection, though that fact does not appear on the title page of the pamphlet. With the general method adopted by Dr. Hadwen and his friends our readers are sufficiently familiar. If the death-rate of a disease such as scarlet fever, the bacteriology of which is obscure, has declined, the result is claimed as showing "what sanitation can do when not interfered with by vaccines or serums." If some other disease of similarly obscure causation (such as measles, the death-rate from which was 277 per million in 1901, 275 in 1906, 363 in 1911, and 462 in 1915) has not declined, nothing is said about it. When, on the other hand, the mortality of such a disease as diphtheria has declined, laboured attempts are made to prove that antitoxin can have had nothing to do with the change. With this apology for reasoning, by means of which we could "prove" that the increased circulation of halfpenny newspapers has increased the numbers of deaths from cancer, we need not deal; but we shall refer to two instances which well illustrate Dr. Hadwen's competence to instruct the lay reader in medical statistics and the standard of controversial ethics to which he conforms. On the first page of his pamphlet he gives the absolute numbers of deaths from anthrax for each year from 1901 to 1915. He remarks: "It is thus seen that the number of deaths in 1915 is double that of fifteen years ago. The average number of deaths per annum before the serum was introduced in 1899 was only eight. This speaks for itself." For the period prior to 1899, as Dr. Hadwen does not state how many years have been averaged, we cannot check his figure, but statistically, the point is that the variability of the annual numbers must be large, since the absolute number is small and the incidence of the disease is upon a population of millions; the death-rate is therefore minute. Roughly, the measure of reliability of a rate varies as the square root of the number. Taking the annual average of 16.13, we should quite often expect fluctuations of as much as 5 or 6 either way, and it is an even chance that there will be a fluctuation of 2.7 or more either way. The only large variations from the mean value are in 1905 and 1906 (24 and 26 cases), and again in 1915 (24 cases). Dr. Hadwen deliberately contrasts the latter figure with the 12 cases of 1901. Moreover he does not mention the fact that several recent cases of anthrax have been traced to the importation of infected hair which was the subject of a special inquiry carried out by the Local Government Board. The attempt to convey to the reader the impression that anthrax is steadily increasing, doubling itself in fifteen years, is a lamentable example of statistical incompetence and controversial blindness. On p. 8 of his pamphlet Dr. Hadwen gives the recorded deaths from syphilis, and insinuates that the death-rate has been rising since salvarsan came into use. Unskilled as he may be in statistical methods, he must be aware that the Registrar-General (in the official evidence submitted to the Royal Commission on Venereal Diseases and elsewhere) has frequently warned the reader that the official statistics of deaths from venereal diseases are seriously incomplete, and only to be used with the utmost caution. This does not deter Dr. Hadwen from writing: "National insurance money has actually been used for the purpose of inventing and manufacturing imitations of this dangerous drug (salvarsan), and there is no question that behind all the morbid sensationalism artificially created in regard to the treatment of this disease, at public expense, lies the wire-pulling of commercial interests." The concealment of wires behind morbid sensationalism is a method of rhetorical camouflage which is not easy to comprehend, but that one member of an honourable profession should aim such a taunt as this at those of his professional colleagues who have had the duty of advising the Government upon a serious problem, is a painful instance of the depths to which a controversialist may descend. We do not suppose that any persons of average intelligence

will be disturbed by Dr. Hadwen's utterances, but they have a certain value in the light they throw upon the psychology of the supporters of the British Union for the Abolition of Vivisection.

THE SINKING OF HOSPITAL SHIPS.

BEFORE the war many of those best qualified to judge the stage of culture reached by the German people, and especially the North German people and their rulers, believed that it was essentially behind that attained by the Western peoples. It was believed that though they had learnt to use the methods and machinery of science, they had not assimilated the higher mental and spiritual qualities developed by the civilization of the more advanced nations. This opinion has unfortunately been only too amply confirmed by a large mass of evidence. One of the earliest pieces of evidence was the manifesto of the intellectuals, which perhaps impressed upon the minds of the intellectual classes in other countries the low standard of German culture more than even the atrocities committed by the orders of the military chiefs. The Germans share with the lower races of mankind a certain cunning which is being exhibited at the present time in many directions. One example is their practice of preceding each fresh iniquity by lying statements; they speak, for example, of seaside resorts as ports, and open towns as fortified places before they bombard the one or drop bombs on the other. In pursuance of this policy, before they began torpedoing hospital ships they transmitted through the American Ambassador a memorandum (January 28th, 1917) respecting the misuse of hospital ships, which was a tissue of falsehoods, purporting to be backed up by scraps of hearsay evidence which would not have been accepted in a court of law as evidence against a pickpocket. The memorandum and so-called evidence on which it rests have now been published in a White Paper,¹ together with a detailed reply on each point and a note by the Foreign Secretary dealing both with the original memorandum and with a later memorandum (March 29th) received through the Netherlands Government. A categorical denial was issued by the British Government at the time, and Mr. Balfour expresses the hope that the German Government will, now that the value of the evidence on which it relied has been demonstrated to the meanest capacity, have the sense to withdraw the false charges it has made regarding the misuse of British hospital ships and give unconditional instructions to its naval forces to grant these vessels in the future the immunities due to them under the provisions of international law. British hospital ships have never been used for the carriage of munitions of war or of combatant troops; Red Cross stores and personnel of the Royal Army Medical Corps (who are protected by the Geneva Convention) have been embarked, and it is thought probable that the German Government may have been misled by the fallacious deductions of their witnesses, who apparently were unable to verify their assumption that cases of Red Cross stores were really munitions of war, and bodies of the Royal Army Medical Corps in khaki uniforms detachments of combatant troops. No British hospital ship has ever embarked any persons but invalids and hospital staff. The German Government in its second memorandum tried to make out that though the allegation as to the carriage of troops had been denied, that as to the carriage of munitions had not been denied. This is founded upon the terms of an official denial by the British Government of a particular story of one Albert Messany, a Viennese opera singer, which is shown to be a tissue of falsehoods. The White Paper points out that "the play which the German Government make with this imaginary discrepancy is an illustration of their practice of trying to make capital out of infinitesimal points, a practice which has the appearance of being adopted in order to cover up the weakness of their main position."

¹ Cd. 8692. His Majesty's Stationery Office. Price 3d.

CONJOINT BOARD OF SCIENTIFIC STUDIES.

The first annual report of the Conjoint Board of Scientific Studies, established at the instance of the Council of the Royal Society in June, 1916, has been issued. The objects of the Board are to promote the co-operation of those interested in pure or applied science; to supply means by which the scientific opinion of the country on matters relating to science, industry, and education, may find effective expression; to promote the application of science to industries and the service of the nation; and to discuss scientific questions in which international co-operation seems advisable. The Chairman of the Board, which consists of representatives of numerous societies, is the President of the Royal Society. Among the constituent societies are the Royal Anthropological Institute, the Royal Colleges of Physicians and Surgeons in England, the Royal Society of Medicine, the Pharmaceutical Society of Great Britain, the Psychological, Linnean, Zoological, Biochemical, and Psychological Societies, the Institute of Chemistry, the Society of Chemical Industry, the Chemical Society, and the Royal Institute of British Architects. There is a small executive committee, of which Sir Joseph J. Thomson, President of the Royal Society, is chairman, and Dr. W. W. Watts, Professor of Geology in the Imperial College of Science and Technology, secretary; among the other members are Sir Alfred Keogh and Sir Ray Lankester. The board has appointed a number of subcommittees, some of which appear to have got to work during the year, including the International Catalogue Subcommittee, which has obtained information regarding the extent of the use made by scientific men of the present International Catalogue of Scientific Literature; the Watching Subcommittee on Education, of which Sir Ray Lankester is convener, the Metric System Subcommittee, and the Anthropological Survey Subcommittee. The last named consists of Major Leonard Darwin (convener), Professor A. Keith (secretary), Dr. James Galloway, Dr. P. Chalmers Mitchell, and Professors G. Elliot Smith, Karl Pearson, and Arthur Thomson. It has presented a report on the need of a physical survey of the British people, and intends to institute further inquiries before drafting recommendations. On its advice the executive committee asked the Board of Education, the Local Government Board, and the Registrar-General's Office to nominate representatives on the subcommittee, and Sir George Newman, Sir Arthur News-holme, and Dr. T. H. C. Stevenson, have been appointed. The Watching Subcommittee on Education has held a conference with the Council of Humanistic Studies, and has made a report to the Conjoint Board, in the course of which it recommended that both natural science and literary subjects should be taught to all pupils below the age of 16, and that afterwards specialization should be gradual and not complete. It points out that in many schools of the older type more time, which can often be obtained by economy in the time allotted to classics, is needed for instruction in natural science, but that in many schools more time is needed for instruction in languages, history, and geography. The opinion is also expressed that while it is impossible and undesirable to provide instruction in both Latin and Greek in all secondary schools, provision should be made in every area for teaching these subjects. The subcommittee also transmitted to the Government Committee on Science in the Educational System of Great Britain, two recommendations on which it was unanimous; one is that in order to secure teachers able to give inspiring and attractive courses in science adequate salaries should be paid, and the other, that while prime importance must be attached to provision for laboratory work it was essential that there should be instruction also in the romance of scientific discovery and its applications. Every pupil should not only receive training in observational and experimental science, but should be given a view of natural science as a whole, the object being

to evoke interest in science in relation to ordinary life, "rather than to impart facts or data of science presented by an examination syllabus, or even to systematize their rediscovery."

THE LABOUR PARTY AND THE MEDICAL PROFESSION.

AN interesting story is current with regard to the proposal now before the Labour Party to enlarge its borders so as to bring into membership "producers by brain" as well as "producers by hand." This story is that the Labour Party candidates at the next general election will include ten or a dozen medical men pledged to support a scheme for a State medical service. The rumour may be justified by events, but an examination of circumstances shows that at present it can be only a speculation as to what may happen. In the first place, it should be noticed that the proposal of the Labour Party executive for widening the constitution of the party is only a recommendation, and although it will probably be adopted at the conference which will take place at the end of January, the decision has still to be made. Secondly, it depends on this or succeeding conferences to determine what the programme of the Labour Party for the next general election shall be. Consequently, the question whether a State medical service shall be advocated by Labour candidates will in turn depend upon whether such a system shall be approved by the conference as a part of its programme, or, alternatively, upon the latitude to be given to Labour Party candidates who may come forward under a new constitution. There is very little doubt, however, that the reorganization of the party on the broader basis will be determined upon. It is probably on this account that Mr. Arthur Henderson, when he left the War Cabinet, preferred to keep the secretaryship of the party rather than resume its leadership, his wish being to attend to the organization in view of coming developments. He is at present giving all his time to this work in the office in Victoria Street, and in going up and down the country. So far the programme of the party for the next general election rests upon the resolutions passed at the Labour Conference in Manchester last January, and in these there is nothing about a Ministry of Health or State medical service. Meanwhile, of course, various groups are looking ahead; and it would not be surprising to hear that a number of doctors, more especially those who are members of the Fabian Society, should be taking informal action with the object of getting the question of a State medical service brought before the conference, and of suggesting that a certain number of medical men, if the Labour Party constitution is enlarged, should be included in the roll of parliamentary candidates for the next general election. There is talk of three hundred candidates being brought forward by the Labour Party. That, of course, must depend to some extent on ways and means; but with enlargement of constitution the "means" will doubtless enlarge, and the Reform Bill, by reducing expenses, will make candidature easier. But nothing has been settled.

THE REMUNERATION OF RURAL PRACTITIONERS.

THERE are two statements in a letter by "A Country Doctor," published under this heading at p. 633, upon which more light seems to be required. The first is that the fee for attendance on discharged soldiers and sailors and temporary residents is unremunerative. Assuming our correspondent's estimate of his travelling expenses in visiting the particular patient he instances to be correct, there is no doubt that his visits to this patient are unremunerative. If he has any real remuneration for attending such cases it must be that the majority live much nearer to him, so that, on the average, it costs him less in travelling expenses than he receives for attendance. The question whether this is economically a sound basis of remuneration is open to argument, but it certainly

seems to put an undue share of the risk on the shoulders of the medical practitioner, especially the rural practitioner, at the present time. At the conference of Local Medical and Panel Committees on October 18th the position of the rural practitioner was fully debated, and strong objection was taken to the mileage allowances offered for attendance on discharged disabled sailors and soldiers. The Insurance Acts Committee was instructed to press for the same scale of payment as that allowed for attendance on serving soldiers, and we understand that urgent representations to this effect have already been made to the Commissioners by the Committee. With regard to mileage generally under the Insurance Acts, the Insurance Acts Committee was instructed to press for an increased grant to rural practitioners. The other point in our correspondent's letter upon which further light seems to be required is his assertion that though his practice, as a country practice, may be called good, with every economy he could not live if he had not private resources. The general applicability of such a statement must depend, of course, largely upon the standard of living, which varies with each man. We are aware that for many years past some in a position to form a competent opinion have advised that no man should enter the medical profession who has not got some private means, but we did not know that matters had gone so far that a country practitioner could not live upon the receipts of his practice. We are quite aware that it is often a tight fit, particularly when children are growing up; the increased cost of living during the last few years must often have made the adjustment of receipts and expenses more difficult. It is now recognized that a medical practitioner is justified in increasing his fees to private patients, but the private patient of small means is disposed to argue that the same economic changes that are embarrassing the doctor embarrass him also. Moreover, not a few such private patients have become official patients. The profession is in a vicious circle, and we do not profess to be able confidently to point out the way of escape, but that the matter deserves very serious consideration is not doubtful.

A NEW JOURNAL OF NEUROLOGY AND PSYCHIATRY.

A new journal of neurology and psychiatry¹ in three languages—German, French, and Italian—has recently appeared under the direction of that eminent authority, C. Von Monakow, Professor of Neurology in the University of Zurich, with the collaboration of all the well known Swiss neurologists and psychiatrists. The assistant editors in neurology are Dr. Bing (Basel), Dr. Minkowski (Zurich), and Dr. Naville (Geneva); in psychiatry, Professor Dr. Weber (Geneva) and Professor Dr. Maier (Zurich). The second part of the first volume contains several important and interesting communications. Dr. Boissard records his researches on the behaviour of the leucocytes in genuine epilepsy; Dr. Naville publishes two communications upon amaurotic idiocy (Tay-Sachs' disease), and a note also upon an exceptional case of unilateral myopathy. Dr. H. Uemura, who has been working under Professor Monakow's direction, concludes an important paper upon the connecting paths between the stem of the brain and the cerebellum. This part contains also an experimental study of the physiology of the Rolandic and parietal convulsions by Dr. Minkowski, and the volume concludes with a review by Dr. Bing of German opinions upon the nervous accidents determined by the explosion of projectiles without evidence of visible injury. The volume is admirably printed and illustrated, and the matter contained upholds the deservedly high reputation which Swiss neurology has attained. This journal should be read by all neurologists and psychiatrists.

¹*Schweizer Archiv. für Neurologie und Psychiatrie. Archives Suisses de neurologie et de psychiatrie. Archivio Svizzero di Neurologia e Psichiatria.* Band I. Heft 2. Zurich, 1917. Art. Institut, Orell Füssli.

INTERNATIONAL SOCIETY OF SURGERY.

At a meeting of the Société Internationale de Chirurgie in Paris on November 3rd, 1917, which was attended by delegates from Belgium, France, Great Britain, Serbia, and the United States, it was resolved to dissolve the society after the publication of the volume of *Transactions* of the meeting held in New York on April 14th, 1914. It was further resolved that, should there be any assets after the publication of this volume, the money shall be divided *pro rata* amongst the members, so that each member of the Germano-Austrian group shall receive his share, but that the shares belonging to members of other nations shall be retained and applied to some object of scientific reparation in Belgium. The meeting then determined that a new society shall be formed after the war on a basis similar to that of the Société Internationale de Chirurgie. It will be called the Société Interalliée de Chirurgie, but will be open also to such surgeons of neutral countries as may be nominated for election by the general committee.

Medical Notes in Parliament.

Army Medical Services in France.

In the course of the debate on the Consolidated Fund Bill in the House of Commons, on Tuesday, Major David Davies asked whether the report of the Committee appointed to inquire as to the Army Medical Service in France would be presented to the House of Commons or treated as a confidential report to the Secretary for War; also as to the qualifications of the chairman. The gallant officer given this office had apparently retired from the service in 1909, but became Inspector of Infantry from 1914-15, when he again retired from the army, being at that time, it appeared, over 70 years of age. Major Davies further submitted that there could be no permanent improvement in the Royal Army Medical Corps until the Director-General was placed on the Army Council. It was useless to say that Sir Alfred Keogh had access whenever he liked, for all knew that when questions concerning medical matters were being discussed at the Army Council the Director-General of the Medical Service was not necessarily there, and had no right to be there, to give expression to his views. It was true that in 1904 Lord Esher's Committee reported that for financial and other reasons the Director-General of Medical Services should be placed under the Adjutant-General, but Lord Esher in a recent letter subsequently had written: "How much of the suffering undergone by our soldiers was due to the shortsightedness of my committee will never be known."

Mr. Macpherson said that until the report of the Committee of Inquiry had been received and considered by the Army Council he could not say whether or not it would be presented to the House. The Chairman of the Committee had had a distinguished career. It was true he was somewhat old, but in certain cases old age was no crime, and he was sure that the distinguished officer, who was perfectly fit and healthy, was capable, with all his knowledge and experience, of presiding over the Committee. Those who knew the composition of this Committee would realize that it was not a Committee appointed to white-wash anybody. The members of it would not be corrupted even by titles. As to the demand that the Director-General of Army Medical Service should have a position on the Army Council, Mr. Macpherson said that he accepted the report of Lord Esher's Committee, particularly as he knew that if in any given case on any important problem the experience of the Director-General was necessary for the Army Council he was welcomed, and every opportunity was given to him of stating his case.

Sir William Babbie: Army Council's Decision.

In the course of the debate on the Consolidated Fund Bill in the Commons, on Tuesday, Major David Davies followed up some questions he had addressed to the Under Secretary for War by further inquiries as to the circumstances of the reinstatement of Surgeon-General Sir William Babbie as Director of Medical Services at the War Office. Mr. Macpherson had stated earlier that, after the appearance of the Mesopotamia Commission Report, Sir William was given leave pending its consideration. He

was invited to submit an explanation; this was found by the Army Council to be satisfactory, and he was recalled from leave to resume his official duties. Mr. Macpherson had previously intimated that, for reasons for which the parties concerned were not to blame, the explanations of other officers mentioned in the Mesopotamia Report had not yet been available for consideration by the Army Council. Major Davies, recalling these answers, asked Mr. Macpherson if he could say who was responsible for the breakdown in the medical service in the Mesopotamia campaign. Did the reinstatement of Sir William indicate that the responsibility rested with Lord Hardinge or with the other medical officers, or did it concern the officers who held office in the Indian Medical Service before the war?

Mr. Macpherson, in a reply covering also other matters raised in the debate, said it would be remembered that in the Mesopotamia Report there was what lawyers called a saving clause so far as Sir William Babbie was concerned. It was made perfectly plain by the Commission that if it was possible to utilize the services of Sir William Babbie in any high appointment they could have no possible objection to his services being so used. The Army Council had a right by military law to ask of any officer an explanation of his conduct before he was dismissed or if they intended to dismiss him. In this case the Council exercised its right and had before it Sir William Babbie's explanation. It had in mind at the same time the recommendations of the Mesopotamia Commission. After perusing Sir William Babbie's explanation of his conduct the Army Council was unanimously of opinion that it would be a great detriment to the public military service of this country if it were deprived of the continued service of Sir William Babbie. Consequently the Council, as was its right, asked Sir William to come back to carry on the work which he was doing at the War Office, and was doing exceedingly well. Mr. Macpherson added he was certain that any soldier with any knowledge of the work of the Army Medical Service in any of the campaigns with which Sir William Babbie's name had been associated would be of the opinion that the Army Council took right and proper action to continue to use the excellent services of a most distinguished servant of the State. Replying to an interjection by Mr. Hogge, as to why the explanation of Sir William Babbie could not be given to the House, Mr. Macpherson replied that Sir William was content to leave the matter as it stood. The Army Council had never published explanations submitted to it by officers. On a further question by Major Davies as to why the explanations of the other officers were not available, Mr. Macpherson said that having regard to the persistent interruption he would state what was the fact. Sir William Babbie was directly under the Imperial Army. Some of the officers were not, and the question arose whether the Indian Government should take action in the case of two very distinguished Indian officers, Sir John Dixon and Sir Beauchamp Duff, or whether the Army Council should take action. That case was submitted to the Law Officers, who took time to consider the rather difficult and technical point, and that was how the delay arose. These two gallant officers were willing and anxious to have an opportunity at once of sending explanations to the Army Council.

Training of Military Medical Officers.—Major David Davies asked whether medical men who joined the Royal Army Medical Corps were compelled to undergo a course of instruction in drill before they began their clinical duties; if so, what was the period given to this course of instruction; and whether, in view of the shortage of medical men, arrangements would be made to allow these medical officers to proceed to their clinical duties without the delay caused by this instruction. Mr. Macpherson replied: Medical men commissioned as officers in the Royal Army Medical Corps undergo a short course of instruction in their military duties, and much importance is attached to this training, which is not confined to drill, but includes military sanitation, anti-gas protection, and the duties of a medical officer with troops in the field. It is not proposed to abolish this special training, which is considered essential to the efficiency of the officers concerned. In reply to another question, Mr. Macpherson said that the present status of the Director-General of the Army Medical Service did not come within the scope of the inquiry now proceeding as to medical arrangements for the British armies in France.

The Medical Re-examination of Recruits.—The Select Committee on the Medical Re-examination of Recruits resumed its sittings on November 6th, Colonel Grettton presiding in the absence of Mr. E. Shortt, K.C. Dr. Galloway, Chief Medical Commissioner of National Service, gave evidence as to the scheme under which medical examinations for the army and classifications and gradings have been transferred from the War Office to the Ministry of National Service. The features of the new arrangements have already been published. Dr. Galloway also described the new system of classification of recruits.

Civilian Practitioners' Local War Service.—In answer to Mr. Perkins, Mr. Macpherson said that the employment of civilian medical men willing to work as civilian medical practitioners in the neighbourhood of their homes was one for general officers commanding-in-chief of the various commands. So far as the War Office was concerned, such offers were welcomed.

Hospital Physicians and Army Medical Service.—Mr. Alden inquired whether Mr. Macpherson was aware that when hospital physicians and surgeons were asked to join the Royal Army Medical Corps Territorial Force in 1908 they were given a definite official assurance by the then Director-General of the Army Medical Service that, if they did so, their appointment would entail no duties in time of peace, but a liability in time of invasion or national emergency to perform only clinical duties identical with those they performed in civil life in general hospitals; and whether he would explain why a number of hospital physicians and surgeons who were over military age, and who joined the Royal Army Medical Corps Territorial Force on this understanding in 1908, had been compelled to perform duties other than clinical which were wholly foreign to their previous experience. Mr. Macpherson said the answer to the first part of the question was in the affirmative with the qualification that no promise was made that the clinical duties should be identical with those performed in civil life. He was not aware of any case in which these officers were compelled to do duties other than clinical.

Medical Examination of Recruits.—In reply to Sir Hamar Greenwood, Sir A. C. Geddes said that the Ministry of National Service had taken over that part of the function of the Army Medical Service which is concerned with the medical examination of the physical fitness of recruits and potential recruits. Civilian medical practitioners who had been employed on a recruiting medical board would, however, be eligible for re-employment under National Service.

Soldiers Disabled by Rheumatism and Tuberculosis: After-care Colonies.—Mr. Anderson asked the Pensions Minister whether he was considering how to provide gratuitous treatment on scientific lines for all soldiers and sailors suffering from rheumatism and tuberculosis; and whether he would consider the desirability of making grants, in addition to their pension, so that they might reside in health institutions under the care of specialists until every effort towards cure had been made. Sir A. Griffith-Boscawen said that under the instructions of the Ministry Local War Pensions Committees had full power to arrange with any existing institution for the treatment of rheumatism, and those powers had been widely used. Should it be found that existing accommodation was insufficient, the Minister was ready to give assistance towards meeting the need. Treatment for tuberculosis was provided by the National Insurance Commissioners in conjunction with the local authorities. In order that the disabled man might obtain the fullest advantage of these arrangements, grants had been made to assist the funds of Insurance Committees, and, in addition, the Minister had undertaken to provide the whole cost of treatment for advanced cases. Moreover, the Ministry were at present considering the question of providing after-care colonies where treatment and training might be given in cases of this disease in its early stage. Every means possible would be adopted to bring about an effective cure wherever cure was possible.

Military Hospitals for Venereal Disease.—In reply to a question by Mr. Arnold Ward, which contained a suggestion that objection had been raised locally to the establishment of military hospitals for venereal disease in or near urban districts in the Eastern Command, Mr. Macpherson said that the concentration of such patients in special hospitals assured the utmost advantage to health and the speedy return of the men to duty. There had been local opposition not only in the Eastern Command, and the feeling was so strong against the use of buildings that it had become necessary to utilize hutments.

Criminal Law Amendment Bill.—Mr. Ramsay MacDonald asked the Home Secretary whether, in view of the state of public business and the unlikelihood of any progress being made with the Criminal Law Amendment Bill this session, he would consider whether he could use his powers under the Defence of the Realm Act, or otherwise, to provide safeguards against the worst dangers by which soldiers were beset, and the grossest carelessness in communicating disease. Sir G. Cave replied he regretted the opposition to the Criminal Law Amendment Bill, the passage of which would in his opinion reduce the evil referred to in the question. It was for the Army Council to consider whether anything could be effected by a regulation under the Defence of the Realm Act.

THE WAR.

UNITED STATES ARMY MEDICAL SERVICE.

TRANSPORT AND TREATMENT OF WOUNDED.

In continuation of the note on this subject published last week we give the following further particulars drawn from the articles published by Colonel Reno in the *New York Medical Journal*. In the organization of the transport of wounded two zones are recognized—the zone of the advance (or of combat) and the zone of the line of communications, leading to the base. As has been stated, a regiment of infantry has four medical officers, and other divisional units have a proportional number. The regimental medical officers establish a regimental aid station. The next unit is the ambulance company, of which there are four to a division under the collective command of a major; each ambulance company appears to have four medical officers. Its transport may be mechanical or horse. When the division is in action each ambulance company provides a dressing station, to which men of the company transport the wounded from the regimental aid station, usually by hand litter or wheeled litter, but by ambulance if possible, or by any other means of transport. Ambulances ply between the ambulance company dressing station and the field hospital.

The field hospitals, of which there are four to a division, are tented, each providing 216 beds in six "ward tents," 16 ft. by 50 ft.; there are also four "hospital tents," 14 ft. by 16 ft., housing the dispensary, office, operating-room, and stores respectively; a kitchen is placed under a tent fly. When, however, buildings are available, the tentage is not pitched. Such surgical operations are done here as are needed to fit the men for transportation; they are performed under the strictest antiseptic or aseptic precautions, and every effort is made to dress wounds so that they will not require redressing for some time. A field hospital is relieved of its wounded as rapidly as possible. When the number of wounded is great and transport facilities to the rear are bad, or when there are non-transportable wounded, a section or the whole of a field hospital, or even several field hospitals are immobilized, and their administration is then taken over by the line of communications, which provides the division with duplicate equipment. Two of the field hospital companies with a division have motor transport—eleven trucks, each of a capacity of a ton and a half, and two motor cycles or a touring car. Each has six medical officers—a major and five captains or lieutenants of the Medical Corps or Medical Officers' Reserve Corps—three non-commissioned officers, two cooks, one mechanic, and sixty-eight privates, all belonging to the medical department. The transport of an animal-drawn field hospital company consists of seven wagons, with a capacity of one and a half tons each, four draft mules for each wagon and two extra, and twenty-two riding horses. It has the same number of medical officers and non-commissioned officers, but it has a horse-shoer, a saddler, and a farrier in place of three of the privates in the motor hospital.

The next link is the evacuation ambulance company—a transport column which passes the wounded from field hospitals to the evacuation hospital, described as the first hospital in the zone of the line of communications; apparently it corresponds very nearly to the British casualty clearing station.

SCHOOLS OF INSTRUCTION FOR ARMY MEDICAL OFFICERS IN AMERICA.

Training camps for newly appointed medical reserve officers, established by the Surgeon-General of the United States Army, were in full swing last July. There are three main training camps, each with a capacity of a thousand student medical officers, at Fort Riley, Kansas, at Fort Benjamin Harrison, Indiana, and at Fort Oglethorpe, Georgia. At each camp there are four ambulance companies, four field hospitals, one evacuation hospital, and six regimental detachments. There is also a training camp for coloured medical officers at Des Moines, Iowa, where ten regimental detachments of coloured men are to be organized. The course at each camp occupies about eight hours a day for three months. During the first month the instruction

is in the work of the enlisted men of the medical department, so as to fit student officers for duty as instructors; the second month is given to the duties of medical officers proper; and the third to work in the field, such as the conduct of ambulance companies, field hospitals, and so on. The student officers are organized in provisional companies of 150 men each, with officers and non-commissioned officers appointed from their number. At each camp there are ten regular medical officers as instructors and in charge of the administration. The three main training camps have a capacity of producing about 12,000 trained military medical officers annually. Upon completion of the course the more experienced physicians and surgeons are relieved and assigned to other duties. Selected officers are sent for special training to the Rockefeller Institute for instruction in laboratory work, or to other centres, including Cornell Medical College, New York, for instruction in x-ray work.

THE USAACS.

On the outbreak of war steps were taken to enlarge the United States Army Ambulance Corps. We gather from an article published recently in the *New York Medical Journal* that the volunteer American Ambulance Service, established by the Friends of France on the French front, has been taken over, but the main enlargement has been by way of enlistment in America. A training camp has been established at Allentown, Pennsylvania, where there is ample room, a good water supply, and extensive buildings. Dr. Arthur Yale of Philadelphia, now a major in the service, was able to supply 700 men from an organization of Church clubs he had established in Philadelphia, and the Intercollegiate Bureau at Washington undertook to supply the number of men needed to make up the total of 4,100 at first contemplated. The commanding officer of the camp is Colonel E. E. Persons, and the sanitary officer Major Richard Slee, both of the regular army. Each unit comprises three sergeants, a corporal, two mechanics, two cooks, and thirty-seven privates, with a lieutenant in command. Four units constitute a company, under the command of a captain, and five companies a battalion. Each unit has twenty-four automobile ambulances, an officer's car, three trucks, and kitchen trailers.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Wounded.

Surgeon R. G. Morgan, R.N.

Surgeon T. N. McB. Ross, M.C., R.N.

ARMY.

Killed in Action.

LIEUT.-COLONEL C. R. A. PYE, D.S.O., M.B.

Lieut.-Colonel Cecil Robert Arthur Pye, D.S.O., M.B., Ch.B.Syd., was killed on October 4th whilst commanding the 19th Battalion Australian Infantry. He was born at Windsor, N.S.W., on July 7th, 1890, and entered the Sydney University Medical School, and graduated M.B., Ch.B.Syd., after which he studied in England. On his return to Australia the war had commenced, and he at once volunteered, preferring to remain with the infantry, in which he had previously served, and in which he had been promoted captain in 1913. Lieut.-Colonel Pye served at Anzac with the 17th Battalion Australian Infantry. He was a skilful medical man, a gallant soldier, and a most competent commanding officer, and had earned the highest praise from the A.I.F. commander. On May 11th he was awarded the D.S.O. for conspicuous gallantry and initiative when in charge of the whole of the front line held by his battalion. He organized a successful attack, and exhibited great energy and determination when meeting a counter-attack made by the enemy. He set a splendid example to the men under him.

CAPTAIN G. S. ELLIOTT, A.A.M.C.

Captain George Stephenson Elliott, A.A.M.C., whose death in action, on September 26th, at the age of 32, was announced in our issue of October 27th, was the youngest son of the late Mr. Thomas Elliott, of Ballarat, Victoria, and a brother of Brigadier-General H. E. Elliott, D.S.O., C.M.G., commanding the 15th Infantry Brigade. He was

educated at Ballarat College and Melbourne University, graduating M.B., B.S., in March, 1916. For some months he was medical officer at No. 5 Base Hospital, Melbourne. He arrived in England in September, 1916, and soon joined the 56th Battalion as its medical officer, remaining with it until his death. He had been recommended for a decoration for his previous fine work at Bullecourt, and was nominated for the New Year's Honour List. He was very well known in Victoria as an athlete and a playing member of the University League football team. He leaves a widow and infant daughter.

CAPTAIN J. B. RANDALL, R.A.M.C.

Captain John Beaufoy Randall was killed in action in France on October 31st, aged 28. He was the younger son of Mr. Wyndham Randall, surgeon of Bridgend, Glam., and was educated at Bridgend County School and St. Bartholomew's Hospital. He graduated B.Sc.Lond., with honours in physiology, in 1911, and M.B., B.S.Lond., with honours and distinction in medicine, in 1914. He subsequently served for one year as house-physician to St. George's Hospital, joined the R.A.M.C. as temporary lieutenant in January, 1916, and soon proceeded to France. He was promoted to captain after a year's service, and was home on leave in September last.

CAPTAIN J. STRUTHERS, S.A.M.C.

The annual obituary of Edinburgh University, dated October 15th, gives the name of Captain John Struthers, South African Medical Corps, as killed in action, without date. He graduated M.B. and C.M.Edin. in 1894, and before the war was in practice at Neora, Colimvaba, Tembuland, South Africa.

Died of Wounds.

CAPTAIN W. G. MCCONNELL, R.A.M.C.

Captain William Gardiner McConnell, R.A.M.C., was reported as having died of wounds, in the casualty list published on November 2nd, after his name had appeared in the list of wounded a fortnight before. After taking the L.R.C.S.I. and L.R.C.P.I. in 1915, he joined the R.A.M.C. as a temporary lieutenant, and was promoted to captain after a year's service.

CAPTAIN W. MORRISON, M.C., R.A.M.C.

Captain William Morrison, M.C., R.A.M.C., died in hospital of wounds and gas poisoning on October 23rd. He was the younger son of the late Rev. W. Morrison of Mulben, Keith, and was educated at Milne's Institution, Fochabers, and at Edinburgh University, where he graduated M.B. and Ch.B. in 1909, after which he joined the British East Africa Medical Service. He took a temporary commission as lieutenant in the R.A.M.C. on March 17th, 1915, and was promoted to captain after a year's service, receiving the Military Cross on November 25th, 1916. He had served at the front for about two years past, except for a few months in the winter of 1916-17, when he was recovering from shell shock.

CAPTAIN A. Z. PHILIPS, R.A.M.C.

Captain Abraham Zadok Philips, R.A.M.C., died on October 24th of the effects of gas poisoning on the previous day, aged 36. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1910, and M.D., with commendation, in 1913, also taking the London D.P.H. in 1914 and the F.R.C.S.Edin. in 1915. He afterwards filled the posts of house-physician at the Royal Southern Hospital, Liverpool, and of house-physician and house-surgeon at the Liverpool Infirmary for Children. After serving, in the first year of the war, as surgeon to the Florence Fienes hospital at Dunkirk, he took a temporary commission as lieutenant in the R.A.M.C. in July, 1915, and was promoted to captain on completion of a year's service.

CAPTAIN D. J. S. STEPHEN, M.C., R.A.M.C.

Captain David James Shires Stephen, M.C., R.A.M.C., died of wounds and of gas poisoning on October 23rd. He was educated at Aberdeen University, where he graduated M.B. and Ch.B. in 1910 and M.D. in 1912, afterwards filling the posts of senior house-surgeon of Lincoln County Hospital and of assistant medical officer of the Lawn Asylum, at Lincoln. He joined the R.A.M.C. as a temporary

lieutenant on October 10th, 1914, and was promoted to captain after a year's service. He gained the Military Cross on July 24th, 1915.

Died on Service.

MAJOR H. E. DALBY, R.A.M.C.(S.R.).

In the obituary notice (published in the *BRITISH MEDICAL JOURNAL* of October 27th) of Major H. E. Dalby, R.A.M.C.(S.R.), who died at Basra on October 14th after an operation for appendicitis and peritonitis, it should have been stated that he served in the R.A.M.C. from 1899 to 1905, when he retired, and joined the Special Reserve, settling in practice at St. Mary Church, Torquay. He rejoined at the outbreak of the war, and served with the 8th Field Ambulance in the retreat from Mons, after which he was invalided home. On recovery he was appointed Principal Medical Officer at Witley Camp, Surrey. In September, 1915, he was put in medical command of the hospital ship *Braemar Castle*, and in May, 1916, transferred to the *Assaye*.

LIEUTENANT W. C. McMILLAN, I.S.M.D.

Lieutenant William Calderwood McMillan, Senior Assistant Surgeon, I.S.M.D., died on active service of pneumonia on October 24th, aged 45. He was born on April 18th, 1872, educated at the Calcutta Medical College, and entered the Indian Subordinate Medical Department on February 21st, 1893, becoming first-class assistant surgeon on February 21st, 1912, and getting his commission during the war. He had been successful in the study of Indian languages, having passed the High Proficiency test in Urdu, and the Higher Standard in Persian, Pushtu, and Panjabi. Before going on service he was stationed in Calcutta.

LIEUTENANT AND QUARTERMASTER H. UNDERWOOD, R.A.M.C.

Lieutenant and Quartermaster Harry Underwood, R.A.M.C., died of dysentery on service in Egypt on October 18th. After serving in the ranks, he attained warrant rank as sergeant-major on October 12th, 1914, and had since received a commission.

SUB-ASSISTANT SURGEON GAURI SHANKAR, I.S.M.D.

First class Senior Sub-Assistant Surgeon Gauri Shankar, I.S.M.D., was reported as having died on service in the casualty list published on November 1st. He was born on May 12th, 1868, entered the I.S.M.D. on March 25th, 1889, and attained his late grade, ranking as subadar, on August 16th, 1914. He had gained the Indian Order of Merit during the war. Before going on service he was serving in the station hospital at Jullundar.

Wounded.

Major W. R. Craig, Australian A.M.C.
Major T. J. Frizell, Australian A.M.C.
Major F. M. Furber, Australian A.M.C.
Captain J. Arthur, R.A.M.C.(T.F.).
Captain C. H. Brennan, R.A.M.C.(S.R.).
Captain J. E. Cable, R.A.M.C. (temporary).
Captain S. R. Glead, R.A.M.C. (temporary).
Captain W. G. Gondie, R.A.M.C. (temporary).
Captain H. B. Graham, R.A.M.C. (temporary).
Captain E. B. Leech, R.A.M.C. (temporary).
Captain R. Mackinnon, R.A.M.C.(S.R.).
Captain R. D. Nasmyth, R.A.M.C. (temporary).
Captain W. J. Nisbet, R.A.M.C. (temporary).
Captain P. S. Parkinson, Australian A.M.C.
Captain D. H. Russell, M.C., R.A.M.C. (temporary).
Captain R. W. Ryan, R.A.M.C. (temporary).
Captain W. Steadman, R.A.M.C. (temporary).
Captain H. C. Watson, R.A.M.C. (temporary).
Lieutenant A. P. Draper, R.A.M.C. (temporary).
Lieutenant E. B. Leech, R.A.M.C. (temporary).
Lieutenant J. N. Morris, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Anderson-Berry, David Douglas Anderson, Captain Royal Scots, the Lothian Regiment, only son of Dr. Anderson-Berry, of Highgate, killed September 26th, aged 27. His first commission was dated May 12th, 1915.

Burnside, Eustace Bruce, Captain the Buffs (East Kent Regiment), only son of Colonel E. A. Burnside, A.D.M.S., Ripon, killed October 12th, aged 22. He was educated at Eton and at Balliol College, Oxford, got a commission in the Buffs at the outbreak of the war, and became lieutenant on December 27th, 1914.

Cunningham, S. Gordon, Second Lieutenant Royal Field Artillery, youngest son of Dr. Cunningham, of Bellevue, Cambellton, killed October 22nd, aged 25.

Edwards, D. W., M.C., Captain Army Service Corps, attached Royal Flying Corps, younger son of Captain C. R. Edwards, R.A.M.C., reported missing April 6th, 1917, now presumed killed on that date.

Holton, Francis Keatley, Lieutenant Middlesex Regiment, only son of Dr. F. W. P. Holton, killed October 27th, aged 20. He was educated at St. Edward's School, Oxford, and destined for the Church, but entered the army through Sandhurst. He got his commission in January, 1916, and went to the front in August, 1916.

Inch, Robert Stuart Mark, M.C., Lieutenant Norfolk Regiment, younger son of Dr. Inch, of Gorebridge, Midlothian, killed October 22nd. He was educated at George Watson's College, Edinburgh, and adopted the profession of accountant, obtaining his commission through Edinburgh University O.T.C. He received the Military Cross twelve months ago, and was wounded in 1916.

Waller, Thomas Henry Whalley, Lieutenant Gloucestershire Regiment, killed in action on October 22nd, aged 21, was the only son of Dr. A. W. Waller, of Stroud, Glos. He was educated at St. Peter's School, Weston-super-Mare, and Malvern College, and had been registered as a medical student. Acting as captain he had led his company "over the top" and gone straight through to the objective, successfully holding the ground gained all day until he was shot by a sniper's bullet and instantly killed.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

FOOD ADMINISTRATION IN MILITARY HOSPITALS.

We have received a copy of a pamphlet on the administration, conservation, and accounting of hospital food supplies,* which has been issued by authority for use in Canadian military hospitals in England. Here are brought together in a handy form the many regulations bearing upon commissariat, both those that are old-established and those contained in recent Army Council instructions or Canadian routine orders. All those who are directly concerned in the diet of invalid Canadian soldiers, from the medical officers in charge of wards and nursing sisters up to the officer commanding, will find in this summary a practical guide to their duties in respect of food and feeding. The pamphlet is interleaved so that any future orders and regulations may be inserted, if necessary. The instructions with regard to the ordering of diets and extras should resolve some of the difficulties encountered by newly appointed medical officers unfamiliar with the mysteries of army diet sheets and summaries; while the section on the conservation and disposal of cook-house refuse should prove of much assistance to administrative officers. It is evident that economy in dealing with hospital kitchen refuse has been reduced to a system which secures the least possible waste with the largest cash return. This standardized method of sorting and selling by-products and disbursing the proceeds shows what can be done when the "dripping fund" of a military hospital is run on business lines. Although the pamphlet is intended only for Canadian hospitals there are many other administrative officers who would probably find it helpful, and we should not be surprised if a compilation on similar lines were soon issued for British military hospitals.

MENTIONED IN DISPATCH.

A dispatch from General Sir Charles Monro, Commander-in-Chief in India, describing military operations on the North-West Frontier, in Persia, and elsewhere, from March 10th, 1916, to March 31st, 1917, was issued as a supplement to the *London Gazette* on October 31st. The following medical officers are included in a list of officers and men brought to notice for gallantry and good services appended to the dispatch: Major C. E. W. S. Fawcett, R.A.M.C.; Captains J. B. Hanafin and M. A. Rahman, I.M.S.; Lieutenant B. S. Dhondy, I.M.S.; Assistant Surgeon J. W. Marshall, I.S.M.D.; First Class Sub-assistant Mirza Mohammed Beg Khan Bahadur, I.S.M.D.; and Third Class Sub-assistant Surgeons Silaram Vishnu Sathe, Sorosbi Ranjan Sen, and Karam Bayeram, I.S.M.D.

HONOURS.

The Emperor of Japan has conferred the Order of the Sacred Treasure (First Class) upon Surgeon-General Sir Arthur W. May, K.C.B., F.R.C.S., K.H.P., late Director-General Medical Department, R.N., for distinguished services rendered during the war.

The Distinguished Service Cross has been awarded to Surgeon-Probationer A. C. Fowler, R.N.V.R., for services in action with enemy submarines.

* *Hospital Food Supplies: Administration, Conservation, and Accounting for Use by Canadian Military Hospitals in England.* Issued by the Director of Medical Services Canadians, London.

Captain (acting Major) K. B. Williamson of the Royal Garrison Artillery, formerly a medical student of Edinburgh University, has been awarded the Military Cross.

The President of the French Republic has conferred the Croix de Guerre upon the following medical officers of the Royal Navy: Staff Surgeon Walter T. Haydon and Surgeons Horace E. R. Stephen, M.B., Ronald G. Lyster, and Horace P. Margetts.

Wales.

COLONIES FOR DISCHARGED TUBERCULOUS SOLDIERS IN WALES.

AN interesting announcement was made at the annual meeting of the Council of the Welsh National Memorial held last week at Llandrindod Wells. Major David Davies, M.P., to whom the movement owes its inception and much of its success, stated, as the result of an interview with the Pensions Minister with reference to the establishment of colonies for discharged tuberculous soldiers from Wales whose return to their pre-war occupations might be injurious to the public health, that the Ministry hoped shortly to be in a position to equip sanatoriums with means for training and for giving instruction in various trades, and that colonies would be provided where such men, after undergoing treatment, might continue their training and be enabled to earn their living. The Council was informed that, if the Pensions Minister's scheme was carried out, Major David Davies was prepared to give, free of cost, two valuable properties for the establishment of such colonies. It is understood that negotiations have already been entered into for realizing the project. At the same meeting the resignation of Dr. Marcus Paterson, who has acted as medical director of the National Memorial Association since its formation, was received with the greatest regret, and high appreciation was expressed of the services which he had rendered. It is understood that the vacancy will not be filled up at present, but that temporary arrangements will be made to carry on Dr. Paterson's work during the continuance of the war.

CARDIFF HOSPITAL.

Colonel Bruce-Vaughan, who has rendered such excellent service to the King Edward VII Hospital at Cardiff, in conjunction with other gentlemen, is putting forward a strong appeal for further funds in order to place the hospital on a sound financial basis. It is stated that additional beds to the number of 180 are urgently required in order to provide to some extent for a waiting list of (at present) a thousand prospective patients. Colonel Bruce-Vaughan, as Chairman of the House Committee, appeals (1) for £8,000 to wipe off the overdraft which it is estimated will stand to the debit of the current account at the end of the year, and (2) for an additional income of £15,000, which will be necessary before the new wards now being built can be opened. In addition to this a large amount is required for furnishing and to meet capital expenditure. The suggestion is that the demand should be met, at least in part, on the basis of weekly subscriptions by wage-earners supplemented by proportional subscriptions from the employers of labour. It is pointed out that in Newcastle last year the workmen's contribution towards a similar object was little short of £30,000, and it is held that there should not be any difficulty in obtaining even a larger sum in Glamorganshire.

Scotland.

THE Privy Council has decided to withhold its assent from the ordinance promoted by the four university courts regarding the preliminary examination until a conference with the Scottish Education Department has taken place.

Miss Agnes M'Alpin, founder of the Glasgow Training Home for Nurses (now the M'Alpin Nursing Home) died on November 3rd at the age of 92. She was pioneer of the movement to train nurses, more especially for nursing in private families. She started on a small scale with the help of her sister, who survives her, but had the gratification of being able to attend the opening in 1908 of the new home, where a tablet commemorates her work.

NATIONAL SERVICE MEDICAL ADVISORY BOARD.

The Minister of National Service has appointed the following to be an Advisory Medical Board for Scotland to advise him on questions relating to the examination of men of military age by the National Service Medical Boards. The Secretary for Scotland has appointed the same gentlemen to advise him on questions relating to the examination of such men by the Medical Assessors who are to be appointed by him:

Sir Donald MacAlister, K.C.B., M.D.
R. C. Buist, Esq., M.D.
J. R. Drever, Esq., M.B., Ch.B.
John Gordon, Esq., M.D.
Professor Harvey Littlejohn, M.B., F.R.C.S.E.
Professor T. E. Monro, M.D., F.R.F.P.S.G.
John Playfair, Esq., M.D., F.R.C.P.E.

TUBED FEEDING-BOTTLES.

We are glad to learn that the Central Midwives Board for Scotland has made a formal representation to the Privy Council, urging that the manufacture, importation, and sale of long tube feeding-bottles should be made illegal. After a short preamble on the infantile death-rate in Scotland, the board draws attention to one item in the causes of infant mortality which it believes to be easily susceptible of amelioration—namely, infantile diarrhoea and diseases of the digestive system. Each year the infant death-rate reaches its highest point in the third quarter—July, August, and September. The excess at this season is mainly attributable to fermentative changes in milk, which are fostered by the use of long tube feeding-bottles. These abominations are universally condemned by medical authorities, but are still very popular with poor mothers. Although theoretically cleansible, they always contain an inner coating of coagulated milk, which, especially in warm weather, teems with fermentative micro-organisms, while their use encourages the swallowing of air. Moreover, the child, with the bottle snugly beside it in the cot, is tempted to suck whenever it chooses, and is in consequence often overfed, with the usual train of digestive disorders. Thus chronic fermentation of the food and chronic overfeeding go on side by side so long as these filthy bottles are allowed. In 1910 France, and in 1912 Germany, passed laws prohibiting the tubed feeding-bottle, and it is high time that we fell into line with our friends and our enemies. The Central Midwives Board for Scotland suggests that a single clause bill would meet the requirements of the case. We are glad to give our warm support to this proposal, which need not wait upon the heels of a Ministry of Health but should be enacted at once.

Ireland.

DR. JOHN LUMSDEN, Director-in-Chief of the Joint V.A.D. in Ireland, was entertained to dinner at the Gresham Hotel, Dublin, on November 3rd, by the officers of the Ambulance and Nursing Divisions of the St. John Ambulance Brigade on the eve of his departure for France.

The Ballina Board of Guardians at their last meeting granted to their five dispensary medical officers increases of salary of £20 a year each, with triennial increments of £7 10s. until a maximum of £200 per year is reached.

Dr. Fitzgerald of Newtownbutler and Dr. Mance of Burnbrae, Lisburn, who have both recently recovered from serious illness, have been presented by their friends and patients with illuminated addresses accompanied by valuable gifts.

TUBERCULOSIS IN BELFAST.

In his report for the past three years, presented to the Belfast Municipal Committee of Management on hospitals and dispensaries, Dr. Trimble, chief tuberculosis officer, reviews the history of the scheme of the corporation for dealing with tuberculosis. It has been described by the Local Government Board for Ireland as the most comprehensive scheme in Ireland and one of the most complete in the United Kingdom, providing as it does institutional, dispensary, and domiciliary treatment, not only for all insured and exempt persons, but also for all residents in the city suffering from tuberculosis. The total number of persons examined during the period under review was

7,365; of these, 82.6 per cent. were tuberculous, and 7.6 per cent. suspects; the remaining 9.8 per cent. were not tuberculous. Among the tuberculous the disease was pulmonary in 82 per cent. The greatest incidence of the disease was from 15 to 20 years of age. In Belfast and Ireland generally females suffer more; in Great Britain the reverse holds. The hardships associated with poor economic conditions tell more heavily on the female, and with better conditions of living the high incidence on the female may be expected to change. The total cost of the scheme for the year ending March 31st was £30,681. Dr. Trimble, in discussing the advantages of the scheme, points out that though statistics do not show any marked falling off, the educative effect is good.

TREATMENT OF VENEREAL DISEASE.

The decision of the Government to extend to Ireland the measures for combating venereal diseases that have already been adopted and put into operation in Great Britain will entail an important reorganization of the various sanitary authorities in Ireland. Regulations made by the Local Government Board under Section 148 of the Public Health (Ireland) Act, 1878, respecting provision to be made by the sanitary authority for the diagnosis, treatment, and prevention of venereal diseases have been issued to the county boroughs, county councils, governing bodies and committees of management of hospitals and infirmaries, and to boards of guardians; all these bodies will be concerned in the organization and execution of the necessary schemes. In connexion with all approved measures the Local Government Board for Ireland will repay 25 per cent. of the expenditure incurred under the regulations, and as the Royal Commission on Venereal Diseases expressed the opinion that "the conditions now existing, and those which must follow on the conclusion of the war, imperatively require that action should be taken without delay," sanitary authorities are requested to act promptly. The Order empowers the sanitary authority to make arrangements (a) for the treatment at and in hospitals and other institutions of persons suffering from venereal disease; (b) for placing at the disposal of medical practitioners such skilled assistance in the treatment of venereal disease as may be required; and (c) for supplying medical practitioners with salvarsan, or its substitutes for the treatment and prevention of venereal disease. It is understood that the existing hospitals and infirmaries will meet the demands for this treatment. Sanitary authorities are expected to prepare and submit for approval a scheme. Hospitals with which arrangements are made may, in many instances, be prepared to undertake further arrangements for enabling medical practitioners to obtain reports on blood and other materials submitted for examination, and for supplying practitioners with the necessary drugs. Such arrangements might be made in other cases with the authorities of university laboratories and reliable pharmacists. All information obtained in regard to any person treated must be regarded as confidential. The widest publicity is to be given to the fact that facilities for treatment are available for any person affected with the disease, and provision is being made for instructional lectures and for the publication of information on questions relating to the disease as may be thought necessary or desirable.

Canada.

THE MILITARY SERVICE ACT.

The total enlistment in Canada up to July 15th, 1917, was 426,622; the population of males in Canada between the ages of 18 and 45, according to the census of 1911, was 1,720,070. Of the various provinces, Ontario has contributed 40,133 more than its proportionate share, while Quebec is 50,176 behind its share. The Maritime Provinces have failed by 5,554 to send their proportionate quota, whereas the Western Provinces have sent more than their share—Manitoba and Saskatchewan by 7,943, Alberta by 5,448, and British Columbia by 2,206. The first class of recruits under the Act will be called up at the beginning of October, and medical boards are being established throughout the country and arrangements have been made for the immediate examination of men

who present themselves so as to avoid congestion and consequent delay when the Act goes into force. Physicians of military age will be divided into three classes according to their physical fitness—Class A, who will go overseas; Class B, who will be posted for duty in England or at one of the Canadian camps; and Class C, who will serve on the staffs of hospitals in this country.

THE CONTROL OF FOOD.

A recent Order in Council restricts the use of beef and bacon, which must not be served in public eating places on Tuesdays or Fridays or at more than one meal a day. In order to conserve the supply of wheat, substitutes for white bread must be placed on the table whenever the latter is served. The use of canned vegetables is discouraged while fresh vegetables are obtainable. The use of wheat is forbidden in the distillation or manufacture of alcohol, unless such alcohol is to be used for commercial or munition purposes, and any person who desires to use wheat for such purpose must first obtain a licence to do so from the Food Controller.

THE RETURNED TUBERCULOUS SOLDIER.

Some interesting points were brought up at a conference in Ottawa of medical officers in charge of sanatoriums under the direction of the Military Hospitals Commission. All members of the Expeditionary Force, whether they have been overseas or not, who are suffering from tuberculosis, are admitted to these institutions. The discussions centred largely round questions of discipline. It has been found inadvisable to send officers and men to the same institution for treatment, and it was recommended that in future they should be treated in separate sanatoriums. It was also thought advisable that a separate institution should be established for chronic cases, which filled beds in the sanatoriums that should be used for men with a chance of recovery. Incurrigibles, it was thought, should be sent to a detention sanatorium, where discipline could be rigidly enforced.

The opinion was expressed that men on their return to Canada should be allowed to visit their families before entering a sanatorium, as otherwise they might be discontented and perhaps refuse treatment, thereby becoming a menace to the community. Cases had occurred in which men had refused to be treated, and had signed forms releasing the Government of all responsibility towards them, but later had returned and asked to be admitted into the sanatorium. Such men, it was thought, should be treated leniently and allowed to retest, thus receiving pay and allowances. At holiday times, such as Christmas, patients should not be allowed to go home, as experience had shown that at such times they would eat and drink too much and probably suffer a relapse on their return to the sanatorium; leave might, however, be given a little before the festive season, and if the reason for this were carefully explained to the men there would be no difficulty in most cases. It was unanimously resolved that it ought to be made a penal offence for any one to give intoxicating drink to a tuberculous soldier.

It has been the custom of the Medical Board at Quebec to recommend a man for six months' treatment. This has been found to be a mistake, as, at the end of the time stated, the man expects to be cured, and it has been difficult sometimes to keep him in the sanatorium longer than that. It was considered that no definite time should be mentioned. Emphasis was laid upon the great value of occupation both as an aid to discipline and a promoter of health. It took the minds of the patients off their own troubles and even bed cases could do fancy work. The interest they would take in their own work and in getting up little exhibitions was notable.

It was thought that no doctor should be expected to treat more than fifty men, and that an additional medical officer should be provided for every additional forty patients or less. A medical man should not be burdened with any duties beyond the medical treatment of his patients.

SOME time ago it was announced that the medical department of Columbia University, New York, had opened its doors to women students. Eight have entered for the current session. Harvard, which also proposed to admit women to its medical school, has, it is stated, withdrawn its offer, only one woman who was regarded as a desirable student having presented herself.

Correspondence.

BACTERIOPHORIA (CARRIAGE OF BACTERIA BY "CARRIERS").

SIR,—There are diseases the bacteria of which may be present in persons who do not themselves exhibit the symptoms of any disease; such a person may have recovered from the disease of which he has the bacteria or may never have shown any symptom of it. Yet such a person is or may be capable of conveying the bacteria present in himself to other persons, who may thus become infected with, and suffer from, the disease producible by the bacteria conveyed. These persons are commonly called *carriers*. The word *carrier*, unaccompanied by any reference to the thing carried, is insignificant; *germ-carrier* or *germifer* may be suggested in substitution; but for reasons which in the pages of this JOURNAL I need not set forth, neither can be regarded as scientific. I propose that the conveying persons above described should be called *bacteriophorous*. If this name be accepted, the state will be called *bacteriophoria* and the conditions *bacteriophoric*. It will be convenient to explain the manner in which the names have been arrived at.

The use of *phoros* in compounds, to signify bearing or carrying, is well established by such words as *δορυφόρος* (spear bearing or carrying) and *ὄπλοφόρος* (bearing, carrying, or wearing arms), most of which are used also as substantives. By uniting it with *βακτήριον* (bacterium, regarded as the singular of bacteria) we get the word *βακτηριοφόρος*. And as the Greek termination *os*, represented in Latin by *us*, becomes in English *ous* (*ἄμορφος*, for example, becoming *amorphous*, and the Latin *garrulus* becoming *garrulous*), the English equivalent must be *bacteriophorous*. Then, from the coined word *βακτηριοφόρος* can be formed, to describe the state, process, or involuntary act of carrying bacteria, the word *βακτηριοφωρία* (*bacteriophoria*), by analogy to the formation of such words as *θυρσοφωρία* (a carrying of the thyrsus or Bacchic wand, from *θυρσοφόρος*). And, again, by analogy to the formation of such words as *φιλικός* (of or for a friend, belonging or suitable to friendship, from *φίλος*, *φιλία*), can be formed, to describe the conditions or circumstances, the word *βακτηριοφορικός* (*bacteriophoric*).

I may add that *bacteriophorous* persons can be called the *bacteriophorous*, just as *scrofulous* persons are called the *scrofulous*, or perhaps the substantive, *bacteriophore*, might be admitted.

Finally, I may be allowed to say that I have written this letter merely on account of the objections which I entertain to the use of the word "carriers," which, besides being strictly meaningless, is in truth little better than slang, and in the hope that it may become disused.—I am, etc.,

October 29th.

M. G. D.

THE REMUNERATION OF RURAL PRACTITIONERS.

SIR,—Recently some letters have appeared with regard to the remuneration of rural practitioners. A big change has taken place in my particular district, the population of which has decreased about 500 in the last ten years, and during that period the number of doctors has fallen from twelve to six, and of these six, two have gone to the war. The district is purely agricultural, with the exception of one small area. There must be some reason for these remarkable figures, and I think that is to be found in the finances of country practice.

The advertisements in the JOURNAL of practices for sale seem to show that the average receipts of purely agricultural practices are quite half those of the town. Yet the expenses are certainly more in the country, as a motor car or other means of conveyance is a necessity and not a convenience as it is in a town. Under the National Insurance Act town and country patients are paid for at the same rate, and, although there is less sickness in the country, there is more work and more highly-skilled work. It is quite probable some of the town practitioners will be inclined to dispute these points, but I have gone into the first with my town friends, and I find that although the number of consultations are more in the town, the visits are much more in the country. The

reason for this is obvious when one considers the number of chronic cases in which a walk along a well-paved foot-path of a quarter of a mile is possible, but in which two or three miles of bad, possibly hilly, roads would be out of the question. Moreover, many patients whose health has hopelessly broken down leave the towns and retire to the country, and require medical attendance for the rest of their lives. This applies with especial force to consumptives. As to the second point, that more skilled work is demanded, the absence of hospitals in the country means that nearly every case which in the towns would go to the hospitals has to be treated by the local man single-handed, with the possible help of a neighbour. A cottage hospital may lessen the amount of travelling, but does not usually affect the responsibility. "Rus in Urbe," in your issue of October 20th, points out that discharged soldiers and sailors and temporary residents are paid for at the same rate in the town and country, and mentions the observation of a "leader" of our profession that a good many attendances at even a small fee will amount to a considerable sum. I am attending now a discharged soldier living three miles away. It costs me at least 5d. a mile to run my car in this hilly country; I shall be paid 2s. 6d. each visit, or to speak more accurately some indefinite sum less than 2s. 6d., and I cannot see how a good many attendances will leave me better off. This particular case was a private patient before the war and always paid a reasonable fee.

I am well aware that country practice has its charm; the fact that we are seldom able to throw the responsibility of our serious cases upon the broad shoulders of a consultant or hospital is in itself a strong incentive to the constant study of our profession. But we ought to be paid a living wage for the work we do for the Government. It is our private patients that enable us to live, and it is only because we are afraid of losing these that we take insurance work. Even with our private practice, something more is often required. My practice, as a country practice, would be called a good one, but with every economy I could not live without my private income.—I am, etc.,

October 31st.

A COUNTRY DOCTOR.

THE CURE OF INGUINAL HERNIA.

SIR,—In his paper in the BRITISH MEDICAL JOURNAL of October 27th Lieut.-Colonel A. J. Hull, F.R.C.S., has described a form of herniotomy which he apparently considers quite original, but as a matter of fact it resembles in all its essential features the procedure which I have performed in a large proportion of my cases during the past fifteen years. As this operation is fully described in my work on operative surgery (p. 205 et seq.) I need not allude to it more fully. Like Lieut.-Colonel Hull, I sometimes operate with local anaesthesia, but as a rule I prefer a general anaesthetic.—I am, etc.,

EDWARD H. TAYLOR, F.R.C.S.I.,

Regius Professor of Surgery, University of Dublin.

Dublin, Oct. 31st.

SCOTTISH NON-PANEL DOCTORS AND A MINISTRY OF HEALTH.

SIR,—There appeared in the BRITISH MEDICAL JOURNAL of November 3rd, p. 602, a report of the annual meeting of the Medical Guild, in which the statement occurred that it is "an organization of non-panel practitioners for the purpose of opposing the National Insurance Act." I shall be obliged if you will allow me to say that this statement is inaccurate. The policy of the Guild is not, and never has been, to oppose the National Insurance Act, but the Medical Benefits Section of that Act as at present administered. The following is the policy of the Guild on this question:

1. To maintain the freedom of the profession in its professional and personal relations with the public.
2. To encourage the public to maintain a corresponding freedom.
3. To oppose the method of administration of the medical benefits under the National Insurance Act in so far as it interferes with such freedom.

These are also incorporated in the policy of the National Medical Union, of which the Guild is a federated body.—I am, etc.,

FREDERICK PORTER,
Hon. Sec. the Medical Guild.

Edinburgh, Nov. 6th.

PANEL DOCTORS' REMUNERATION.

SIR,—In your issue of the JOURNAL for October 27th, under the heading of "Panel doctors' remuneration," it is stated that Sir E. Cornwall said, in reply to a question by Mr. Snowden, M.P.:

In the great majority of cases the final payments for the year 1916 had been made, and in those areas where some balance was outstanding the amount would only be small, as the sums which had been advanced monthly or quarterly during the year would have approximated closely to the total sums which would be found to be due on the final settlement.

This surely does not apply to the Pembrokeshire area, since the panel practitioners only received, for 1916, 5s., instead of 7s.—namely, 1s. 3d. per quarter instead of 1s. 9d. The balance due cannot be considered a small one.—I am, etc.,

CHAS. A. BRIGSTOCKE,

Honorary Secretary Pembrokeshire Local Medical and Panel Committees.

October 31st.

Obituary.

SIR DAVID C. McVAIL,

CONSULTING PHYSICIAN, ROYAL INFIRMARY, GLASGOW.

We regret to announce the death, on November 4th, of Sir D. C. McVail, at his residence in Glasgow. Though in his 73rd year, the war had brought him back to active hospital work, and he was attached to two war hospitals. He rejoiced in being able to do such work, but it was a severe strain upon his strength. He continued to work while suffering from a cold, which was followed by pneumonia, to which cause his death was due.

David Caldwell McVail was born at Kilmarnock in 1845, and received his early education from William Gunnyon, an erudite classical scholar, and afterwards under Donald Ferguson, one of the foremost teachers of Kilmarnock Academy. He began his medical studies by becoming apprenticed to a local druggist. He received his medical education in Glasgow, first at the Andersonian College, and afterwards in the University. He took the diploma of L.R.C.P. Edin. in 1866, and subsequently held the office of house-surgeon to the Alnwick Infirmary down to 1871. In 1876 he graduated M.B. Glasg., and in 1877 was elected Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow. He succeeded Dr. Eben Watson as professor of physiology in the Andersonian College, but in 1880 co-operated with Dr. Knox and Dr. Reid in founding the Western Medical School, in which he held the lectureship in the practice of medicine and was at the same time dispensary physician to the Western Infirmary. At this period he engaged in original research, the results of which were published in a course of lectures on the mechanism of respiration in normal and abnormal conditions, which was honoured by a Faculty honorarium of fifty guineas. In St. Mungo's College, of which in 1889 Dr. McVail was one of the founders, he became professor of clinical medicine, and at that time was appointed physician to the Royal Infirmary, continuing to hold both posts until 1906.

By his accomplishments as a physician he gained a large practice, and by the interest he showed throughout his life in university affairs and in medical reform in many directions he became an acknowledged leader of the profession in Glasgow. He was a member of the Glasgow University Court for nearly a quarter of a century, and took a leading part in its business. Before this he had been largely instrumental in obtaining the Act of 1889, embodying a scheme for university reform which revolutionized the university life of Scotland; it resulted in raising the standard of teaching and in the establishment of several new chairs and many lectureships. He was appointed a Crown representative for Scotland on the General Medical Council in 1892, and when he retired after twenty years' service was succeeded by his brother, Dr. J. C. McVail, vice-chairman of the National Insurance Commissioners in Scotland. Both on the General Council of the University and on the General Medical Council Sir David McVail was a frequent and effective speaker; his influence was due, as he himself said, mainly to the fact that he never took up any subject without having mastered every detail and circumstance bearing upon it. He was no respecter of persons or precedents, but subjected every proposal to the test of common

sense, and the keen critical spirit with which he was so amply endowed.

He received the honour of knighthood in recognition of his public work in 1910. He is survived by Lady McVail, by a son, who is a member of the medical profession, and a daughter.

T. T. WHIPHAM, M.D., F.R.C.P.,

CONSULTING PHYSICIAN TO ST. GEORGE'S HOSPITAL, LONDON.

Dr. THOMAS TILLYER WHIPHAM died on November 3rd at the age of 78, at Hatherleigh, a Devonshire village to which he had retired some years ago. He was the son of Mr. T. H. Whipham of Lincoln's Inn, and was educated at Rugby, and Oriel College, Oxford. He graduated M.B. Oxford in 1866 and proceeded M.D. in 1888. During his whole professional life he was associated with St. George's Hospital, holding in succession the appointments of demonstrator in anatomy, curator of the museum, and lecturer on botany, pathology, and medicine. He was first assistant physician and afterwards physician to the hospital, and on his retirement was appointed consulting physician. He became a member of the Royal College of Physicians in 1866 and a Fellow in 1873; he was censor in 1894 and senior censor in 1901. He had been physician to the Atkinson Morley Convalescent Hospital and examiner in medicine to the University of Oxford and to the Conjoint Board of the Royal Colleges in England. Dr. Whipham was for many years an active worker, especially in the *post-mortem* room, and frequently took an effective part in the proceedings of the Pathological Society, the fortnightly meetings of which used to be so largely attended. After his retirement he was seldom seen in London, and devoted himself to country pursuits. He was a J.P. for the county of Devon.

THE death occurred at Eton, on November 1st, of Lieut.-Colonel WILLIAM AUGUSTINE ELLISON, Surgeon Apothecary to His Majesty's Household at Windsor Castle, and Consulting Physician to King Edward VII Hospital, Windsor. He was born in 1855, and was the eldest son of the late Dr. James Ellison of Windsor. He was educated at Eton, University College, Oxford, and St. George's Hospital. After taking the diploma of M.R.C.S. Eng. in 1882 he graduated M.B. Oxon. in 1884, and proceeded M.D. in 1895. Dr. Ellison was a remarkable athlete in his younger days. Besides winning distinction as a footballer and gymnast he rowed twice in the Eton eight, was thrice in the head of the river crew at Oxford, rowed against Cambridge in 1878, and won many rowing and sculling prizes at Oxford and at Henley. His career as an oarsman culminated in 1880, when he stroked the Leander eight for the Grand Challenge Cup. After serving as assistant medical registrar at St. George's Hospital he was appointed surgeon apothecary to Queen Victoria's household at Windsor Castle in 1888, and was reappointed by King Edward and by King George. In the Nineties he was acting resident physician to Queen Victoria at Balmoral. He was a member of the Eton College Medical Board, vice-president of the Medical Officers of Schools Association, and vice-president and member of council of the National League for Physical Education. For many years he was associated with the volunteers, and commanded the first volunteer battalion of the Royal Berkshire Regiment, later known as the 4th battalion (3rd line) Royal Berkshire Regiment, Territorial Force. The funeral took place at Eton Cemetery on November 5th, when Canon Sheppard, Subdean of the Chapels Royal, officiated, assisted by the Vicar of Eton.

Universities and Colleges.

UNIVERSITY OF LEEDS.

THE University of Leeds has received with great regret the resignation by Professor A. S. Leyton of the Chair of Pathology and Bacteriology in the University. In accepting this resignation, the University Council has taken the opportunity of recording its high appreciation of the valuable services which Professor Leyton rendered to the university during his tenure of the chair. The question of the appointment of a successor is at present occupying the attention of the university authorities.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual meeting of the Fellows and Members is summoned to meet at the College on Thursday next at 3 p.m., when the annual report will be presented. We mentioned on October 20th that the Society of Members had suggested that, in view of the present great pressure on the time and money of medical men at home and the absence of so many members abroad on His Majesty's Service, the meeting should not be held. The Council of the College decided otherwise, but at the annual meeting of the society on October 30th the action of its council was confirmed. Consequently no resolution will be submitted on behalf of the society at the meeting and no attempt made to attend or obtain a quorum.

CONJOINT BOARD IN ENGLAND.

REVISED REGULATIONS FOR THE PRELIMINARY EXAMINATION.

THE revised regulations of the Royal Colleges of Physicians and Surgeons in England relating to the Preliminary Examination required for the diplomas of the Royal Colleges come into force at once. Latin is now an optional subject, and a larger range of optional subjects has been adopted. A candidate must pass in: (a) English; (b) mathematics; (c) one of the following languages: Latin, French, Russian, German, Italian, or Spanish; (d) a second language selected from the foregoing list or one of the following subjects: higher mathematics, experimental mechanics, chemistry, physical geography, physics, botany, biology, geology.

The Services.

EXCHANGE.

CAPTAIN R.A.M.C., who has served a year in France at a base hospital, desires an exchange for the winter months with a medical officer in England.—Address, No. 3600, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Medical News.

MR. O. F. N. TREADWELL, F.R.C.S., assistant medical inspector of prisons, has been appointed one of the Commissioners under the Prison Act, 1877.

PROFESSOR S. D. ADSEAD, F.R.I.B.A., will lecture at University College, London, on November 15th, at 5.30 p.m., on "Some general aspects of town-planning after the war," under the presidency of Sir William Collins, M.D., M.P., chairman of the Chadwick Trustees.

THROUGH the generosity of Miss Chalmers, a block for incurables has been opened in the beautiful grounds of the Christchurch Hospital, New Zealand. The block consists of three stories, and from its roof there is a magnificent view of the plains and surrounding mountains.

DR. CHRISTOPHER ADDISON, M.P., Minister of Reconstruction, will give an address on "Health problems and reconstruction" at a meeting which the Faculty of Insurance has arranged at the Central Hall, Westminster, on Saturday, November 24th, at noon. Mr. Kingsley Wood, L.C.C., will preside.

A SERVICE was held on November 2nd, in the chapel of the National Hospital for the Paralysed and Epileptic, Queen Square, Bloomsbury, in commemoration of founders' day. The service was conducted by Canon Edgar Sheppard, and among those attending were Lord Beauchamp, president of the hospital, Sir Frederick Macmillan, Dr. James Taylor, and Sir James Crichton-Browne.

THE following are among those recommended for election into the Council of the Royal Society on November 30th: Dr. Hugh Kerr Anderson (Cambridge); Professor G. C. Bourne, Linacre Professor of Comparative Anatomy, Oxford; Dr. A. R. Cushny, Professor of Pharmacology, University College, London; Dr. W. H. Lang, Barker Professor of Cryptogamic Botany, University of Manchester; Dr. W. H. R. Rivers (Cambridge), and Professor C. S. Sherrington (Oxford).

THE American Red Cross in France has arranged to publish a small monthly journal, the *Medical Bulletin*, containing abstracts of articles appearing in British, French, and American periodicals. This journal will be distributed free to American medical officers, and to officers of other armies on request. The arrangements are in the hands of Dr. Kenneth Taylor, director of the Robert Walton Goelet Research Fund, 6, Rue Piccini, Paris.

RECENTLY published official statistics show that in 1911 the number of deaf-mutes in Italy was 27,608, and of blind

persons 28,357. As regards the regional distribution of deaf-mutism, Lombardy headed the list with 5,363. Piedmont coming next with 3,496. The largest number of blind persons was in Sicily, where the number was 3,462, Tuscany coming next with 2,705.

A SERIES of seven drawings of the London Hospital, by Mr. Hanslip Fletcher, have been reproduced in gravure by Messrs. W. H. Benyon and Co., Cheltenham. They include sketches of the characteristic heavy main front of the hospital, a view from the garden, and a view of the medical college. There are four drawings of interiors—the great hall of the out-patients' department, the receiving room, the lupus light room, and the library of the medical college. The drawings are excellent examples of Mr. Fletcher's skill in interpreting architectural features, and will appeal strongly to old students of the hospital. The subscription price for artist's signed proofs on India paper, with plate paper mounts, is 42s. the set (portfolio 5s. 6d. extra). In this form they can be sent abroad. The publishers will supply them in this country in oak frames at an extra charge of 31s. 6d. the set.

DR. T. BRAILSFORD ROBERTSON, professor of biochemistry and pharmacology in the University of California, has executed a deed, giving to the university all his patent rights in tethelin. This substance, extracted from the anterior lobe of the pituitary body, is reported, as was noted in the *JOURNAL* of September 29th, p. 430, to have a remarkable influence in accelerating the growth of granulation tissue. It is stated to be of value in curing wounds and in causing old-standing wounds to heal promptly. The profits resulting from the sale of tethelin are to constitute an endowment, vested in the regents of the University of California, who will apply the income to medical research. The researches will be supervised by a board of directors. The University of California believes that the establishment of this foundation may serve as a pattern of procedure by which others may dedicate the results of their scientific discoveries to the benefit of mankind as a whole.

A MEETING of the West London Medico-Chirurgical Society was held under the presidency of Dr. A. J. Rice-Oxley at the West London Hospital on November 2nd, when several cases of interest were shown. Major McAdam Eccles demonstrated by means of photographs and microscopic slides an unusual case of hermaphroditism. The subject had the external sexual characteristics of a female, but testes in a low state of development were present and a uterus was absent. Drs. Grainger Stewart and Reginald Morton showed a case of oesophageal diverticulum, in which some of the symptoms in this condition, usually regarded as cardinal, were absent. The pouch was excellently seen in the skiagram. Dr. Morton also showed a skiagram of a stomach distended with a large hair ball, in which the diagnosis was made by means of x-rays and afterwards confirmed at operation. Mr. Aslett Baldwin showed a man who had been operated on for the removal of calculi in both kidneys and the left ureter and now had hernial protrusions from all three operation wounds; he had, moreover, quite recently submitted to operation for radical cure of left inguinal hernia. Drs. A. E. Saunders, Souttar, Owen, Pernet, and Quesada exhibited other cases, or skiagrams of cases, the latter in conjunction with Dr. Morton. Discussion followed.

AN annotation in the current number of the *British Journal of Ophthalmology* makes out a strong case for reform in the regulations for eyesight tests laid down by various departments of State. It is stated that while visual acuity, for instance, is gauged by Snellen's test types, nothing is done to ensure that the conditions under which the tests are applied shall be comparable to the standards. No official regulations of any department state the illumination of the standard. This is unfair to the candidates for Civil Service appointments. If an appeal from the decision of the ordinary examiners is allowed the candidate may have to pay a fee for the further examination, yet the conditions under which such appeal examinations are carried out often, it is stated, leave much to be desired. The remedy proposed by our contemporary is that the many regulations relating to eyesight now in force should be revised by a committee of experts appointed by the Government after consultation with the Ophthalmological Society and the Ophthalmological Section of the Royal Society of Medicine, and that this committee should act as a standing committee of reference which all departments should be required to consult. It is proposed also that one central properly equipped examination hall, provided with dark rooms, laboratories, and so forth, should be available for the use of all departments.

Letters, Notes, and Answers.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and *JOURNAL* are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera*, Westrand, London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

A CORONER ON THE DUTIES OF MEDICAL MEN.

AN inquest was held on October 20th, at Nuneaton, on a boy aged 9, who died from convulsions due to acute gastritis set up by eating raw apples. The father's evidence was that on October 16th the boy was indisposed, and during the night vomited pieces of raw apple. Next morning the boy was no better, but witness did not think it necessary to fetch a doctor, and, although the vomiting continued during the next day, he still did not think a doctor was needed. The following night the boy had a fit, and witness went for a doctor, who said that he did not go out at night, but suggested that the child could be brought to him wrapped in a blanket, or that another doctor should be called in. The next morning the medical man was sent for again, but when he arrived at midday the boy was dead. The medical man, in reply to a question from the foreman of the jury, said that he had been working very hard the previous day until the early morning. The coroner then observed that there was an erroneous idea abroad that a doctor was bound to attend a patient as soon as called. He pointed out that a doctor must have some rest. In this case the medical man had quite exonerated himself by telling the father to call another doctor, or bring the lad to him. The coroner's remarks seem to have had a steadying effect upon the jury, who brought in a verdict in accordance with the medical evidence, and expressed the opinion that the father would have acted more wisely if he had called in other advice.

GLYCERIN IN THE TREATMENT OF WOUNDS.

MAJOR C. W. DUGGAN, R.A.M.C., O.C. Military Hospital, Lincoln, writes: In 1916 I used liquid paraffin as a substitute for glycerin in the treatment of gunshot wounds, but I found that healing was delayed by its not proving a satisfactory application for osmotic action. The various pastes recommended have the same drawback. Provided necrosis, foreign bodies, etc., are removed from a wound, and one of the many much advertised antiseptics is used, suppuration occupies a very limited period in the healing of a large gunshot wound. It is in the second stage that glycerin with an antiseptic is so useful, and for it there is in my opinion no substitute. Most observers omit all reference to osmosis in the healing of wounds.

GERMAN "SCIENTIFIC" WARFARE.

SOME time ago Dr. Georg Friedrich Nicolai, formerly physician to the Imperial family of Germany and Professor of Physiology in the University of Berlin, was condemned to reduction in military rank, detention in a fortress, and confiscation of his property by way of punishment for the publication of a book on the biology of war. In it he described the degradation of the German military character caused by the war. In illustration he stated that a military officer of the highest rank had asked him whether it would be possible to throw behind the enemy's lines bombs containing cholera germs or plague bacilli. On the professor's reply that such a procedure would be inhuman, the officer contemptuously replied: "In this war humanity has no place and it is lawful for Germany to do everything that may be to her advantage." Nicolai adds that millions of Germans are of the same way of thinking. A doctor on the General Staff asked him whether it would not be possible to inoculate Russians with bacteria, adding, "With such cattle, everything is lawful."

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The FitzPatrick Lectures ON MEDICINE IN ENGLAND DURING THE REIGN OF GEORGE III.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS
OF LONDON.

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I. GENERAL CONDITIONS—MEDICAL EDUCATION.

THE sixty years of the reign of George III witnessed vast intellectual changes which closed for ever the long period of feudalism. They saw the practical application of methods of thought which had been taking definite shape for the previous hundred years. They heard the death knell of principles which had enthralled and fettered Europe for centuries, and they saw the foundations laid of those conceptions of civil and intellectual liberty which have since governed the world. It was an age in which the principle was firmly established that free inquiry was the only sure road to the advancement of knowledge, toleration of opinion, and liberty of action.

But although this spirit of free inquiry was abroad in the land, and although its cause was championed by some of the mightiest intellects of that or any other age, yet for a considerable time its victory hung in the balance. Its full fruition was postponed for a number of years, for, in the course of its advance, the spirit of free inquiry met with a most powerful and determined opposition in a reactionary spirit which stood sullenly at bay, and during the last thirty years of the eighteenth century nearly succeeded in wrecking the whole movement.

This age is, perhaps, better known to us than any other in the annals of our history, and its close proximity to our own will surely elicit a measure of our interest and sympathy. The opulence of its literature has made us familiar with its customs, its manners, its great men, and its great women. The lives led by the people of that time, their formal old-world courtesy, their robustness of character, even their foibles, all appeal to us, and occupy a share of our affections. Then, again, the age of George III is adorned by some of the greatest names this country has ever produced. It is hallowed by the memory of Burke the first of political philosophers, of Fox the foremost champion of civil and religious liberty, of the stately Gibbon, of the endearingly simple Goldsmith, of the quartette of great Scotsmen, Hunter, Hume, Adam Smith, and Robertson, and of the commanding and representative personality of Johnson, better known, and dearer to us, perhaps, than any other.

If the foregoing be admitted as a true interpretation of the spirit of the age of George III; if it be granted that this age witnessed great general changes in thought and action, great advances in human progress, and the germs of that social and intellectual state under which we at present live, then it will surely follow that the same processes were in operation in the particular realm of medicine, and produced most important changes therein. It becomes, therefore, a matter of interest and profit to trace these changes; for I venture to think we shall find evidences, in such a study, of the inception of many customs, methods, and theories which have become accepted facts at the present time.

In order to accomplish this purpose it is proposed to attempt a description of the state of medicine during this period.

The proper appreciation of the particular quality of medical thought during the reign of George III involves a consideration of all thought and literature at that time. The last half of the eighteenth century was an age of transition, in which the human intelligence refused to be satisfied with mere speculations, in which it objected to accept ideas as true on the *ipse dixit* of so-called authority, and in which it evinced an overmastering craving for proof. In the second half of this century doctrines which had withstood the assaults of ages were seen to crumble and wither when subjected to the unrelenting process of investigation founded on a secure scientific basis. The same scientific method carried the thoughts of men to heights hitherto unscathed, and opened up vistas of knowledge never

before conceived. The honour of having wrought this change in thought belongs to the French school, of which the chief exponents were Voltaire, Montesquieu, and Rousseau. These men nurtured and brought to fruition the spirit of free inquiry and toleration, and although they borrowed the idea from Locke, Hobbes, and others in this country, they are nevertheless entitled to praise for having clothed it with their genius and imagination.

The first evidence of a change came in the domain of historical writing. Owing to the influence and incessant labours of Voltaire, history for the first time came to be written from a rational standpoint. In his *Le Siècle de Louis XIV* for the first time it was no longer a narration of the trivial acts and peculiarities of kings and captains, but an exhaustive inquiry into the manners, customs, and economic conditions governing the destinies of peoples. After this almost every branch of literature and thought was involved in the same change, until in the closing years of the eighteenth century was witnessed the final emancipation of the human intellect, the last struggles of feudalistic principles, and the dawn of civil, intellectual, and religious freedom. This beneficent stream of unfettered thought was at first without channels, and, with the flood-gates wide open, it bid fair to swamp the very things it was intended to conserve and foster. But as time went on it became more and more directed, until early in the nineteenth century it was so controlled that its full benefits became manifest in every department of life and thought. In a word, the spirit of scientific inquiry became universal, and the days of mere speculation were numbered.

When we come to consider the evolution of medical thought during this epoch, little difficulty is experienced in instituting a parallel with the change that had taken place in intellectual Europe. Until the end of the eighteenth century the spirit of scientific inquiry and the desire to appeal to facts ascertained by experiment did not influence medical thought to any great extent. Harvey, the glory of this College, was so in advance of his time that he was doomed to wait a century for that suitable soil on which his seed could come to fruition. Indeed, we are forced to the conclusion that medical thought during the first half of the eighteenth century accomplished scarcely anything that has withstood the test of time. The theories of medical science then promulgated were often the results of metaphysical speculations, and little or no attempt was made to submit them to the supreme tests of scientific proof. For this reason the systems, raised up with so much labour, and at the expense of such great philosophical ability, were soon swept away when tested by the experimental method.

After giving due attention to these various systems, it must be confessed that one rises from the task with a feeling of sadness—sadness that such powerful intellects wasted their abilities on work calculated so little to contribute to the real advancement of medical knowledge. Indeed, to express shortly our view of the effects produced upon medicine by the systems, we might, with slight substitution of words, adopt a passage from Lord Morley's *Voltaire*, and say, "For all the systems we see only dismal tracts of medical darkness, we hear only the humming of the doctors, as they serve forth to men thirsting after knowledge, the draft of a medical superstition."

The comparative absence of medical advancement during the first half of the eighteenth century can scarcely cause astonishment if the particular education and environment of physicians at that time be taken into account. Those who championed the new scientific method of inquiry were never weary of pointing out that much of the inability of thinkers to advance, and many of the misconceptions that had arisen concerning the fundamental principles of life, were largely due to the influence of the particular teaching then in vogue. They pointed out that a system of teaching which directed mental activities to the fixed and the past, was not conducive to an intellectual training for the purpose of advancing on new, and therefore untrodden, paths of thought. If this be true, there can be no doubt that physicians, during the early years of the reign of George III, lacked, as a rule, that particular kind of training, for they were largely under the influence of this special form of teaching. In many of them erudition in classical attainments far outweighed their eminence in medicine, and was, indeed, their chief claim to distinction. Their special mental training encouraged them to place more reliance upon speculative theorizing concerning

disease than upon the meaning of facts and conditions observed at the bedside and on the *post-mortem* table.

But a change for the better was close at hand. Early in the reign of George III the work of Morgagni began to produce an effect upon medical thought in England, and soon many physicians were engaged in obtaining a real knowledge of disease from the study of morbid conditions found after death. The logical consequence of the work of Morgagni found expression in the labours of Baillie and Bichat, both of whom carried the subject forward. These prominent men were the real fathers of modern pathology and medicine. They occupied positions similar to those of Voltaire and Montesquieu in thought, Burke in politics, and Newton in natural philosophy. They were bold innovators, who swept away an ancient order of things which had long cumbered the ground and defied advance. They established on lines never since departed from, the only rational study of disease. Our debt to them can scarcely be expressed in words.

II. THE CONDITION OF THE MEDICAL PROFESSION IN THE EIGHTEENTH CENTURY.

Having thus summarized the general state of medical thought as it existed at the beginning of the reign of George III, it now becomes necessary to study the more intimate conditions found in the medical profession at that time.

During this reign the medical profession was divided into three grades—physicians, surgeons, and apothecaries. In London, and for seven miles around, these three divisions were governed respectively by the College of Physicians, the Corporation of Surgeons, and the Society of Apothecaries. But beyond this area none of these bodies exercised any very effective control over its members and its privileges. It therefore came to pass that many practitioners resided in the provinces who owned no allegiance to those bodies, and often possessed no legal title to practise either medicine or surgery.

The Ratio of Practitioners to Population.

It is difficult to arrive at any correct estimate of the numbers of practitioners in England at this time, for although the registers of the three licensing bodies can be consulted, they contain a small proportion only of the total. There is, however, one important source of information from which a fairly accurate estimate of the numbers engaged in practice can be obtained. In 1779 Dr. Samuel Foart Simmons, physician to St. Luke's Hospital, published the *Medical Register*. This was the first attempt to gather into one volume particulars of the medical profession and its activities. Unfortunately, only three issues were made, but in the last, which appeared in 1783, data are found from which an estimate of the numerical strength of practitioners resident in England may be made. From an investigation of this invaluable book, only three copies of which are known to exist in London, it is ascertained that in 1782 4,459 medical men were resident in England and Wales, to serve a population estimated at 7,814,327 souls, or one medical man for every 1,752 people. Of this number, 774 doctors were resident in London, with an estimated population of 650,845, or one medical man to every 840 inhabitants. The subject of overcrowding in the medical profession has been ventilated frequently of late years, but when the ratios just given are compared with those obtaining at the present day, no very marked difference will be found. At the present time about 25,000 practitioners in England and Wales serve a population of about 36,000,000, or one to every 1,440 people, while in London about 6,500 doctors attend about 4,500,000 people, or one to every 705 inhabitants. The author of *A Picture of the College of Physicians* estimated that in 1817, London, with a population of 1,100,000 had in residence 1,098 doctors, or one to every 1,000 people. Nor can it be said that the scale of remuneration for medical services rendered has altered to any considerable extent. Physicians in those days charged a guinea, at a time when the purchasing power of the sovereign was far greater than it is now. Indeed, it may be safely stated that a relatively larger number of physicians secured a handsome competence from the practice of their profession in the reign of George III than is the case at the present day, while some, such as Lettsom, Warren, Simmons, and Battie, realized large fortunes.

According to the *Medical Register* for 1783, London contained 149 physicians, 274 surgeons, and 351 apothecaries. This return takes no account of many who, owing to the laxness of supervision, sold drugs and practised surreptitiously without any proper authorization, and the same remark applies with greater force to the provinces. The College, jointly with the Master and Wardens of the Society of Apothecaries, had the power of supervision over drugs sold by apothecaries, but towards the latter part of the eighteenth century a new order had arisen, which, as we shall see, made it necessary to recast the laws and regulations governing the apothecaries. This new order was the druggists, and over these neither the College of Physicians nor the Society of Apothecaries had any jurisdiction.

An investigation of the composition of the College of Physicians, and of the parts of London favoured by those belonging to it during this reign, is of considerable interest. In 1746 the College was composed of 54 Fellows and 24 Licentiates. Of these, 47 resided in the City and 14 in the west end. In 1782 there were 43 Fellows and 74 Licentiates, of whom 35 lived in the City and 42 in the west. The migration from the City to the west had now begun to be marked, and in 1817 out of 89 Fellows and 224 Licentiates, 32 only lived in the City, while 105 practised in the west. From this time the exodus from the city progressed steadily, until at the present day two Fellows only remain to uphold the honour of the College in the heart of the greatest city in the world.

An examination of the number of Fellows and Licentiates admitted is also instructive. From 1760 to 1820 inclusive, 128 Fellows were created, or an average of 2.1 per annum, and during the same period 416 Licentiates were admitted, or an average of 6.9 per annum. During the last thirty years of George III's reign the influx of Licentiates became pronounced, and at the end of the reign they outnumbered the Fellows in a proportion of nearly three to one. The preceding account will, I trust, give a sufficient description of the numerical state of the profession, and will indicate the relatively small numbers of which it was composed.

Medical Laws and Regulations.

I now proceed to a consideration of the laws and regulations under which the medical profession worked at this period. No central authority possessing powers under parliamentary Acts existed, but the three corporate bodies of the College of Physicians, the Corporation of Surgeons, and the Society of Apothecaries respectively exercised jurisdiction over the physicians, the surgeons, and the apothecaries. But even then the power to assert authority by these bodies was limited and often exhibited in a lax manner. As might be supposed, their charters, granted in a bygone age, were ill adapted to new and constantly changing conditions. They referred rather to the profession resident in London, and contained no strict provisions for the governance of those of their members who resided in the provinces. The College of Physicians had ample authority over all physicians engaged in practice in London, and no physician could pursue his vocation in the metropolis and seven miles around without a licence from the College after having been duly examined. Also, by the first statute (14 and 15 Henry VIII. c. 5), which confirmed the charter, the College was given power to examine and grant a licence to all physicians in England, with the important exceptions of graduates in medicine of Oxford and Cambridge. Over them it had no jurisdiction so long as they practised in the provinces. Previous to the granting of the first charter of the College, the right had been conceded to the Bishop of London and the Dean of St. Paul's, with the assistance of physicians and surgeons, to examine and grant licences to those wishing to practise. The same right was also given to a bishop or his vicar-general in the provinces. Even so late as 1687 some bishops continued to exercise this right, and the practice was not discontinued until the College issued a warning on the subject to each bishop. In addition to its other powers, the College was possessed of the right of entering apothecaries' shops in order to inspect the drugs sold.

In much the same way the Corporation of Surgeons and the Society of Apothecaries exercised jurisdiction over members of their bodies, but the control was far less efficient than that of the College. In London it was fairly effective, but in the provinces it left much to be desired.

This failure of control, especially so far as regarded the Society of Apothecaries, was due to the fact that it had no authority over those who were not members of the society. Consequently a large body of practitioners came into existence, and soon caused considerable alarm. These men were not members of any legally constituted body; they held no diploma entitling them to practise medicine and surgery; but, nevertheless, they carried on their business without let or hindrance. Soon they formed the majority of the medical profession, but no power existed by which they could be brought under control. In London these buccaneers of the profession could be dealt with efficiently, but not so in the provinces. According to John Mason Good, these men were merely druggists who, in addition to selling drugs, compounded and dispensed medicines, and practised medicine and surgery. They sold pure drugs to the apothecary, but reserved the impure drugs for their own use. They were unversed in Latin, and could not, therefore, read prescriptions. They first made their appearance at about the end of the seventeenth century, and towards the end of the eighteenth century they had become so numerous that it was felt on all sides that something should be done to bring them under some sort of control.

The Apothecaries Act, 1815.

The result of this incursion of unqualified and ignorant men into the medical profession was the passing of the Apothecaries Act in 1815, but before that could be done public opinion had to be roused concerning the danger. In this agitation for a better state of things the names of John Mason Good and George Man Burrows stand out prominently, and it was owing almost entirely to their powerful advocacy that the reform was brought about. The former founded the "Pharmaceutic Association" in 1794, while the latter was responsible for the "Association of Surgeon-Apothecaries," both being devoted to the improvement of the position of that branch of the profession. If they received no encouragement, at least they met with no active opposition from the Colleges of Physicians and Surgeons, and soon the labours of the two associations bore fruit. On August 1st, 1815, the Apothecaries Act became law, and for the first time in the history of medicine in this country cognizance was taken of the principle that all those who practised must first be properly qualified.

By the provisions of the Apothecaries Act all those who kept an apothecary's shop were required to pass an examination before examiners appointed by the Society of Apothecaries, and all candidates for the examination had to give proof of having served five years as apprentices. The Master and Wardens were given power to enter any apothecary's shop in England and Wales and to impose fines if impure drugs were found. Finally, no apothecary could recover debts in a court of law unless he possessed a licence to practise.

There can be no doubt that the passing of this Act marked an immense advance in the regulations for the control of the profession, and it was the forerunner of all subsequent Acts. It had, however, its defects, and it would have been well had the two Colleges inquired more closely regarding the consequences of this Act. What was the effect of this Act? At a stroke the education of three-fourths of those who contemplated entering the medical profession was placed under the entire control of the Society of Apothecaries through legal powers granted by Parliament. The Colleges had no voice in the matter of determining the scope of medical education, and could deal only with those belonging to their own bodies. It must be admitted that their policy was somewhat short-sighted, for it would have been a comparatively easy matter to adjust their relations with the Society of Apothecaries in such a manner that a share of the control conferred by Parliament would have fallen to their lot. As it was, the Colleges were shut out from all participation in the control of the greater number of the profession, and many years had to elapse before they regained their power.

III. MEDICAL EDUCATION.

I now come to a consideration of the facilities existing for the acquirement of medical knowledge during this period, and to inquire concerning the standard deemed necessary. At this time the three capitals of the British

Isles were the only centres at which medical education could be obtained, and with regard to the number of students, London and Edinburgh were much ahead of Dublin. In London seven general hospitals were established where a knowledge of medicine could be obtained. At Guy's, St. Thomas's, and the London Hospitals systematic courses of lectures in the theory of medicine, materia medica, chemistry, and clinical medicine were given, but in most of the other hospitals the teaching was sadly neglected. Too often the members of the medical and surgical staffs considered it to be no part of their duty to give instruction except to a few favoured pupils from whom they took a premium for the privilege.

As a rule, the subjects of medicine, materia medica, anatomy, and chemistry were taught at schools and lectures supported by private enterprise, of which there were many in the metropolis at the time. In the *Medical Register* for 1783 a page is devoted to a list of lectures, and of the nineteen given there, all were supported by private enterprise, with the exceptions of those at the London, St. Thomas's, and Guy's Hospitals. Indeed, it appears that Dr. George Fordyce of St. Thomas's, Dr. William Saunders of Guy's, and Dr. Maddocks of the London were the only physicians who gave systematic courses of lectures at the institutions to which they were attached. In the same manner midwifery was taught by means of private lectures given by Denman, Osborne, John Clarke, and David Davis. Prominent among these private lecturers was Dr. George Fordyce, who lectured for thirty years on physis, materia medica, and chemistry at his house in Essex Street, Strand. He was assiduous and unremitting in his work; beginning at seven in the morning, he delivered three lectures, each lasting an hour, on six days in the week, and probably nearly all students coming to London at this period passed through his hands. The teaching of anatomy was carried on chiefly at the school in Windmill Street, where the brilliant abilities of the two Hunters, Hewson, Cruickshanks, Wilson, and Baillie made it deservedly famous. Mr. John Shelden and Dr. R. Maclaurin at their respective houses also taught anatomy with considerable success.

After a student had attended lectures and the practice of a hospital for a sufficient length of time, which varied at different periods, he was free to present himself for examination at the Corporation of Surgeons, or the Society of Apothecaries, and if he satisfied the examiners he was granted a diploma. Often however, he did not follow this course, but after studying medicine and surgery, betook himself to the provinces and began practice as an apothecary without any diploma. He was quite secure, and no law could reach him so long as he kept away from London.

When, however, a student decided to practise as a physician, the course to be pursued was different and far more exacting. It was necessary for him to obtain a degree in medicine in some university and in due time to submit himself to the examination for Licentiates at the College of Physicians. This course was obligatory for all physicians except those who chose to practise in the provinces, in which case the possession of the M.D. of either Oxford or Cambridge exempted them by statute from being obliged to become Licentiates. From all accounts the examination for the Licence of the College, which was conducted in Latin, was thorough and searching. It not only established the fact that a successful candidate was learned in medicine, but it proved also that he was a man of considerable erudition and culture. The examination for the candidate for the Fellowship was precisely the same as that for the Licentiate, and the College could justly claim that the members of their body were men of far higher mental attainments than those of the Corporation of Surgeons and the Society of Apothecaries.

At the universities of Oxford and Cambridge the professors of physis and anatomy gave courses of lectures, and so also did the professors or readers of anatomy, botany, and chemistry, but the reading of these lectures appears to have been of a somewhat perfunctory nature, and no practical instruction seems to have been given. Those who intended, therefore, to become physicians settled at centres in this country and on the Continent where the serious study of medicine could be prosecuted, and, except for the purpose of fulfilling the requirements of the universities in the matter of a medical degree, were hardly ever in residence.

The regulations relating to medical degrees differed at the sister universities, and are difficult to follow with any exactness. According to the author of *An Address to the College*, the method of procedure in granting medical degrees at Oxford was as follows: No person could be admitted to the honour of a doctor's degree in medicine until he had been a member of the university for fourteen years, and had complied with all the exercises required. In other words, he was expected to become a Bachelor of Arts in four years, a Master in seven years, a Bachelor of Medicine in ten years, and a Doctor in fourteen years. The principle, therefore, of a degree in Arts before proceeding to one in medicine was established. For the B.A. degree candidates were required to defend questions in logic, grammar, rhetoric, and moral philosophy; to be examined in the same, and all the examinations and exercises were conducted in Latin. For the M.A. degree the candidate was again required to defend questions in the subjects for the B.A., and, in addition, questions in natural philosophy. He was expected, also, to defend three other questions of any kind, and to read six lectures, in the Latin tongue, in natural and moral philosophy. Lastly, he had to pass an examination in geometry, metaphysics, optics, physics, history, geography, chronology, Latin, and Greek. The exercises for the same degrees at Cambridge appear to have been similar, but perhaps more latitude was allowed to candidates in specializing in particular subjects. Now, whatever may have been the way in which these exercises were kept in the letter—and many asserted that they were a mere farce—there can be no doubt that in the spirit they contained the framework of a comprehensive intellectual training. Indeed, those who relied on the system at the two universities as the best preliminary course for physicians, could point with truth to the regulations in force to prove their argument. For the M.B. degree the candidate was required to defend two subjects in physic for two hours, and to oppose two others for a like period. In 1760, according to Dr. Wells, the Act for the M.B. degree consisted of reading the *Aphorisms* of Hippocrates. However that may be, the candidate was obliged to go through a course of anatomy before proceeding to keep the Act. For the M.D. degree the candidate was required to explain a whole book of Galen in six extempore, or three written, lectures.

At Cambridge, perhaps, a more pronounced attempt was made to impart medical knowledge by means of lectures, and the professors appear to have performed their functions with some show of energy. The degree of Bachelor of Medicine could be taken six years after admission, provided that the candidate had kept nine terms at the university. Two public disputes had to be maintained in Latin by the candidate. One question was chosen by the candidate, and the other by the professor. The candidate then read a thesis on his own question, and defended it and the professor's question against the arguments of the professor and other doctors present. Finally, the professor read his "determination" in Latin. This proceeding was conducted in public, and, as a rule, many spectators were present. The degree of M.D. could be taken five years after the M.B., and the exercises required were on the same lines as those for the M.B. Dr. Wells states that originally the candidate was obliged to oppose another candidate, but that this regulation was abrogated on the payment of a fine of twenty shillings. He also asserted that the professor's question could be obtained by the candidate at any time, however long, before the Act was kept. At Cambridge and Oxford a doctor's degree in medicine was sometimes given by royal mandate, and apparently it was not always obligatory to proceed in Arts before taking the M.B. degree, although this course was generally pursued. The foregoing, then, is a picture of the course of education followed by many of those who desired to become physicians. The tendency of that education was in the direction of general culture, and accounts for the high order of mental attainments which was such a prominent feature of the College of those days. In other universities the same spirit prevailed, but the insistence on general knowledge was far less pronounced, and more attention was paid to the special subjects connected with medicine. An education acquired at a university in the days of George III gave a man a more marked distinction from his fellows than it does in our day.

IV. THE ESTABLISHMENT OF DISPENSARIES.

In close association with the facilities for acquiring medical knowledge was the rise and development of the dispensaries in London, one of the most remarkable features in the medical history of the reign. So far back as 1696 an attempt had been made by this College to establish a dispensary for the benefit of those who were too poor to purchase pure drugs, but after a time the project fell into abeyance. With that single exception, no dispensary existed in the metropolis until 1770, when the General Dispensary in Aldersgate Street was founded. This was followed in 1774 by the Westminster General Dispensary, and between that date and 1820 no less than twenty-four similar institutions came into being, of which fifteen remain in active work at the present day.

The need for increased facilities for the medical treatment of the poor of growing London, and the wider conceptions in vogue concerning the duties of the rich towards the poor, no doubt, were largely responsible for the foundation of the dispensaries. Many of these institutions, however, owed their origin to the insistent demands of energetic physicians who, supported by their influential friends, desired a field for clinical work. At that time physicians of great ability were beginning to flock to London; the possibilities of obtaining positions where they could found professional reputations as teachers were limited, and the staffs of the hospitals were small. In this difficulty the more enterprising spirits threw themselves with ardour into the project, and so it came about that the dispensaries were staffed by some of the ablest and most enlightened physicians in the town. The names of Lettsom, James Sims, Hulme, Simmons, Willan, Wells, and Cooke are prominently associated with this movement, and some of the dispensaries, such as the "General," the "Westminster," and the "Public" soon became centres for teaching, and the excellence of the clinical instruction attracted many students. A particular interest attaches to the Public Dispensary in Carey Street, for it was there that Robert Willan and his pupil Thomas Bateman prosecuted their researches in dermatology and gave to the world the first attempt to classify skin diseases from an anatomical standpoint.

Many special hospitals and institutions also began their activities in this reign, or a few years before its commencement. Thus, between the years 1749 and 1820, seven lying-in hospitals and dispensaries, three institutions for venereal disease, three vaccine establishments, one fever hospital, and one lunatic asylum were founded in London; surely a worthy testimonial to the medical progress of the age and the energy of the physicians.

V. MEDICAL SOCIETIES.

Further evidence of the medical activity of this reign is found in the rise of the numerous societies devoted to the advancement of medicine. Probably the earliest society of this kind of which we have any record was one founded by Glisson about 1650, and mentioned in his work on rickets. The next was the Society of Naval Surgeons, which began its career in 1746. This society engaged Mr. Sharp to deliver lectures on surgical operations, and met at a house in Covent Garden. Sharp was soon succeeded by William Hunter, who continued the course for several years. In 1752 a medical society was formed, chiefly owing to the energy of William Hunter, and met at the Mitre Tavern. The next to be founded was the "Medical Society of Physicians," in 1764, by John Fothergill, and one of its presidents was William Hunter. Licentiates of the College only were eligible for election, and the meetings were held at Old Slaughter's Coffee House, but once a quarter the members dined at the Crown and Anchor. In 1767, at the instigation of Dr. Heberden, the "Meetings of the College of Physicians" were begun, and between that date and 1820 six volumes of transactions were issued. The year 1771 saw the establishment of the "Guy's Physical Society" by Dr. William Saunders, and the same year witnessed the foundation of the "Physico-Medical Society." In 1773 the "Medical Society" was founded, and in the following year the "Middlesex Hospital Society" began its career. Mr. Shelden formed a medical society in 1779, which met at his house in Great Queen Street, and in 1782, owing to the efforts of Dr. Simmons, Dr. Fordyce, and John Hunter, the "Society for the Improvement of Medical Knowledge"

was formed, the meetings being held at Old Slaughter's Coffee House. Fordyce was also responsible for the foundation of the "Lyceum Medicis Londinense" in 1785. Finally, the "Abernethian Society" was established in 1795, the "Medico-Chirurgical" in 1805, and the "Hunterian" in 1819. A society of Physicians to Dispensaries met in the Borough about 1780, but the exact date of its foundation is uncertain.

It will thus be seen that twelve medical societies were formed during the reign of George III, and three only before that period. Many of them came to an end after a few years of usefulness, but six remain, and are flourishing at the present time. Among those who did so much to encourage the formation of these societies, the names of Simmonds, Fordyce, William Hunter, Fothergill, and Lettsom must for ever be honoured. They toiled, not unsuccessfully, for the advancement of medicine and for a wider medical polity where men holding diverse opinions could meet and exchange their views.

(To be continued.)

THE RELATIVE GERMICIDAL EFFICIENCY OF ANTISEPTICS OF THE CHLORINE GROUP AND ACRIFLAVINE AND OTHER DYES,

WITH OBSERVATIONS OF THE RATIONAL TESTING OF ANTISEPTICS.

BY

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(Report to the Medical Research Committee.)

The object of the following paper is to point out certain common errors in the testing of antiseptics of the chlorine group which lead to totally inaccurate inferences as to their germicidal potency; secondly, to compare the results obtained by methods eliminating these errors with those furnished by other antiseptics; thirdly, to examine the claims made by Browning and his colleagues¹ for the alleged vastly superior germicidal potency of acriflavine and certain other dyes; and, lastly, to indicate how important the matter of the velocity of disinfection is in forming a judgement of the utility of antiseptics in surgical practice, and also the methods suitable for their successful employment.

The Testing of Antiseptics of the Chlorine Group for Germicidal Action.

The instability and reactivity of the hypochlorites and other antiseptics of the chlorine group has long been known. Their ability to react with proteins, peptones, and amino acids to furnish products some of which still possess germicidal properties (chloramines), and others which are entirely inert (chlorides and compounds containing chlorine united to carbon), has been definitely determined. When a relatively large excess of protein acts on minimal quantities of hypochlorite, no chloramine derivatives persist, and the whole of the chlorine is converted into germicidally inactive forms. Notwithstanding these well established facts current literature contains countless examples of experiments in which workers have taken protein-rich media, then added minute quantities of the chlorine antiseptic; subsequently, after an unstated interval, when all or most of the antiseptic has been decomposed, the mixture is inoculated with organisms, and surprise is expressed at their ability to grow unchecked. Under such circumstances the observed results depend much more on the rate of reaction between the antiseptic and the protein medium than upon germicidal action.

In making tests of the germicidal efficiency of any antiseptic there seems to be no good reason for not following the order of mixing the materials indicated by the conditions of their practical use—namely, to add the antiseptic last to the inoculated medium. Under these conditions very different results are obtained with unstable antiseptics, compared with those observed when the organisms are added last. Perhaps the most naive alleged demonstration of the inutility of hypochlorites as antiseptics was that offered by Delbet, who took egg albumen, added a little hypochlorite of undetermined strength, next heated

the mixture for a considerable time, so that all the antiseptic would be decomposed with certainty, and then found, to his evident satisfaction, that streptococci could grow in the residue. Equally enlightening experiments have led various workers into statements as to the excellence of hypochlorite solutions as culture media for *B. capsulatus* and *B. pyocyaneus*, but these entertaining speculations need not be seriously considered.

More recently, however, Browning and his colleagues have published a series of experiments in which the germicidal potency of various antiseptics of the chlorine group is compared with various dyestuffs, with results which apparently indicate an enormous superiority for the latter. Numerical ratios for the relative antiseptic potency of the various substances are given, in which the lethal concentration of chloramine-T tested against staphylococci in serum is taken as unity. The lethal concentration of chloramine-T in serum is stated to be 1:250 without reference to much lower concentrations already published by others. The discrepancy is due, in the main, to the fact that the antiseptic was added first to the medium and the organisms last. No indication is given by Browning of the all-important interval of time elapsing between the two additions. From what has been already stated, it is clear that by this method of procedure irregular results are inevitable.

In the following table, a few new experiments are given, showing the results of the action of chloramine-T when tested against *Staphylococcus aureus* in blood serum and in 0.7 per cent. Witte's peptone, the antiseptic being added last as in actual practice.

In these experiments the medium (2 c.cm.) was inoculated with a suspension in saline of an agar slant growth of *Staphylococcus aureus*. The chloramine-T solution (1 c.cm.) in varying concentration was added last, and at regular time intervals the number of surviving bacteria was estimated by plating. In every case any unchanged antiseptic was destroyed before plating by the addition of sterile sodium thiosulphate solution.

TABLE I.—Chloramine-T.

Medium used: Horse serum. Concentration of chloramine-T in mixture, 1:1000.

Time of Action.	Bacterial Count.*
0	1,750
5 minutes	0
Medium: Horse serum. Concentration of chloramine-T in mixture, 1:2,000.	
0	1,831
5 minutes	9
15 "	15
45 "	49
90 "	85
3 hours	307
Medium: Horse serum. Concentration of chloramine-T in mixture, 1:3,000.	
0	1,509
5 minutes	82
15 "	96
45 "	211
90 "	627
3 hours	1,308
Medium: Witte's peptone, 0.7 per cent. in saline. Concentration of chloramine-T in mixture, 1:4,000.	
0	82,090
5 minutes	0
Medium: Witte's peptone, 0.7 per cent. in saline. Concentration of chloramine-T in mixture, 1:5,000.	
0	82,400
5 minutes	14,520
15 "	0
Medium: Witte's peptone, 0.7 per cent. in saline. Concentration of chloramine-T in mixture, 1:6,000.	
0	1,323
5 minutes	15
15 "	12
45 "	14
90 "	16
3 hours	37

* 1 drop = $\frac{1}{10}$ c.cm.

From these results it is clear that under the above conditions the lethal concentration of chloramine-T in blood serum is slightly under 1:2,000, and in 0.7 per cent. Witte's peptone between 1:5,000 and 1:6,000. These figures contrast with 1:250 and 1:2,000 respectively given by Browning and his colleagues. The use by Browning of the figure 1:250 for the lethal concentration of chloramine-T against *Staphylococcus aureus* as a standard for calculating the relative antiseptic potency of other substances is clearly misleading.

The fundamental error in Browning's figures for the antiseptic potency of chloramine-T is again encountered in

the case of the still more reactive hypochlorite preparations. A later section of this paper contains experimental results illustrating germicidal action of these and other substances acting in a blood serum-muscle extract medium, and also in defibrinated blood.

Some Factors concerning the Rational Testing of Antiseptics.

It is generally recognized that the testing of substances for their antiseptic or germicidal properties is fraught with innumerable pitfalls, and that by varying the conditions of testing almost any kind of result may be obtained. In the case of disinfectants intended for hygienic purposes, the Walker-Rideal method in one or other of its forms gives a reasonably satisfactory basis for comparison, but with substances intended for wound disinfection, no such standard methods exist. Experiment for the determination of the lethal concentration of the germicide acting on various organisms in water, blood serum, blood, or pus usually are regarded as sufficient, and but little attention is paid to such important factors as the time of action, temperature, and number of organisms present.

A great advantage in the use of serum as a medium for the determination of the germicidal properties of an antiseptic intended for surgical use is the fact that it presents a homogeneous medium of fairly constant composition, but it is important to bear in mind that many organisms are very susceptible to the action of blood serum, even though previously heated to 58-60°. To avoid this complication, large numbers of the organism should be used, and fairly resistant types, such as *Staphylococcus aureus*, should be chosen. The use of blood as a standard medium for the testing of the germicidal properties of antiseptics has been suggested by Emery, and this would seem to be a rational procedure in the case of substances intended for intravenous use. Great difficulties are encountered in securing uniform laboratory experiments on the germicidal action of substances upon pus, largely owing to extreme variations in its composition and physical condition, and whether the infecting organisms are free or ingested in the leucocytes. As a substitute for pus, the use of blood as a test medium is of practical value in throwing light on the action of antiseptics in the presence of cellular elements, though the results will be particularly unfavourable to those substances, such as hypochlorites, which are readily decomposed by haemoglobin.

Usually the lethal concentration for germicidal substances tested under various conditions against different organisms is alone considered. But it is becoming constantly clearer that much more than this is needed to form a judgement of the possible value of an antiseptic for wound treatment. A higher concentration of an otherwise inoffensive germicide may easily prove more useful practically than a lower concentration of a more active compound. The fundamental work of Miss Chick,² following that of Paul and Krönig and Madsen and Nyman, has clearly shown that the act of disinfection resembles in many fundamental respects an ordinary chemical reaction in which the two reacting components are represented by bacterial protoplasm and disinfectant. The rate of disinfection varies enormously with different germicides. The mass of antiseptic and that of the bacteria and other reacting substances, as well as the temperature and intimacy of contact between the reacting substances, all influence the result. A knowledge of the speed of disinfection is important in judging of the most suitable manner in which to employ different antiseptics in actual practice. Thus, as will be seen later, the hypochlorites, chloramine-T, and similar substances in concentrations such as are used in practice act with extraordinary speed, completing in a few minutes or even seconds an amount of disinfection which dyes, such as acriflavine, require six hours or more to effect. But in actual use the hypochlorites and chloramine-T are chemically unstable and need frequent renewal unless disinfection has been completed, while frequent renewal of the dyestuffs would add but little to their effect, and actually they are found to be most useful employed as wet dressings, and not for irrigating. This point has been convincingly discussed by Parry Morgan.³

In order to obtain information as to the relative speed of disinfection exerted by various antiseptics, we have determined the progressive change in the number of bacteria in

suited mixtures after varying lengths of time of action. We have made use of two media—one a mixture of horse blood serum (1 c.cm.) with muscle extract (1 c.cm.), obtained by soaking fresh veal with an equal weight of 0.7 per cent. salt solution and straining through gauze, but not filtering. The other medium was sterile fresh defibrinated rabbit's blood (2 c.cm.). These mixtures were heavily inoculated with a *Staphylococcus aureus* emulsion obtained by shaking a twenty-four-hour agar slant growth with 8 c.cm. of salt solution. After determining the total number of organisms in the mixture by plating an aliquot part, 1 c.cm. of the antiseptic solution was usually added and samples withdrawn from time to time and the surviving bacteria estimated. In most cases the antiseptic was added at about the concentration commonly used for wound treatment, though in the case of some of the more active substances lower concentrations were also employed and occasionally higher ones with the less active substances.

In the case of antiseptics of the chlorine group, their further action in the sample withdrawn for plating was at once checked by addition of an excess of sterile sodium thiosulphate solution, while potassium sulphide was used as antidote with the salts of the heavy metals. No antidote was used in the case of the dyes, and in some cases evidence of inhibition of growth on the plates was noted, due to the mechanical carrying over of some of the dye. The use of the blood serum-muscle extract medium was chosen as bearing some similarity to that in which the antiseptics would be used in wound treatment. It has the further advantage of being easily reproduced in fairly uniform quality. For many antiseptics the addition of muscle extract makes the tests more severe than when blood serum is used alone. The experiments were all carried out at 32-35° C., and the results are all expressed as the number of bacteria present in one standard drop of the mixtures = $\frac{1}{20}$ c.c.u. For convenience, the antiseptics are grouped in three classes—namely, those of the chlorine group, dyes, and metallic salts.

TABLE II.—Chlorine Group of Antiseptics.
(Blood Serum-Muscle Extract Medium. *Staphylococcus aureus*.)

Antiseptic Used.			
I. Sodium hypochlorite. Concentration: As added, 1:200; in mixture, 1:600.			
Time of Action.			Bacterial Count.*
0	...	...	1,966,000
2 minutes	...	...	405
5 "	...	...	0 ¹
II. Sodium hypochlorite. Concentration: As added, 1:200 (0.2 c.cm.); in mixture, 1:2,200.			
0	...	...	1,966,000
5 minutes	...	...	311,200
15 "	...	...	157,400
45 "	...	...	15,170
90 "	...	...	15,120
3 hours	...	...	1,651
6 "	...	...	1,587
24 "	...	...	1,294,000 ³
III. Eusol (HClO). Concentration: As added, 1:400; in mixture, 1:1,200.			
0	...	...	2,150,000
2 minutes	...	...	496
5 "	...	...	2
15 "	...	...	0 ¹
IV. Eusol. Concentration: As added, 1:400; in mixture, 1:4,400.			
0	...	...	2,129,000
5 minutes	...	...	1,310,000
15 "	...	...	507,900
45 "	...	...	605,200
90 "	...	...	641,400
3 hours	...	...	868,300
6 "	...	...	983,000
24 "	...	...	2,310,000 ²
V. Chloramine-T. Concentration: As added, 1:50; in mixture, 1:150.			
0	...	...	1,365,000
5 minutes	...	...	0 ¹
VI. Chloramine-T. Concentration: As added, 1:200; in mixture, 1:600.			
0	...	...	726,300
5 minutes	...	...	998
15 "	...	...	191
45 "	...	...	7
90 "	...	...	4
3 hours	...	...	3
6 "	...	...	0 ²
VII. Dichloramine-T in oil. Concentration: As added, 1:50; in mixture, 1:150. ³			
0	...	...	2,020,000
0.5 minute	...	...	0

TABLE II (continued).

VIII. Dichloramine-T in oil. Concentration: As added, 1:50; in mixture, 1:150.⁴

Time of Action.	Bacterial Count.*
0 ...	1,157,000
5 minutes ...	458,700
15 " ...	294,900
45 " ...	0

IX. Iodine in potassium iodide. Concentration: As added, 1:50; in mixture, 1:150.

0 ...	1,463,000
5 minutes ...	0

* 1 drop = $\frac{1}{10}$ c.cm.

¹ Active chlorine present. ² Active chlorine absent. ³ Mixed with platinum wire. ⁴ Not mixed, left to diffuse.

The results contained in Table II indicate clearly the extraordinarily rapid action of the antiseptics of the chlorine group. All of the solutions of strengths used in wound treatment affected sterilization in the course of five minutes or less. The experiments in which insufficient quantities of sodium hypochlorite or caustol were used (II and IV) show that when their immediate action is over, and no undecomposed antiseptic remains, growth of the surviving organisms readily takes place. The efficiency of chloramine-T added to the extent of 1:600 in the mixture illustrates its more potent action than roughly equivalent quantities of chlorine in the form of hypochlorite or caustol. This is, no doubt, largely due to its slower rate of decomposition in the medium.

TABLE III.—Metallic Salts, Phenol, Hydrogen Peroxide.

(Blood Serum-Muscle Extract Medium. *Staphylococcus aureus*.)

Antiseptic Used.

I. Mercuric chloride. Concentration: As added, 1:1,000; in mixture, 1:3,000.

Time of Action.	Bacterial Count.*
0 ...	1,894,000
5 minutes ...	234,400
15 " ...	41,520
45 " ...	12,500
90 " ...	7,258
3 hours ...	2,985
24 " ...	0

II. Silver nitrate. Concentration: As added, 1:100; in mixture, 1:300.

0 ...	786,400
5 minutes ...	729,900
15 " ...	651,700
45 " ...	530,600
90 " ...	425,900
3 hours ...	175,600
6 " ...	38,270
24 " ...	2,643

III. Argyrol. Concentration: As added, 1:6.7; in mixture, 1:20.

0 ...	917,500
5 minutes ...	753,500
15 " ...	655,300
45 " ...	622,500
90 " ...	327,600
3 hours ...	9,792
6 " ...	4,693
24 " ...	0

IV. Zinc chloride. Concentration: As added, 1:33; in mixture, 1:100.

0 ...	1,223,000
5 minutes ...	868,300
15 " ...	819,200
45 " ...	491,500
90 " ...	211,900
3 hours ...	51,580
6 " ...	3,657
24 " ...	704

V. Hydrogen peroxide. Concentration: As added, 1:35; in mixture, 1:105.

0 ...	1,201,000
5 minutes ...	589,800
15 " ...	819,200
45 " ...	778,200
90 " ...	802,800
3 hours ...	1,087,000
6 " ...	1,137,000

VI. Phenol. Concentration: As added, 1:50; in mixture, 1:150.

0 ...	1,409,000
5 minutes ...	1,471,000
15 " ...	819,200
45 " ...	192,700
90 " ...	34,900
3 hours ...	13,700
24 " ...	2,985

* 1 drop = $\frac{1}{10}$ c.cm.

The results of experiments with metallic salts, phenol, and hydrogen peroxide, are recorded in Table III. Mercuric chloride, added as a 1:1,000 solution, is seen to be distinctly more rapid and complete in its action than silver nitrate or zinc chloride, and, though the latter were used in much higher concentration, they did not effect sterilization in twenty-four hours. Argyrol was used in very high

concentration (1:20), and, while it eventually sterilized completely, its action was by no means rapid, and only slightly superior to phenol (1:50). The experiment with hydrogen peroxide illustrates its rapid but very transitory effect, which reached its maximum in a few minutes, with subsequent unrestricted growth.

TABLE IV.—Dyes.

(Blood Serum-Muscle Extract Medium. *Staphylococcus aureus*.)

Antiseptic Used.

I. Malachite green (Grübler). Concentration: As added, 1:333; in mixture, 1:1,000.

Time of Action.	Bacterial Count.*
0 ...	821,600
5 minutes ...	182,700
15 " ...	0
90 " ...	8,920
3 hours ...	5,574
6 " ...	74,200
24 " ...	1,015,000
48 " ...	3,706,000

II. Malachite green (Grübler). Concentration: As added, 1:1,000; in mixture, 1:3,000.

0 ...	2,097,000
5 minutes ...	1,359,000
15 " ...	369,100
45 " ...	211,500
3 hours ...	272,300
6 " ...	557,000
24 " ...	1,093,000
48 " ...	6,553,000

III. Brilliant green (Grübler). Concentration: As added, 1:333; in mixture, 1:1,000.

0 ...	810,200
5 minutes ...	29,950
15 " ...	27,410
45 " ...	20,160
90 " ...	14,500
3 hours ...	8,871
6 " ...	1,946
24 " ...	256,600
48 " ...	658,900

IV. Acriflavine. Concentration: As added, 1:333; in mixture, 1:1,000.

0 ...	589,800
5 minutes ...	353,400
15 " ...	249,300
45 " ...	179,200
90 " ...	78,210
6 hours ...	701
24 " ...	0

V. Acriflavine. Concentration: As added, 1:1,000; in mixture, 1:3,000.

0 ...	557,100
5 minutes ...	218,600
15 " ...	121,900
45 " ...	100,800
90 " ...	81,540
6 hours ...	474
24 " ...	0

VI. Acriflavine. Concentration: As added, 1:3,333; in mixture, 1:10,000.

0 ...	755,400
5 minutes ...	524,300
15 " ...	319,300
45 " ...	308,200
90 " ...	106,500
3 hours ...	94,840
6 " ...	22,780
24 " ...	1,113,000

VII. Proflavine. Concentration: As added, 1:333; in mixture, 1:1,000.

0 ...	888,100
5 minutes ...	794,500
15 " ...	744,500
45 " ...	308,200
90 " ...	104,800
3 hours ...	65,560
6 " ...	53,200
24 " ...	1,242

VIII. Proflavine. Concentration: As added, 1:1,000; in mixture, 1:3,000.

0 ...	888,100
5 minutes ...	744,500
15 " ...	655,400
45 " ...	326,100
90 " ...	169,900
3 hours ...	154,800
6 " ...	84,900
24 " ...	4

IX. Proflavine. Concentration: As added, 1:3,333; in mixture, 1:10,000.

0 ...	855,400
5 minutes ...	761,800
15 " ...	744,500
45 " ...	469,500
90 " ...	304,500
3 hours ...	196,400
6 " ...	93,750
24 " ...	183,600

* 1 drop = $\frac{1}{10}$ c.cm.

The action of the dyes on staphylococci in the blood serum-muscle extract was, on the whole, disappointing. Malachite green and brilliant green, even when added at 1:333 concentration, so that 1:1,000 was present in the

mixture, failed to effect sterilization in twenty-four hours, and by the end of that time the organisms were growing freely. Similar mixtures on exposure at 37° readily underwent thorough putrefaction, so that it is clear that unchanged persistence of colouring matter cannot be regarded as evidence of continuing germicidal action. The experiments with acriflavine indicate a relatively slow action, and even in the higher concentrations a fair number of viable organisms were present after six hours' action. The lower concentration (1:3,333 as added) failed to sterilize in twenty-four hours, and permitted growth so that the final number of organisms had risen above that present at the start.

Browning gives the following lethal concentrations for dyes acting in serum on *Staphylococcus aureus*: Malachite green, 1:40,000; brilliant green oxalate, 1:100,000; acriflavine, 1:200,000. Under the conditions of our experiments the lethal concentration for malachite green and brilliant green is greater than 1:1,000, and for acriflavine between 1:3,000 and 1:10,000.

TABLE V.—Chlorine Group of Antiseptics.
(Defibrinated Blood Medium. *Staphylococcus aureus*.)

Antiseptic Used.

I. Sodium hypochlorite. Concentration: As added, 1:200; in mixture, 1:300.

Time of Action.	Bacterial Count.*
0	573,400
5 minutes	563
15 "	282
45 "	2,432

II. Sodium hypochlorite. Concentration: As added, 1:200; in mixture, 1:333.

0	573,400
5 minutes	1,774
15 "	1,485
45 "	19,656

III. Sodium hypochlorite. Concentration: As added, 1:200; in mixture, 1:400.

0	232,900
45 minutes	89,600

IV. Eusol (HClO). Concentration: As added, 1:400; in mixture, 1:600.

0	578,000
5 minutes	1,562
15 "	2,330
45 "	36,600

V. Eusol. Concentration: As added, 1:400; in mixture, 1:700.

0	811,000
5 minutes	35,280
15 "	48,250
45 "	51,580

VI. Eusol. Concentration: As added, 1:400; in mixture, 1:800.

0	260,800
5 minutes	143,300

VII. Chloramine-T. Concentration: As added, 1:50; in mixture, 1:150.

0	221,500
5 minutes	125
15 "	0

VIII. Chloramine-T. Concentration: As added, 1:100; in mixture, 1:200.

0	235,600
45 minutes	0

IX. Chloramine-T. Concentration: As added, 1:133; in mixture, 1:400.

0	1,178,000
5 minutes	20,160
15 "	6,451
45 "	4,032
3 hours	806

X. Dichloramine-T in oil. Concentration: As added, 1:50; in mixture, 1:150.

0	59,900
2 minutes	0

* 1 drop = $\frac{1}{10}$ c.cm. † Mixture stirred with platinum wire.

The relative inefficiency of sodium hypochlorite and eusol acting in defibrinated blood is shown in Table V. This is apparently due to the ease with which sodium hypochlorite is decomposed by haemoglobin. The fact that an equal volume of the ordinary hypochlorite solutions added to blood infected with streptococci is insufficient to effect sterilization has already been noted by Emery. The superior efficiency of chloramine-T compared with equivalent amounts of hypochlorite acting in blood is very marked, and is doubtless due to its slower rate of decomposition already noted.

TABLE VI.—Dyes.

(Defibrinated Blood Medium. *Staphylococcus aureus*.)

Antiseptic Used.

I. Malachite green (Grübler). Concentration: As added, 1:333; in mixture, 1:1,000.

Time of Action.	Bacterial Count.*
0	1,754,000
5 minutes	107
15 "	88
45 "	65
90 "	82
3 hours	35
6 "	36
24 "	13
72 "	0

II. Malachite green (Grübler). Concentration: As added, 1:1,000; in mixture, 1:3,000.

0	1,693,000
5 minutes	1,310,000
15 "	819,200
45 "	208,000
90 "	146,900
3 hours	86,010
6 "	89,600
24 "	1,219,000

III. Brilliant green (Grübler). Concentration: As added, 1:333; in mixture, 1:1,000.

0	1,966,000
5 minutes	0

IV. Brilliant green (Grübler). Concentration: As added, 1:1,000; in mixture, 1:3,000.

0	1,630,000
5 minutes	1,261
15 "	563
45 "	755
90 "	717
3 hours	857
6 "	2,592
24 "	1,171,000

V. Acriflavine. Concentration: As added, 1:333; in mixture, 1:1,000.

0	654,600
5 minutes	358,400
15 "	108,800
45 "	98,180
90 "	1,472
3 hours	203
6 "	17
24 "	0

VI. Acriflavine.† Concentration: As added, 1:333; in mixture, 1:1,000.

5 minutes	835,600
15 "	494,600
45 "	190,500
90 "	139,800
3 hours	104,000
6 "	0
24 "	0

VII. Acriflavine. Concentration: As added, 1:1,000; in mixture, 1:3,000.

0	654,700
5 minutes	411,900
15 "	225,800
45 "	138,100
90 "	30,640
3 hours	1,152
6 "	32
24 "	0

VIII. Acriflavine. Concentration: As added, 1:3,333; in mixture, 1:10,000.

0	900,600
5 minutes	819,200
15 "	508,900
45 "	190,000
90 "	83,260
3 hours	32,260
6 "	768
24 "	3

IX. Acriflavine.† Concentration: As added, 1:3,333; in mixture, 1:10,000.

5 minutes	802,800
15 "	790,900
45 "	587,100
90 "	405,000
3 hours	159,700
6 "	16
24 "	0

X. Proflavine. Concentration: As added, 1:333; in mixture, 1:1,000.

0	819,200
5 minutes	4,710
15 "	1,638
45 "	474
90 "	304
3 hours	113
6 "	12
24 "	0

XI. Proflavine.† Concentration: As added, 1:333; in mixture, 1:1,000.

5 minutes	778,000
15 "	376,800
45 "	186,400
90 "	164,300
3 hours	28,290
24 "	0

TABLE VI (continued).

XII. Proflavine. Concentration: As added, 1:1,000; in mixture 1:3,000.				
Time of Action.				Bacterial Count. ¹
0 .....	...	...	...	819,200
5 minutes .....	...	...	...	201,340
15 .....	...	...	...	208,000
45 .....	...	...	...	122,500
90 .....	...	...	...	53,220
3 hours .....	...	...	...	29,670
6 .....	...	...	...	2,995
24 .....	...	...	...	2
XIII. Proflavine.† Concentration: As added, 1:1,000; in mixture, 1:3,000.				
5 minutes .....	...	...	...	778,000
15 .....	...	...	...	376,800
45 .....	...	...	...	186,400
90 .....	...	...	...	164,300
3 hours .....	...	...	...	28,290
24 .....	...	...	...	0
XIV. Proflavine. Concentration: As added, 1:3,333; in mixture, 1:10,000.				
0 .....	...	...	...	819,200
5 minutes .....	...	...	...	753,700
15 .....	...	...	...	652,000
45 .....	...	...	...	591,400
90 .....	...	...	...	394,200
3 hours .....	...	...	...	448,000
6 .....	...	...	...	48,380
24 .....	...	...	...	282
XV. Proflavine.† Concentration: As added, 1:3,333; in mixture, 1:10,000.				
5 minutes .....	...	...	...	933,500
15 .....	...	...	...	835,600
45 .....	...	...	...	750,900
90 .....	...	...	...	208,700
3 hours .....	...	...	...	204,500
24 .....	...	...	...	331

* 1 drop = $\frac{1}{10}$ c.cm.

† The blood and antiseptic were mixed, incubated twenty-four hours and then the suspension of staphylococci added. In these experiments, therefore, the precipitate occasioned by the dye was produced before inoculation. Comparison of X and XI indicates the probability that many organisms are carried down by the relatively slow formation of a flocculent precipitate. The rapid falling off of the cocci found in the fluid was probably due to this cause, and not to the germicidal action of the dye.

The germicidal action of the dyes in defibrinated blood is in most cases distinctly superior to that shown in the blood serum-muscle extract medium. Malachite green is seen to be distinctly inferior to brilliant green, acriflavine, or proflavine. Neither brilliant green nor malachite green when present in 1:3,000 concentration failed to prevent multiplication of the organisms. Acriflavine and proflavine present in 1:3,000 concentration failed to sterilize in six hours, but usually did so in twenty-four hours, while when present in 1:10,000 concentration the mixture was not quite sterile in twenty-four hours.

DISCUSSION AND CONCLUSIONS.

The main facts disclosed by the preceding series of experiments are as follows: (a) The rapid and complete disinfection brought about by solutions (one volume) of members of the chlorine group of antiseptics of the strength commonly used in the treatment of wounds, when added to heavily infected blood serum-muscle extract mixture (two volumes). (b) Under similar circumstances, solutions of acriflavine, proflavine, brilliant green, and malachite green failed to sterilize in six hours mixtures which the chlorine antiseptics sterilized completely in five minutes or less.

Browning concludes from his experiments that acriflavine is 800 times more powerful against staphylococci in serum than chloramine-T. A comparison of our Experiment VI, Table II, and Experiment IV, Table IV, shows that a 1:600 solution of chloramine-T can sterilize in six hours an infected blood serum-muscle extract which was not sterilized in six hours by 1:1,000 acriflavine. The difference in results is striking and deserves comment. One source of error in Browning's experiments has already been indicated, namely, the addition of the chlorine antiseptics to the blood serum before adding the organisms. We believe another source of discrepancy is due to the fact that Browning and his associates used extraordinarily few bacteria in their tests, namely, 0.1 c.cm. of a 1:20,000 dilution in saline of a twenty-four-hour peptone water culture. A loopful of this mixture plated on agar yielded "twenty or more colonies." It appears to us that the use of such small numbers of organisms is unsuited for the determination of the germicidal value of substances, for, in the first place, such a low concentration of organisms in the secretion of a wound of long standing borders on "surgical

sterility"; hence the experimental conditions are not comparable with those in acute septic wounds. Secondly, if 5 per cent. of the organisms in Browning's tests survived they would have a good chance of being entirely overlooked, and sterility might thus be inferred when viable organisms were actually present. Lastly, the bactericidal properties of the serum medium becomes a significant factor when few organisms are used in the presence of native germicidal substances.

Another cause of the marked difference between our own and Browning's results is the fact that he allowed the antiseptics to act for twenty-four to forty-eight hours before testing, whereas in our own experiments subcultures were taken at frequent intervals, which brought under observation the progress of disinfection. The longer period naturally fosters a favourable judgement of the slowly acting dyes, while shorter periods are adverse to them.

We conclude, therefore, that the statements of Browning and his colleagues as to the relative germicidal efficiency of chloramine-T and other antiseptics of the chlorine group compared with brilliant green, malachite green, and acriflavine, are incorrect, and that their mode of testing the germicidal action of the substances studied by them leads to results which are radically misleading.

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DETECTION AND TREATMENT WITH EMETINE BISMUTH IODIDE OF AMOEBIC DYSENTERY CARRIERS AMONG CASES OF IRRITABLE HEART.*

BY

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(Report to the Medical Research Committee.)

AMOEBIc dysentery as a direct or aggravating cause of irritable heart was found amongst soldiers returned from the Mediterranean Force.¹ It was therefore considered important, in dealing with this condition, to determine the number of cases of carriers, and to attempt to cure them. From October, 1916, to February, 1917, we examined the stools of all cases from the Mediterranean Force admitted to the Hampstead Military Hospital suffering from irritable heart. No selection of the men was made in so far as the presence or absence of a history of dysentery was concerned. In all sixty-five cases have been examined, of which twenty-five had a definite history of dysentery.

Infections.

The microscopic examinations of the stools were made in the usual way, and we aimed at six careful examinations† at least of each man before discharging him as uninfected. How far we were able to carry this out the following figures will show:

6 or more examinations ...	...	...	51 cases
5 examinations only ...	...	...	1 case
4 .....	...	...	8 cases
3 .....	...	...	3 ..
2 .....	...	...	1 case
1 .....	...	...	1 ..
			65

The following infections were detected:

<i>Entamoeba histolytica</i> ...	24 cases = 36.9 % total cases.
<i>Entamoeba coli</i> ...	32 .. = 49.2 ..
<i>Lamblia intestinalis</i> ...	20 .. = 30.8 ..
<i>Chilomastix mesnili</i> ...	3 .. = 4.6 ..
<i>Trichomonas hominis</i> ...	1 case.

Entamoeba nana (Wenyon and O'Connor) was found as the active free amoeba in one case, and its cysts were found in others. Their occurrence was not always recorded, however, so that no indication of the frequency of this infection can be given. The so-called "iodine cysts"

This work was done at the Hampstead Military Hospital. The treatments were carried out by one of us (J. C. M.), and the examinations made by the other (M. W. J.).

* This was done at the suggestion of Mr. Clifford Dobell.

of Wenyon were found in six cases,⁸ and the eggs of *Trichuris trichiura* (= *Trichocephalus dispar*) in two.

The percentages are, of course, of little absolute significance in so small a number of cases. It was to be expected that they would be higher than some of the corresponding figures obtained elsewhere by a smaller number of examinations per case.² That the larger number of examinations accounts, in part at least, for the exceptionally high proportion of infected cases may be seen in the following tables, where the examinations are shown at which infections were detected.

TABLE I.—Infections with *E. histolytica*, *E. coli*, and *Lambliæ*.

Examination at which detected.	<i>E. histolytica</i> .		<i>E. coli</i> .		<i>Lambliæ</i> .	
	No. of cases.	Per-centage of cases.	No. of cases.	Per-centage of cases.	No. of cases.	Per-centage of cases.
1st ...	11	16.9	14	21.5	9	13.8
2nd ...	3	4.5	5	7.8	1	1.6
3rd ...	4	6.3	5	7.8	3	4.7
4th ...	1	1.7	1	1.7	1	1.7
5th ...	2	3.8	2	3.8	1	1.9
6th ...	2	3.9	1	2.0	2	3.9
Totals ...	23	—	28	—	17	—
8th ...	—	—	1	—	—	—
9th ...	—	—	1	—	—	—
10th ...	1	—	—	—	—	—
14th ...	—	—	1	—	1	—
28th ...	—	—	1	—	—	—
32nd ...	—	—	—	—	1	—
47th ...	—	—	—	—	1	—
Totals ...	24	—	32	—	20	—

The percentages for each examination are worked out on the number of cases which had at least that number of examinations. Table II shows the total number of infections found after each of the first six examinations among the fifty-one cases which had at least six examinations each.

TABLE II.—Infections Found after the Six First Examinations.

No. of Examinations.	<i>E. histolytica</i> .		<i>E. coli</i> .		<i>Lambliæ</i> .	
	No. of cases.	Percentage total cases.	No. of cases.	Percentage total cases.	No. of cases.	Percentage total cases.
1	9	17.6	12	23.5	8	15.7
2	11	21.6	14	27.4	8	15.7
3	15	29.4	18	35.3	10	19.6
4	16	30.4	19	37.3	11	21.6
5	18	35.3	21	41.2	12	23.5
6	20	39.2	22	43.1	14	27.4

It is clear that infections were detected on every examination, including the sixth and last. That even this does not represent the actual total number of infections is demonstrated by the few figures given for still later examinations in the lower half of Table I, which gives the results of twenty-three extra examinations made on twelve negative cases, and of the examinations made during and after treatment on some of the positive cases. These are given merely as further examples of infections not detected in a small number of examinations.

Carriers of *E. histolytica*.

It is of interest to note that among this series of twenty-four carriers in no fewer than twelve no *E. histolytica* cysts measuring over 10μ in diameter were ever observed. These small cysts, measuring $6-10\mu$ in diameter, have been described by several authors,⁴ but rather as an abnormal form of rare occurrence. Such infections may be exceedingly difficult to detect, even when specially looked for, and it has often been necessary to fix and stain films before

a certain diagnosis could be made. The cysts are very easily overlooked when present in the stool in small numbers, particularly if many other small bodies, such as *Chilomastix* cysts, some of the yeasts, pus cells, etc., be present at the same time. For example, Case No. 13 was not found positive until the tenth examination (Table I), although very careful search was made for *E. histolytica*, as large quantities of pus with blood and mucus were usually present in the stool, and the bacteriological report was negative. The cysts were extremely rare and measured about 7μ in diameter. They disappeared after treatment (vide infra), and the clinical condition of the patient improved. The twelve infections in which only small cysts were found were detected as under:

Examinations.	No. of Cases Detected.
1st ... Nos. 23, 24	2
2nd ... Nos. 9, 19, 22	3
3rd ... No. 10	1
4th ... No. 7	1
5th ... Nos. 8, 21	2
6th ... Nos. 18, 20	2
10th ... No. 13	1
	12

These figures, on comparison with Table I, show that in this series it happened that no infection of *E. histolytica*, where typical large cysts were found, was detected after the third examination. This is probably due to chance, and not to the fact that all such infections can be detected in three examinations only. There is naturally a decrease in the number of infections detected at each succeeding examination, and little evidence, if any, that *E. histolytica* differs in this respect from *E. coli* and *Lambliæ*, both of which were sometimes discovered at the sixth and later examinations.²

In one other case (No. 11) the diameter of the *E. histolytica* cysts varied from 7 to 15μ , all intermediate sizes being observed.⁴

Treatment.

Emetine bismuth iodide when given in a powder generally causes nausea and vomiting. In order to overcome these conditions three preparations of the drug were tried. These were experimental preparations made by three different firms, and were submitted to us for trial. They were all in tablet or pill form, and were either mixed or coated with some material supposedly insoluble in the stomach. In all twenty-three courses of treatment were given with these preparations. In no case was nausea or vomiting produced, but in eight cases (35 per cent.) severe diarrhoea and abdominal cramps occurred. Some looseness of the bowels was observed in all cases where the drug appeared to have any action. The results obtained with these preparations are shown below. In these tables "relapsed" signifies that *E. histolytica* was again detected in the stools, and "unaffected" that no negative period was observed during or after treatment.

TABLE III.—Treatment with Stearin-coated Tablets.

Case No.	Treatment.		Dose.	Consecutive Negative Examinations after Treatment.	Result.
	Began.	Ended.			
2	1916. Oct. 27	1916. Nov. 8	36 gr.	No. 24 in 34	Discharged as cured.
1	Oct. 25	Nov. 5	"	26 " 35	" " "
3	Oct. 26	Nov. 7	"	34 " 40	" " "
7	Nov. 6	Nov. 17	"	31 " 46	" " "
6	Nov. 6	Nov. 17	"	23 " 46	" " "
4	Nov. 3	Nov. 15	"	4 " 5	Relapsed Nov. 22, 1916.
5	Nov. 7	Nov. 13	"	12 " 22	Relapsed Dec. 16, 1916.
17	Oct. 31	Nov. 12	"	0	Unaffected.
	Nov. 24	Dec. 8	"	0	"
	Dec. 19	Dec. 20	"	0	"
8	Nov. 18	Nov. 29	"	25 " 33	Discharged as cured.
10	Dec. 2	Dec. 15	39 gr.	22 " 26	" " "
9	Nov. 24	Dec. 5	26 gr.	2 " 2	Relapsed Dec. 8, 1916.
13	Dec. 29	Jan. 9, 1917	"	17 " 21	Discharged as cured.

TABLE IV.—Treatment with Stearin-coated Pills with Resin Ointment Basis.

Case No.	Treatment.		Dose.	Consecutive Negative Examinations after Treatment.	Result.
	Began.	Ended.			
12	1916. Dec. 11	1916. Dec. 22	36 gr.	No. 0	Unaffected.
14	Dec. 18	Dec. 29	"	0	"
15	Dec. 18	Dec. 29	"	0	"
11	Dec. 11	Dec. 22	"	0	"
13	Dec. 13	Dec. 24	"	0	"

TABLE V.—Treatment with Stearin-coated Tablets.

Case No.	Treatment.		Dose.	Consecutive Negative Examinations after Treatment.	Result.
	Began.	Ended.			
*12	Dec. 29, 1916	1917. Jan. 6	27 gr.	No. Days. 2 in 5	Relapsed Jan. 11, 1917.
14	Dec. 30, 1916	Jan. 6	24 "		
	Jan. 11, 1917	Jan. 22	36 "	18 " 23	Discharged as cured.
15	Dec. 30, 1916	Jan. 6	24 "		
	Jan. 11, 1917	Jan. 22	36 "	0	Unaffected.
11	Dec. 29, 1916	Jan. 6	24 "		
	Jan. 11, 1917	Jan. 22	36 "	0	"

* Case No. 12 was often negative for a few days while untreated.

Different measures of success were, it will be seen, obtained with these different preparations. With the first preparation there were eight cures out of twelve cases treated, or 66 per cent. With the second there were no cures, while with the third there was only one cured out of four cases treated, or 25 per cent. Of the three preparations, the first was the only one which gave sufficiently good results to justify its use in preference to the drug given in powder (see below). But even the proportion of cures with this preparation is not sufficiently high to warrant its general use.

The objection to the use of emetine bismuth iodide in powder, given in a cachet or capsule, has been the occurrence of nausea and vomiting. We have treated eleven cases with cachets, and these symptoms occurred in all of them. The drug was given with a hot drink at 9 p.m., after the patient was in bed. The time of the vomiting after the drug was taken varied in different individuals, as is shown in Table VI.

TABLE VI.—Occurrence of Nausea and Vomiting.
No. of cases, 11.

Nausea and vomiting occurred during the				
First hour in	...	...	...	0
Second hour in	...	...	...	3
Third hour in	...	...	...	6
Fourth hour in	...	...	...	2

It is evident from this table that the nausea and vomiting occurs most frequently after the stomach is presumably empty. These symptoms fortunately did not persist during the whole course of treatment. The toxic symptoms disappeared after a time as if a tolerance had developed.^{5,6}

TABLE VII.—Duration of Nausea and Vomiting.
No. of cases, 11.

Nausea and vomiting disappeared after the				
First day in	...	...	...	0
Second day in	...	...	...	0
Third day in	...	...	...	1
Fourth day in	...	...	...	2
Fifth day in	...	...	...	3
Sixth day in	...	...	...	4
Seventh day in	...	...	...	0
Eighth day in	...	...	...	0
Ninth day in	...	...	...	1

Eleven cases were treated with emetine bismuth iodide in cachets of 3 gr. each. Ten cases (91 per cent.) were cured after twelve daily doses (Table VIII).

TABLE VIII.—Cachets.

Case No.	Treatment.		Dose.	Consecutive Negative Examinations after Treatment.	Result.
	Began.	Ended.			
9	1916. Dec. 12	Dec. 23, '16	36 gr.	No. Days. 23 in 28	Discharged as cured.
4	Dec. 29	Jan. 9, '17	"	18 " 24	" "
5	Dec. 18	Dec. 29, '16	"	10 " 24	" "
17	1917. Jan. 13	1917. Jan. 24	"	2 " 4	Relapsed Jan. 28, 1917.
12	Jan. 26	Feb. 7	"	7 " 24	Discharged as cured.
15	Jan. 26	Feb. 6	"	9 " 23	" "
11	Jan. 26	Feb. 6	"	10 " 23	" "
16	Feb. 3	Feb. 14	"	9 " 24	" "
18	Feb. 19	Mar. 1	"	10 " 96*	" "
19	Mar. 9	Mar. 22	"	5 " 29	" "
20	Mar. 9	Mar. 21	"	5 " 30	" "

* We are indebted to Dr. G. C. Low for facilities for making the last four examinations of this patient, after he had been transferred to another hospital.

The one case which was not cured had previously resisted three courses with the first preparation described above. The results obtained with the drug administered by this method are much more encouraging than those obtained with any of the other preparations.

TABLE IX.—Comparison of Results Obtained with the Various Preparations.

Case No.	First Preparation (Table III).		Second Preparation (Table IV).		Third Preparation (Table V).		Cachets (Table VIII).	
	Cures.	Failures.	Cures.	Failures.	Cures.	Failures.	Cures.	Failures.
1	1	0						
2	1	0						
3	1	0						
4	0	1	—	—	—	—	1	0
5	0	1	—	—	—	—	1	0
6	1	0						
7	1	0						
8	1	0						
9	0	1	—	—	—	—	1	0
10	1	0						
11	—	—	0	1	0	1	1	0
12	—	—	0	1	0	1	1	0
13	1	0	0	1	—	—	—	—
14	—	—	0	1	1	0	—	—
15	—	—	0	1	0	1	1	0
16	—	—	—	—	—	—	1	0
17	0	1*	—	—	—	—	0	1
18	—	—	—	—	—	—	1	0
19	—	—	—	—	—	—	1	0
20	—	—	—	—	—	—	1	0
	8	4	0	5	1	3†	10	1

* Three separate courses.

† See Table V.

All the patients treated were suffering from symptoms of irritable heart. Any possible effects of the removal of the *E. histolytica* infection on the symptoms of this condition were carefully looked for. Of the twenty cases which were cured, eleven (55 per cent.) showed a conspicuous improvement, while nine (45 per cent.) showed little or none. The degree of improvement was determined by their increased ability to perform graduated exercises without untoward symptoms.¹ Cases which, before treatment, showed severe symptoms after performing mild exercises could afterwards accomplish the more

advanced exercises with comparative ease. This confirms the previous conclusion that the removal of a coexisting infection may lead to the alleviation of symptoms of irritable heart.¹

Treatment with Methyl-Psychotrine.

In addition to these treatments with emetine bismuth iodide we tested a new alkaloid, methyl-psychotrine, prepared from ipecacuanha by Dr. F. L. Pyman, and sent to us for trial by Dr. H. H. Dale, F.R.S. Two cases were treated with this drug, the results being shown in the following table:

TABLE X.—Methyl-Psychotrine.

Case No.	Treatment.		Total Amount Given.	Result.
	Began.	Ended.		
11	Nov. 17, 1916	Dec. 6, 1916	108 gr.	Unaffected.
12	Nov. 26, 1916	Dec. 4, 1916	54 gr.	"

As will be seen from the table, the drug appears to have had no effect whatever upon the *E. histolytica* infections in spite of the large amounts administered. Case No. 11 had daily doses of the drug increasing from 2 gr. to 9 gr. Case No. 12, daily doses from 3 gr. to 9 gr. In both cases the drug appeared to be quite non-toxic to the patients. Both were subsequently treated with emetine bismuth iodide, and apparently cured of their infections, as shown in Table VIII. Case No. 11 also had a heavy infection of *Lambli*a, which was not affected by the methyl-psychotrine.

Differential Blood Counts.

Mrs. Briscoe, M.D., B.S.Lond., has very kindly given us the results of some differential counts which she made on some of our carriers. These are shown in Table XI. Mrs. Briscoe says: "They all show the high lymphocyte counts (relative and absolute) so frequently found in cases of 'irritable heart,' and they do not show any marked increase either in the eosinophils or large mononuclears. In fact, there is nothing in the counts to distinguish these men from other men suffering from 'irritable heart.'" This is in agreement with Dr. G. C. Low's findings in cases infected with intestinal protozoa.^{7, 8}

TABLE XI.

Case No.	Date of Count.	Infections in addition to <i>E. histolytica</i> .	Differential Count * (per cent. of 400 Cells Counted).					
			Poly-nuclears.	Small lymphocytes.	Large lymphocytes.	Eosino-phils.	Large mono-nuclears.	Baso-phils.
4	Nov. 3, 1916	<i>Lambli</i> a	54.0	12.75	27.5	3.75	1.5	0.5
5	Nov. 3, 1916	—	51.25	21.75	23.75	2.75	0.25	0.25
	Jan. 17, 1917	—	48.0	8.5	38.75	1.25	3.25	0.25
8	Nov. 18, 1916	<i>E. coli</i>	55.0	26.5	14	2.25	1.75	0.5
	Dec. 20, 1916	—	60.0	18.75	18.75	1.0	1.0	0.5
9	Dec. 4, 1916	<i>E. coli</i> , <i>Lambli</i> a	43.75	22.0	30.75	0.75	2.75	—
11	Nov. 17, 1916	<i>Lambli</i> a	48.0	26.25	17.75	4.0	3.0	1.5
10	Nov. 28, 1916	<i>E. coli</i> , <i>Lambli</i> a	55.75	24.0	16.75	2.0	1.25	0.25
12	Nov. 24, 1916	<i>E. nana</i>	55.0	10.5	26.75	5.0	1.5	1.25
13	Dec. 13, 1916	<i>E. coli</i>	53.0	17.5	25.75	2.25	0.75	0.75
14	Dec. 16, 1916	<i>Lambli</i> a	52.25	14.0	30.25	1.75	1.5	0.25
15	Dec. 16, 1916	<i>E. coli</i> , Chilo-mastix	53.25	8.5	33.5	1.5	2.25	1.0
17	Nov. 3, 1916	? <i>E. coli</i>	52.75	20.25	23.75	2.25	0.75	0.25

* The classification used was that given by Cabot in Osler and McCrae's *System of Medicine*, 1915 (see *Lancet*, June 2nd, 1917).

Acknowledgements.

We take this opportunity of recording our indebtedness to Dr. H. H. Dale of the biochemical department of the Medical Research Committee, and to Mr. Clifford Dobell, for very many helpful suggestions and for the practical interest which they have always taken in our work. Dr. Dale arranged for the supply to us of the various forms of emetine bismuth iodide. The methyl-psychotrine used in the treatments here described was kindly furnished, through Dr. Dale, by Dr. F. L. Pyman, Director of the Wellcome Chemical Research Laboratories; while Mr. Dobell has given invaluable assistance with the protozoological examinations, especially by his confirmation of the occurrence of small cysts of *E. histolytica* in the large proportion of carriers mentioned above. The opportunity is very gladly taken of expressing our sincere gratitude to him for his extremely kind and constant interest.

We are indebted to Lieut.-Colonel J. More-Reid, R.A.M.C., Officer Commanding Hampstead Military (Mount Vernon) Hospital, for permission to publish this account of cases in his hospital.

CONCLUSIONS.

1. Additional infections with intestinal protozoa may be detected at the sixth and later examinations.
2. Infections of *E. histolytica* in which no cysts measuring over 10 μ in diameter are found in the stools are far from uncommon.
3. The use of emetine bismuth iodide has cured a large proportion (95 per cent.) of our amoebic dysentery carriers.
4. The best method of administration of this drug is in the form of the loose powder in cachets in daily doses of 3 grains. At least 36 grains should be given in all.
5. Symptoms of irritable heart in amoebic dysentery carriers are reduced in a large number of those patients who have been cured of the amoebic infection.
6. Infection with intestinal protozoa has no marked effect on the differential leucocyte count.

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SPONTANEOUS EVACUATION OF A SHRAPNEL BULLET IN THE LUNG BY EXPECTORATION.

BY

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THE main interest of the following case lies in the fact that the bullet was spontaneously expectorated four and a half months after the occurrence of the gunshot wound.

On April 6th, 1916, Pte. P. D., aged 33, while on military service in Mesopotamia, sustained a gunshot wound from a Turkish shrapnel shell. The bullet entered just above the middle of the right clavicle, and there was no exit wound. He stated that he lay unconscious for hours, and that it was ten hours after being wounded before he was picked up. There was no haemoptysis. He was transferred to the base hospital at Basra, where, except for some stiffness and bruising in the region of the right shoulder, he felt fairly comfortable. There was practically no cough nor expectoration. In ten days he was transferred from Basra to Bombay, where he made excellent progress, and the entrance wound, which for a time discharged fairly freely, gradually healed up.

After fourteen days, when the wound was nearly healed, he was shipped to a hospital in Alexandria, where he remained until June 20th, 1916. Three days after landing he developed left-sided pneumonia with pyrexia, cough, and expectoration, pain in the left side of the chest, but no haemoptysis. During convalescence he had a second attack of pneumonia, from which he recovered. He was then sent home to England, and on July 4th, 1916, was admitted to the Bermondsey Military Hospital under my care.

On admission the scar of the entrance wound was visible just above the middle of the right clavicle. His general condition was fairly good, and there was no pyrexia. There was slight cough, with frothy, muco-purulent expectoration, and some pain over the left chest in front, particularly in the third left interspace and through to the back. There was also some dyspnoea on exertion. The pain was not continuous, and was sometimes referred to the left shoulder blade. At the base of the left lung there was marked dullness, with loss of vocal fremitus and breath sounds, due no doubt to thickening of the pleura. At the right base there was also some impairment of percussion.

For the first few weeks the patient was kept in bed, and was then allowed to get up and walk about. His general health improved, the pain in the chest becoming much less severe although some cough and muco-purulent expectoration persisted. In order to assist the expansion of the lungs Woolf's



FIG. 1.—Radiogram taken by Dr. Herbert Rhodes at Lewisham Military Hospital on August 1st, 1916, showing the shrapnel bullet *in situ*, lying behind the left auricle. The broadening of the bullet shadow is no doubt due to the effect of the movement of the heart.

bottles were ordered, and the third day after using these (July 28th, 5.30 p.m.) he had haemoptysis (about 5 oz.), which lasted for two hours. The Woolf's bottles were accordingly discontinued.

On July 29th, the day after the haemoptysis, râles were audible, just below the root of the spine of the left scapula, and persisted for a few days. The patient still complained of slight pain in front over the third left cartilage and also at the root of the spine. The chest was x-rayed on August 1st by Dr. Herbert Rhodes, the radiographer to Lewisham Military Hospital, and the antero-posterior view of the thorax revealed (Fig. 1) the shadow of an object, probably a bullet, in the region of the shadow of the left auricle. A stereoscopic examination showed this to be at a depth of 4½ in. from the level of the skin of the front of the chest. The bullet must thus have traversed the chest obliquely from the root of the neck on the right side, crossing to the left side, and ultimately lodging behind the left auricle. The patient's condition slightly improved, but he still had an occasional cough which aggravated the pain in the left side of the chest. There was still some shortness of breath, aggravated by any exertion. As the condition seemed to remain unchanged he was brought before a medical board and discharged from the hospital on August 16th as unfit for further military service.

As he lived in the north of London he was asked to report at the Prince of Wales's Hospital should occasion arise. On August 21st (five days after leaving the Military Hospital) he presented himself at the hospital with the bullet in his hand. It appears that on August 20th he had had a second haemoptysis followed by a restless night and severe pain between the shoulders, which prevented him from lying on his back, and the cough became unusually troublesome. The following morning (August 21st), on getting out of bed, he was seized with a violent fit of coughing and brought up a piece of lead irregular in shape a little over 1 inch in length, and weighing 140 grains (Fig. 2). He was admitted as an in-patient for further observation, and a second x-ray examination was made on August 25th by Dr. James Metcalfe, when the bullet shadow was found to have disappeared (Fig. 3).

Numerous moist râles were now heard over the posterior aspect of the left chest and axilla, a few râles being also audible over the right base. These râles cleared up in about a fortnight and the patient was discharged comparatively well. He is now enjoying fairly good health with the exception of slight shortness of breath on exertion.

The x-ray examination appeared to show that the bullet lay behind the left auricle in the posterior mediastinum close to the root of the left lung; it no doubt impinged on the left bronchus or one of its main branches, through which it must have ulcerated, and so found its way into



FIG. 3.—Radiogram taken by Dr. Metcalfe at Prince of Wales's General Hospital on August 25th, 1916, with no trace of the bullet shown in Fig. 1.

the lumen of the bronchus, to be ultimately expectorated as above described.

It is open to conjecture whether the blowing into the Woolf's bottles which initiated the first haemoptysis on July 28th may not have partially dislodged the bullet, which was expectorated on August 21st, twenty-four days later, after a second haemoptysis. It is remarkable that the bullet did not lodge for some time in the upper air passages, or was not again sucked by inspiration into the bronchial tubes during the paroxysm of coughing. It is possible that during the night of August 20th the bullet may have lain partially projecting through the torn bronchus during the twelve or more hours' clapping between the haemoptysis at 5.30 p.m. on the 20th and the expectoration of the bullet as the patient was getting up on the morning of the 21st. The troublesome cough, the restlessness, and the severe pain in the chest during the night suggest the probability of such being the case, and the final expulsion was no doubt due to the severity of the paroxysm of coughing. Had the bullet lodged permanently in the upper air passages, it would



FIG. 2.—Representation of dislodged bullet or piece of lead from Turkish shrapnel shell coughed up by patient on August 21st, 1916. (Actual size.)

have been necessary to have had it extracted by aid of the bronchoscope. The sharp edges and the elongated form of the piece of shrapnel no doubt contributed to the bronchial perforation and consequent evacuation of the bullet. I know of no similar case of spontaneous evacuation of an ordinary smooth conical rifle bullet.

A BED has been endowed in the Leicester Royal Infirmary by a gift of £1,000 in memory of Mr. John Platts, of the firm of Southall Brothers and Barclay, wholesale chemists, Birmingham.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

BRONCHIAL ASTHMA.

More than forty years ago, in conjunction with my father, I treated asthma amongst the miners of the county of Durham. It was common in those days when the ventilation of the mines was much worse than the conditions now prevailing.

Having had the privilege of acting as a deputy physician to out-patients at the City of London Hospital for Diseases of the Chest, Victoria Park, E., for the last eighteen months, I have been brought into contact with asthma as witnessed amongst those who work with furs, or follow dusty occupations, or more probably live in small, badly-ventilated rooms.

From notes of 94 cases, I find that in 25 per cent. the condition is hereditary; that it afflicts all ages, from 6 or 8 years of age to 60; that certain seasons aggravate the complaint, whether this be due to the humidity of the atmosphere or a fall in the barometer. Dry frosty weather agrees best with most asthmatics. Any indiscretion in diet is certain to be followed by a night of asthma; and here we notice the analogy between asthma and epilepsy. In each case it is a madness of the nerves; in bronchial asthma it is the pneumogastric nerve that is at fault. In each complaint an error in diet aggravates the trouble. Sometimes premonitory symptoms or warnings are recorded in epilepsy and asthma. With asthma there may be a tickling or stuffiness of the nose just previous to the attack.

An asthmatic patient feels well for three or four weeks and then may be laid low for a whole week; this resembles the story given by the epileptic. Most asthmatics have constipation, and the same condition aggravates the lot of the epileptic. Bromides relieve the epileptics, whilst iodides do much good to the asthmatics. As described by many authors, the asthmatic has not only his struggle to breathe, but he has a violent cough which continues until he can bring up a pellet of mucus, and then he finds relief and may get some sleep. For the severe attacks of asthma a preparation "Grindelene" does good. It contains *grindelia*, potassium iodide, liq. trinitrin., and tincture of *Euphorbia piliifera* (Oppenheim). For chronic conditions of asthma which generally came before me, when the patient is seldom free from the wheezing and contraction of the chest, nothing does so much good as a combination of potassium iodide and magnesium sulphate, 5 grains of the former and 1 drachm of the latter, in an ounce of water, taken three times a day, two hours after a meal. The preparation of this combination requires consideration; it is necessary first to dissolve the magnesium sulphate in hot water before adding the potassium iodide. If the two salts are mixed without this precaution a solid mass will result. I prescribed the preparation for all the cases which came under my care. If a toxin exists in asthma, as some assert, then the iodide will destroy that toxin. It will cause also a flux or flow of watery mucus from the bronchial tubes, much to the relief of the patient. The magnesium sulphate removes any constipation that may exist, and, acting upon the first part of the intestinal tract, washes away any effete matters which may offend. In addition to the drug treatment I always gave strict injunctions as to diet, and generally provided a printed form for the guidance of the patient.

Ruislip, Middlesex.

EDWARD JEPSON, M.D.

BASOPHILIA IN THE DIAGNOSIS OF LEAD POISONING.

SOME years ago I convinced myself that the presence of punctate basophilia was a valuable help in the diagnosis of lead poisoning, as several writers had insisted. By treating eight suitable cases—diarrhoea, haemorrhage, etc.—with lead acetate, after the manner of an older generation, I found that in seven punctate basophilia appeared on the third to the seventh day of treatment. In a case of uterine haemorrhage it did not appear during a fortnight's treatment. Recently I was consulted in the case of a painter who believed himself to be suffering from lead colic. The result of a careful examination was negative, but my view was not accepted. Later I was consulted again. I had examined the patient's blood without finding basophilia.

I was aware that this did not exclude lead, but it occurred to me that, if I carefully examined the blood again without finding a trace, I might quite safely give him a few doses of lead and watch the result. On the fourth day punctate basophilia was distinctly observed, and the medicine immediately stopped without any bad result whatever. The inference appears to me to be quite legitimate that the man's blood reacted in a normal manner to lead, and that the previous absence of basophilia might be accepted as evidence against lead poisoning.

Ealing.

ROBERT CRAIK.

Reports of Societies.

VALUE AND LIMITATIONS OF SANATORIUM TREATMENT FOR TUBERCULOSIS.

At a meeting of the Medical Society of London on November 12th, the President, Sir ST. CLAIR THOMSON, being in the chair, a discussion was opened on this subject, and adjourned to Monday next.

INTRODUCTION.

Dr. T. D. LISTER said that according to the annual report for 1916-17 of the medical officer of the Local Government Board, the deaths from pulmonary tuberculosis had increased 12 per cent. since 1913, the mortality depending on environment rather than on infection. Since 1911 the number of beds available for the treatment of tuberculosis had doubled, and tuberculosis dispensaries had increased over twelve-fold. He disagreed with the statement made in the report that measures for the treatment and prevention of tuberculosis were, to a large extent, identical. He had seen better results from sanatorium treatment in certain bad cases when they had come from the industrial group than in certain good cases coming from a higher social class. The industrial patient sometimes got a better chance because he got a bigger change. Sanatorium treatment could not be carried out in the majority of homes. Too much might sometimes be claimed as the result of the institutional training, and the lessons learnt were, more often than not, largely forgotten after leaving. He thought that efficient treatment at home was more expensive than that at a sanatorium. The after-history depended largely upon opportunity. Few patients would or could change their environment afterwards. He asked whether the value of the sanatorium method was increased by using any of the derivatives of the tubercle bacillus, and if so, what were its uses in the many cases of mixed infection and the relatively few cases in which a pure infection could reasonably be inferred? The association with tuberculin of vaccines for mixed infection was difficult, costly, and complicated. Such methods were better carried out in sanatoriums under full control, but were only adapted for a very small proportion of the total mass of cases in institutions, so that the value of sanatorium treatment could be little affected by them. The carefully planned scale of diet of the sanatorium, with general attention to digestion, rest and exercise adjusted to meal times, might in some proportion of patients be sufficient to turn the scale in the right direction, but there were some in whom improved nutrition and consequent formation of immunizing bodies was impossible because of an original fault in their biochemistry. The manner in which a family resisted or succumbed to tuberculosis was of great importance in prognosis; diet was often a matter of family tradition, and a type of biochemistry was readily inherited. The results attained by those who gave much or little medicine by mouth or in other ways did not seem to differ greatly. Creosote was still variously used. Nascent iodine treatment did not seem to give all the results hoped for, and latent syphilis should be excluded before ascribing any improvement to the effect of this method on tubercle. The gradual fall of the total death-rate was, he thought, due to the creation of a race resistant to tuberculosis by the ruthless methods of nature, and if nature was to be assisted there was perhaps more to be said for prophylactic inoculation than for increased institutional treatment. The real value of the sanatorium was that it demonstrated how resistance was regained, and inferentially, therefore,

how it was previously lost. What was needed was better domiciliary treatment, and a larger number of skilled supervisors.

THE WELL-TO-DO.

Dr. DAVID LAWSON said that the well-to-do patient usually came under treatment while the disease was in its early phase; he was free to absent himself from home for whatever length of time was necessary, and he was free from anxiety on account of those whom he had left at home; it was therefore reasonable to expect that the results of sanatorium treatment of this type of patient would be more favourable than those obtained where the cardinal element of prolonged treatment had not been available. Sanatorium treatment, as it was now understood and administered, secured for the patient, under special climatic surroundings and under conditions specially favourable for detailed supervision, all the resources of modern medicine. He gave records of 1,000 cases of pulmonary tuberculosis which had passed through his hands in recent years, these including a small number of cases of pleurisy presumed to be tuberculous. The patient's condition was considered as it appeared to be on the point of leaving the sanatorium. He divided them into three categories: (1) Those whose state had *depreciated*—that is, (a) those who had died in the sanatorium, and (b) those designated "worse," in whom the disease appeared to be inexorably advancing; (2) those who were *improving*; (3) the *appreciated* class, including cases of arrest or complete recovery. Under complete recovery were included those patients whose expectoration had either disappeared or contained no tubercle bacilli, and in whose chests no evidence of moisture could be detected; by arrest was meant a similar condition, except that (a) there might still be a little expectoration from time to time containing tubercle bacilli, and (b) a little moisture in the lung might still be recognizable.

TABLE I.—Analysis of 1,000 Cases of Pulmonary Tuberculosis treated under Sanatorium Conditions.

Depreciated, 204=20.4%.		Improving, 265=26.5%.	Appreciated, 531=53.1%.	
Worse, 141=14.1%.	Died, 63=6.3%.		Arrest, 170=17%.	Complete recovery, 361=36.1%.

TABLE II.—Analysis of the Cases whose Condition Appreciated under Treatment in Relation to the Number of Lobes Involved.

Appreciated, 531 Cases.		
1 lobe, 301=56.6%.	2 lobes, 189=35.6%.	3 lobes or more, 41=7.8%.
Closed cases	...	288=54.2%.
Open cases	...	243=45.8%.

TABLE III.—Malaria.

Depreciated, 8=24.2%.		Improving, 9=27.2%.	Appreciated, 15=48.5%.	
Worse, 7=21.3%.	Died, 1=2.9%.		Arrest, 7=21.3%.	Complete recovery, 9=27.2%.

TABLE IV.—Appendectomies.

Depreciated, 11=21.6%.		Improving, 6=11.8%.	Appreciated, 34=66.6%.	
Worse, 8=15.7%.	Died, 3=5.9%.		Arrest, 9=17.6%.	Complete recovery, 25=49%.

TABLE V.—Laryngeal Phthisis.

Depreciated, 22=48.8%.		Improving, 12=25.5%.	Appreciated, 13=27.6%.	
Worse, 3=25.5%.	Died, 10=23.3%.		Arrest, 7=14.8%.	Complete recovery, 6=12.8%.

TABLE VI.—Senile Phthisis.

(Occurring after 50 years of age.)

Depreciated, 22=38.6%.		Improving, 17=29.8%.	Appreciated, 18=31.6%.	
Worse, 15=26.3%.	Died, 7=12.3%.		Arrest, 7=12.3%.	Complete recovery, 11=19.3%.

Sex incidence: Male, 49; Female, 8.

Age incidence: Under 60 years, 47; 60 years and over, 10.

Regarding the bearing of a parental history of pulmonary tuberculosis on the results of treatment, he said that in 112 instances one parent had suffered from pulmonary tuberculosis. In only 10 instances had both parents been tuberculous. This fact seemed strangely at variance with the popular impression that heredity exerted a determining factor upon the incidence of pulmonary phthisis.

He then considered to what extent the patient's own clinical history of certain maladies tended to limit or affect the result of treatment.

Syphilis occurred in 8 cases, and did not appear to be necessarily a serious element in regard to prognosis.

Malaria occurred in 33 cases, of whom 8 died, 9 occupied an intermediate position and improved, and of the remaining 16, all of whom did well, 9 made complete recoveries, and in 7 the disease became arrested. These figures would appear to indicate that this disease should be more seriously regarded in endeavouring to form a prognosis than had usually been the case with many in the past.

Appendectomy had been performed previously on 51 patients, or over 5 per cent. of the total number. Of these, 11.21 per cent. depreciated, 6.11 improved, and 66.6 per cent. appreciated.

Pleurisy occurred as an antecedent in 114 cases, and in a large majority had been present at the base upon the same side as that on which the apical disease appeared at a later date. That it was the commonest of all precursors of pulmonary tuberculosis suggested the desirability of prolonged after-treatment where the disease appeared in youth.

He then spoke of the extent to which certain complications limited the effect of sanatorium treatment.

Glycosuria.—Five cases have been observed, of which one died, one made a complete recovery, and three appeared to be improving when they left the sanatorium.

Ischio-rectal abscess had not proved to be a common complication, and in the series now under review occurred in only 2.3 per cent.

Meningitis.—The great rarity and extreme gravity of this complication of pulmonary tuberculosis in the adult was evidenced by the fact that it occurred in only four cases, but in all proved rapidly fatal.

Laryngeal disease was a grave complication. The number treated was 47, or 4.7 per cent. of the whole, and of these 48.8 per cent. did badly, 25.5 per cent. improved, and 27.6 per cent. appreciated, of whom 6.12 completely recovered. Except as a palliative recourse undertaken to alleviate suffering he had not been favourably impressed by the results which had followed surgical interference. Partial or complete rest of the organ continued to be the most effectual weapon in combating this complication.

Senile Phthisis.—There were 57 cases of senile phthisis—that is, occurring in patients over 50 years of age. In only 10 instances was the onset of the disease delayed beyond the sixtieth year. Depreciation took place in the condition of 22 patients, of whom 7 died; appreciation occurred in 18, of whom 11 made complete recoveries; the remaining 17 improved. From those figures it appeared that pulmonary tuberculosis occurring in later life was both more common and more serious in regard to the prognosis attaching to it than many had thought. He felt convinced that routine examination of sputum for tubercle bacilli in all cases of recurring winter cough and subacute and chronic bronchitis occurring in patients over 45 years of age should be more widely adopted in general practice than at present appeared to be the case.

Diet.

With regard to diet, he disapproved of excessive super-alimentation, and based the dieting at Banchory upon the conclusions arrived at as the result of the investigations on the metabolism of phthisis carried out by Drs. Bardswell and Chapman and Dr. Goodbody. When a patient had reached the vicinity of his top weight dyspepsia was apt to set in, and this should be taken as an indication for making a permanent reduction in the amount of food given.

With regard to alcohol he dispensed with its use, except for patients of 50 years and upwards who had accustomed themselves to a nightcap of this kind and who slept better if the practice was not interfered with. In some of the more marked cases of anaemia red wines seemed to be of true value. As a temporary change from milk, when

recurring bilious attacks were causing trouble, beer or whisky and soda were useful, but the milk in the diet ought to be resumed at the earliest possible opportunity.

Recreations.

In order to induce patients to prolong their residence under sanatorium conditions by relieving the monotony of the life, he decided to try the effect of employing mild outdoor games as a form of exercise. In 1904 a short 6-hole golf putting course was laid out within the sanatorium grounds. That the change was on right lines very soon became apparent. Its application had therefore been steadily extended. With its extension it was observed that the depression and morbid introspection began to disappear, the tone of the patients steadily improved, until at length it reached and had been maintained at a level which, alike from the doctors' and patients' point of view, left nothing to be desired.

In selecting the particular form of sport which might be prescribed, the following restrictions ought to be observed:

(a) It should not be possible for the patients to exhaust themselves in following it. For this reason such sports as these should be barred: hockey, football, lacrosse, fives, tennis, hunting, dancing, long-distance running, boat racing.

(b) The risk of mechanical strain with consequent rupture of an imperfectly healed lesion should be avoided. On that account these sports ought to be barred during the term of treatment and for a minimum of one year after recovery has taken place.

He was absolutely convinced that resumption of full golf ought to be strictly discontinued within twelve months of complete recovery having taken place.

Shooting seemed quite suitable if the patient was content to confine himself to a moderate amount of walking, but he should be warned against firing at the bird which was disappearing quickly over his head, as the sudden upward movement of the arms required involved all the risks of mechanical strain in the region of the apices of the lungs.

Swimming.—Provided the powers to reaction as shown in the circulation were good, he had seen nothing but benefit result from this form of exercise.

Tobogganing was permissible, and also skating if carefully regulated, but bobsleighting, because of the chest compression, involved unwarrantable risks of inducing a breakdown through mechanical strain.

Alluding to special forms of treatment, he said that only on the rarest possible occasion had he seen tuberculin inoculation, when administered during the pyrexial phase of the illness, followed by any benefit. The most useful role of tuberculin was to employ it when, a large measure of arrest having already been attained, the patient's progress appeared to have come to a standstill. Reserved until this stage its exhibition was then frequently followed by a fresh start being given and the patient renewing his progress towards recovery.

Artificial pneumothorax was by far the most valuable addition to the armamentarium of the sanatorium physician which had been made in our generation. He had found it of the greatest possible value in two conditions: (a) as a means of stopping hæmorrhage which was present on a dangerous scale, and (b) in bringing about arrest in localized acute disease. In regard to cases of widespread dry pleurisy, although he had separated the pleural surfaces in such cases, he was still in doubt as to the value of the operation in this connexion.

THE MIDDLE CLASSES.

Dr. NOEL BARDSWELL said that the patients at the Midhurst sanatorium included clerks, school teachers, shop assistants, commercial travellers, civil servants, and members of the various professions. The average length of treatment in the sanatorium was four to five months. He gave statistics concerning 384 cases observed over six years following their discharge, in which the number of deaths which occurred among patients of various ages—termed the "actual deaths"—was compared with the number of deaths which would have occurred had these same patients been members of the general population—termed the "expected deaths." The cases were divided into two groups—Group I including those in which one lobe was involved, and Group II those in which more than one lobe was involved, with slight constitutional disturbance as well. Tubercle bacilli were present in the sputa of all these

patients. The record showed that during a period of six years following discharge from the sanatorium the number of deaths which occurred among Group I (101 cases) was over six times, and among Group II (283 cases) over twenty times that of the expected deaths. Taking the experience of the 384 cases, the actual deaths during the period of observation were more than sixteen times as many as the expected number. When observations were extended over a longer period of years the disparity between actual and expected deaths became less marked, as the worst cases succumbed during the first few years after discharge. A similar study of the after-histories of 1,449 cases treated at the Adirondack Sanatorium, U.S.A., published by Lawrason Brown and Pope, showed almost identical results. He thought after-care was of supreme importance. Among those who had done well a large proportion had been enabled to continue their treatment for some months after leaving the sanatorium. The nature of the employment followed had a great bearing upon prognosis. The most encouraging results appeared among those who were able to exchange unfavourable for favourable conditions of work. Removal to country districts was of the greatest advantage, and, where this was impossible, a shortening of the hours of work or a long week-end for some months after discharge had proved of much value. He wished to emphasize the point that the critical time began when the sanatorium was left. Success or failure was determined during the next two or three years. It was the patient himself and the general practitioner who then shouldered the responsibility, and but for their full appreciation of the position and ready co-operation much of the work of the sanatorium would be lost. More than once he had discussed the question of sanatorium treatment with some of the senior members of the profession, and their opinion agreed with his own, that the sanatorium movement had influenced profoundly for good the outlook for the consumptive. His experience was that, however favourable the home conditions might be, a short term of practical instruction in a sanatorium was of much assistance both to the patient and his medical attendant. He agreed that statistics should be approached with doubt, but to be able to state whether a patient were alive or dead six or seven years after discharge was to possess data of real value. The after-history results at Midhurst for the three consecutive years during which tuberculin was employed largely were no better than those for any three years during which it was not used at all—nor were they any worse. The same could be said for vaccine treatment of mixed infections.

THE WORKING CLASSES.

Dr. WILFRID O. MEER said that the results of sanatorium treatment of the working classes, as revealed by the after-histories, were at present far from satisfying. During the three years 1905-6-7, 292 patients, in whose sputa tubercle bacilli had been found, were discharged from the sanatorium at Frimley. Of 266 of these who were traced to the end of the first year following that of their discharge, 65.8 per cent. were well and working, 24.4 per cent. were alive, and 9.8 per cent. were dead. Of 245 traced to the end of the second year following that of discharge, 56.8 per cent. were well and working, 21.6 per cent. were alive, and 21.6 were dead. Of 209 similarly traced to the end of the fifth year following that of discharge, 38.8 per cent. were well and at work, 14.8 per cent. were alive, and 46.6 per cent. were dead.

He then considered some of the chief factors responsible for such a rapid loss of working capacity in so high a proportion.

1. *The Return to Faulty Environment*.—The great majority of these 292 individuals returned to their work in London at which they had broken down previously. Statistics were given illustrating the rapid wastage on return to urban industrial life, and the improved outlook under better conditions. As shown in the case of the patients who had been able to secure a change for the better in their work and surroundings, obvious alternatives were: (a) Greatly prolonged residence in sanatoriums; (b) a long or short period of treatment, respectively combined with or followed by training and subsequent start in suitable work in a proper environment; (c) the establishment of rural industrial centres, in which patients could work at their accustomed or some closely allied branch of industry.

2. *The lack of provision for prolonged treatment*, the working man, who is obliged to return to full work immediately upon his discharge, requiring longer sanatorium treatment than any other class.

3. *Lack of Provision for Re-treatment*.—If loss of health or recrudescence of symptoms pointed to a probability of relapse, prompt cessation of work and removal to a healthy environment were called for. Improvement was most rapid and satisfactory under sanatorium supervision, but admission, as a rule, involved a long period of waiting.

4. *The admission of cases unsuitable on grounds other than medical*, such as habits, lack of will power and intelligence.

5. *The Need for Earlier Diagnosis*.—In a disquieting proportion of the patients reaching sanatoriums for the first time permanently crippled by extensive disease there was a previous history of initial symptoms disregarded or made light of. Since treatment of advanced active disease was so hopeless, and since in even selected cases of manifest disease present methods called for elaborate and costly amplification, recognition of initial symptoms and supervision at the really incipient stage were all-important for the working man. Given certain essentials—namely, early diagnosis, reasonable treatment, and a chance to spend his future working life in a proper environment—certain attributes of this class of patient made him the most profitable subject for sanatorium treatment.

Captain H. MORRISTON DAVIES said that the mechanical disabilities, which appeared almost from the earliest stage, gave rise in chronic cases to symptoms more serious even than the primary disease. They were due, on the one hand, to the fibrous tissue formation in the lung and in the pleural membranes, and, on the other, to the anatomical and physical conditions of the lung, of the pleural cavity, and of the surrounding walls. At first, contraction of the lung, due to the fibrosis, could to a great extent be equalized by the falling in of the chest wall, by the displacement of the mediastinum and diaphragm, and by emphysema of the healthy parts of the lungs. Once this stage was past, and with the increase of the fibrosis, of the bronchial dilatation and secondary infection, and the development possibly of cavities, a temporary improvement only could be hoped for, unless the mechanical disabilities were compensated by surgical interference. The four methods available were:

1. Nitrogen displacement, with stretching, division, and even rupture of adhesions when necessary.

2. Partial replacement of the lung and parietal pleura by foreign substances when the disease was localized and nitrogen displacement impracticable owing to pleural adhesions.

3. Rib mobilization, by which operation the lung, together with the chest wall, were collapsed; this was a more serious operation than nitrogen displacement and therefore suitable only when the latter was impossible.

4. Paralysis of the diaphragm by section of the phrenic nerve in the neck. The affected half of the muscle was relaxed, and rose into the thorax. The symptoms due to distortion of the diaphragm owing to basal adhesions or to the drag on the muscle during nitrogen displacement were abolished. There was a reduction in the size of the lower part of the pleural cavity, and a partial collapse of the base of the lungs. This was of great benefit in cases of tuberculosis or of dilatation, whether primary or secondary, of the bronchial tubes of the lower lobe.

Surgical intervention must not be regarded as a method of treatment which could be carried out independently of the medical. The best results were obtained by the closest combination of the two.

If the type of case was rigidly selected, the results obtained were extremely gratifying.

All these methods produced a general or local collapse of the lung. They allowed the fibrous tissue to contract without causing distortion of the intra-pulmonary and extra-pulmonary structures. Interstitial and bronchial cavities were obliterated and the serious effects of secondary infections were abolished. The lung was at rest and the symptoms subsided. The patient was thus placed in a condition in which medical and hygienic treatment could be employed with most beneficial results.

THE USE OF NITROUS OXIDE AND OXYGEN WITH REBREATHING IN MILITARY SURGERY.

At a meeting of the Medical Society of London on October 29th, the President, Sir ST. CLAIR THOMSON in the chair, Captain H. EDMUND G. BOYLE, R.A.M.C.(T.), read a paper on experiences in the use of nitrous oxide and oxygen with regulated rebreathing in military surgery at the 1st London General Hospital.

INTRODUCTION.

Captain Boyle said that with this method induction was easy, and recovery rapid and comfortable.

Method of Induction.

Half an hour before the operation the patients were given a preliminary injection of morphine tartrate $\frac{1}{4}$ gr., atropine sulphate $\frac{1}{100}$ gr., scopolamine $\frac{1}{100}$ gr., made up so that 5 minims was the dose. One drop of pure carbolic was added to 4 oz. of the mixture as a preservative. The apparatus used was Gwathmey's,¹ and consisted of four cylinders, two for nitrous oxide and two for oxygen. The supply of each was controlled by two graduated taps, which permitted the gases to flow through the glass bottle containing water in a proportion which could be seen, so that there was visual evidence of how much of each gas was being inhaled by the patient. The gases might go direct to the patient by way of the rebreathing bag, or might be directed through a bottle containing either ether, or chloroform and ether, or such mixture as the administrator chose. The facepiece had at its top a valve to permit a certain amount of intake and output of air and mixed gases. During induction the room should be absolutely quiet, and he preferred to have the head slightly raised until anaesthesia was complete, when he lowered it to the horizontal. He frequently inserted a small dental prop before starting, and always did so when the patient did not breathe easily through the nose and when the nose was narrow with very thin alae nasi. The thin alae were drawn in towards the septum and the patient made violent efforts to breathe but got next to nothing into his lungs. He then became pale, with a bluish tint round the mouth. The pupils dilated and sweating came on. The treatment was to open the mouth and get air and oxygen into the lungs.

At first the bag was filled with nitrous oxide and oxygen in the proportion of 4 to 1, rebreathing starting almost from the beginning. The supply of nitrous oxide was then increased until flowing freely, in order to lessen the period of induction. In about three to four minutes the patient's breathing took on that automatic character which was such a constant sign of anaesthesia. Any degree of cyanosis must be remedied by the addition of a little oxygen, very little being needed to change the colour back to pink. As soon as anaesthesia had been attained the amount of nitrous oxide was reduced to 4, the oxygen being at 1. With this rate most patients would go on perfectly well, and rebreathing could be continued most of the time. Retching or vomiting indicated that there was too much rebreathing, and the valve of the facepiece should be opened and the supply of nitrous oxide and oxygen increased. To deepen the anaesthesia the pressure in the bag should be increased until, when an expiration took place, the bag became taut. The signs of overdosage were noisy and stertorous breathing, followed by twitchings of the muscles, and accompanied by cyanosis. The remedy was more oxygen. The importance of an open and free airway should never be forgotten.

It sometimes became necessary to add either ether or C.E. mixture to the gas and oxygen when extra relaxation of the muscles was required, or during amputations when the nerves were being severed, or occasionally if there was a little difficulty during induction in obtaining anaesthesia. Up to the present he had only added chloroform in the case of a burly or alcoholic patient who needed something more potent than ether alone.

Regulation of Rebreathing.

With regard to regulation of rebreathing he agreed with Gwathmey, who said that approximately the rate of flow of the gases should be such that from a quarter to a half

¹ See his paper, BRITISH MEDICAL JOURNAL, 1917, vol. 1, p. 393.

of the volume of each respiration was of freshly added gas mixture. Too much rebreathing was apt to be followed by post operative discomfort, usually headache, and it might cause an increase of post-operative nausea and vomiting. Vomiting during the progress of the anaesthesia was often an indication of excessive rebreathing for that particular patient, although in comparison with other patients it might not appear excessive. With regulated rebreathing the profuse sweatings and exhaustion noticed after prolonged nitrous oxide and oxygen alone did not occur. The patients retained a good colour, their temperature was, if anything, slightly raised, and there should be no sweating.

Symptoms of Overdose.

The symptoms of an overdose of nitrous oxide in the presence of sufficient oxygen to keep the patient pink were, first, stertorous respiration, and, secondly, the onset of an excessive secretion of mucus. Unless the percentage of nitrous oxide were then decreased the patient's face and hands took on a death-like pallor (not cyanotic); there was absolute loss of all the facial reflexes; the respirations became shallow, and probably the blood pressure fell. This condition, if pushed, would probably lead to death from paralysis of the respiratory centre. The treatment was rapidly to remove the mask and start artificial respiration and to administer oxygen, remembering always to keep the airway clear.

After-condition of Patient.

The post-operative condition was striking. The patients were conscious within two or three minutes of the removal of the anaesthetic, and, in the majority of cases, were not sick. There was in a fair proportion a feeling of nausea, lasting about twenty minutes, and occasionally there was some headache, which was probably due to too much rebreathing for the particular patient, but beyond that the recovery was perfect. There was no taste of ether in the mouth, and no waves of ether vapour coming over as the patient eliminated the drug, even if a little ether had been given during the early stages of the anaesthetic. Since both gases were non-toxic, the combination was especially suited to the badly wounded and septic man. In most of 200 consecutive cases at the 1st London General Hospital there was no appreciable rise of temperature after the operation. Of 711 cases in which this combination was used, 5 had had bronchitis, one of whom had slight bronchopneumonia. There were no fatal cases. Of 550 administrations by Captain Boyle alone, 38 per cent. had either ether or C.E. mixture (two had chloroform alone).

Contraindications.

He considered the method unsuitable (1) for operations in which absolute relaxation was required all the time; (2) some abdominal cases—for example, gall bladder operations. These could be done, but unless the surgeon was prepared to make a large incision and to inject the muscles with some analgesic mixture the operative procedure would be very difficult. It was possible to do appendix operations if the surgeon were going through the muscles over McBurney's point, but if he preferred to go behind the rectus, unless there was to be an injection of the muscles, the gas and oxygen method was not, from the point of view of the surgeon's comfort, to be advised.

Conclusion.

The average amount of the gases required under ordinary consumption was 200 gallons of nitrous oxide and 60 gallons of oxygen for two and a half hours. The work of the nurses was considerably lessened when this combination was employed, as a conscious patient who was not vomiting did not require the undivided attention of a skilled nurse. This was of great importance in a large military hospital where eight or ten operations might be all from the same ward during a morning's work. This combination of anaesthetics was not one to place in the hands of the careless or inexperienced. It required skilful administration, and if used carelessly would inevitably lead to disasters.

DISCUSSION.

Colonel D'ARCY POWER confirmed all Captain Boyle had said from the surgeon's point of view. Unless care were taken the patient was likely to come out of the anaesthetic, as the anaesthesia was on the light side.

Dr. DUDLEY BUXTON said that before using the method much care and experience were necessary, and he emphasized the importance of rebreathing. There were two schools: one held that there was always some cyanosis, the other that cyanosis was dangerous and should be avoided. He agreed with the latter, and considered that cyanosis was not a necessary accompaniment of anaesthesia; cyanosed cases were always worse afterwards. He thought it better to give the alkaloids an hour before the operation, and laid stress on the importance of silence during induction, for which there should be a separate room.

Mr. HERBERT PATERSON said that one drawback to the method was that when gas and oxygen were given for abdominal operations patients suffered severe pain for about twelve hours afterwards. He thought the reason was that the intestine was not paralysed, as after ether and chloroform, so that peristalsis continued for longer; but morphine could be given as it could not be after the latter anaesthetics. One of the greatest advantages was the absence of nausea, which lasted about three days after the administration of ether. With regard to the very slight post-operative rise of temperature, he said that after clean operations performed under aseptic conditions some rise of temperature was regarded as usual, but he had found that the average post-operative rise of temperature with gas and oxygen was one degree less than in similar operations in London performed under gas and ether. He showed temperature charts of patients operated on for appendicitis and hernia, illustrating the difference in temperature in those who had gas and oxygen and those who had chloroform and ether. In the former the highest temperature was 99° F., whereas in the latter it usually rose to about 100° F. In some cases in which gas and oxygen had been given there was no rise of temperature at all. The gas and oxygen method in experienced hands was incomparably better than chloroform and ether. Gas and oxygen were first given for long operations in 1895, but since then the technique had been much improved. The late Sir Frederick Hewitt and Mr. Bellamy Gardner used it in 1895, and it was rediscovered in America in 1897. He considered it most difficult to give; six months' or even a year's experience was needed before it could be given satisfactorily from the surgeon's point of view. It might make the operation more difficult to do, but the patient was safer and was more comfortable afterwards, and fatalities were less frequent.

Colonel H. J. WARING said that, owing to the shortness of induction, much of the surgeon's time was saved. The following classes of case were suitable for gas and oxygen: (1) Septic cases and patients requiring severe operations; (2) operations on patients who were extremely ill, as there was very little shock; (3) operations on old people, as there was not the same danger of bronchitis. The method was not suitable for muscle splitting operations, such as operations on the gall bladder, but was good for operations for enlarged prostate and septic operations. He thought that the small amount of suffering by the patient was a very important point, and gave instances illustrating very quick recovery.

Mr. J. H. CHALDECOTT said that his experience of gas and oxygen dated from the publication of Crile's paper in this country. It was then used combined with local anaesthesia, and he had so used it at St. Mary's Hospital for abdominal operations. He considered it good combined with local anaesthesia; the gas and oxygen provided unconsciousness; the local anaesthetic provided anaesthesia. He never gave gas and oxygen alone for gall-bladder operations, but combined with novocain it was excellent, and there was no after-trouble. Referring to the management of cases, he said that (1) a good airway should be ensured before starting; (2) there should be silence during the induction and during anaesthesia; and (3) the anaesthetic should be continued until the patient was on the trolley and not stopped while he was still on the operating table or he would come round. It was important that the patient should be placed in position for operation before induction.

Major McADAM ECCLES, who said that patients complained of the tooth-prop, asked for information as to the relative cost of the method as compared with ether and chloroform. The weight of the apparatus would make it inconvenient for use in many instances, such as for operations performed in private houses. Owing to the quantity

required, gas might run out in the middle of the operation. He attributed the after-pains to the intestine not being paralysed and peristalsis still going on; the pain was relieved by placing rubber hot-water bottles on the abdomen. He insisted on the need for quiet before induction, and thought the alkaloids were important in this connexion. The patient should never be touched during induction by any one but the anaesthetist, and should be placed, for preference, on the operating table before induction. The rapidity of induction allowed this without loss of time to the surgeon.

Dr. SHIRWAY said that rebreathing introduced a new factor—namely, CO_2 —which acted as a stimulant to the respiratory centre, and therefore produced a different type of anaesthesia. With an increase of CO_2 in the bag and a diminution of oxygen the heart, already starved of oxygen, was being stimulated and would easily become dilated. In America a good many deaths were known to have occurred under gas and oxygen. He suggested that the percentage of CO_2 in the bag should be worked out. He attributed vomiting during and after anaesthesia to stimulation of medullary centres by CO_2 , and thought the amount of CO_2 should be reduced as much as possible. There was urgent necessity for research in anaesthesia—both scientific and physiological—and money was needed to carry it out.

Mr. HUGH LETT expressed the opinion that gases should be heated; the administration of unheated gases might be the cause of bronchitis.

Mr. BELLAMY GARDNER said that there was great danger in trying to rely solely on gas and oxygen. When vomiting occurred during anaesthesia it was not possible to overcome the consequent closing of the air passages by narcotizing the vomiting centre further, as could be done by ether and chloroform. He thought the advantages of the method were not compensated for by the disadvantages of which the patient was ignorant.

Dr. HUGH PHILLIPS said the effect of gas and oxygen combined with local anaesthesia depended upon the method of local anaesthesia employed. If complete in all layers, the result was very good. Silence was of more importance in this method than in any other; the patient should be placed on the table some time before induction was begun. The disadvantages of the method were the weight of the apparatus and the expense. The cost of gas and oxygen and sufficient ether was about 10s. to 12s. an hour.

The PRESIDENT noted the remarkable absence of shock after some operations—for example, in resection of the septum and in laryngo-fissure, the latter requiring a good deal of manipulation. He accounted for it by the fact that a local anaesthetic was always used.

Captain BOYLE said, in reply, that the amount of experience needed depended entirely upon the person. Some learnt the method very quickly. He thought the cost was about 7s. 6d. an hour. The apparatus weighed about 65 lb. There was no need to heat the gas, as it was heated by the patient's breathing. If the gas ran out, it was easy to pass the oxygen through the ether and give that combination for the remainder of the operation.

Rebrielus.

A TEACHER'S TEXTBOOK OF MIDWIFERY.

TEN senior and junior teachers of obstetrics in London, representing between them eight general hospitals and three large lying-in hospitals, have united under the general guidance of Dr. COMYNs BERKELEY in a textbook of *Midwifery*.¹ Primarily designed for students, it is calculated also to be useful to practitioners.

The authorship is sufficient guarantee that the teaching contained in the book is sound. Generally speaking, it reflects thoroughly modern views with sufficient conservatism to act as a corrective to any extreme tendencies. But the main interest of the book lies in the system of collaboration by which it was written. In the case of textbooks of midwifery the chief difference between one book and another lies in the method of presentation of the

subject. The bulk of the subject matter is much the same in them all, but in the method of presenting it the author's individuality gets a chance to show itself, and thereby the book is probably either made or marred.

In the case of this textbook the editor states that efforts have been made to overcome the defects of collective authorship. The manuscript of each author was circulated amongst the other nine and numerous meetings were held at which the various portions of the work were criticized and amended and, if need be, rewritten "so as to include, as far as can be, the views of all."

The result of this treatment has admittedly been to remove the common glaring faults of collective authorship. But it has done more. It has made the writing almost entirely devoid of individuality and rendered it rather dull reading for students. Here and there flashes of individuality appear to emphasize the general greyiness. Such, for example, is the section upon the scopolamine-morphine combination—a brief, trenchant, and sound discussion of the subject, tinged with the saving grace of humour that is so conspicuously absent from the lay articles on that topic.

Apart from these faults of design, the book gives a full and able account of its subject, and the practical teaching bears, as one would expect, the hall-mark of wide and active experience. The illustrations are good, and in most instances helpful. It seems rather a waste to expend almost a page of the chapter on eclampsia upon an illustration of such a non-essential feature as dilatation of the ureters. There are also one or two minor mistakes, such as Fig. 303, where the block has been placed upside down. The paper and printing are excellent. We congratulate the editors on a high degree of success in a difficult venture.

PSYCHOLOGICAL MEDICINE.

THE third edition of Dr. MAURICE CRAIG's successful book on *Psychological Medicine*² contains a new chapter on the functional neuroses and psychoneuroses which have become so prominent since the outbreak of war. A wise caution is thrown out not to regard as malingering the manifestations of war shock unless obviously so proved, for this old view is true in but few cases and should then be easily detected. While hypnotic suggestion is admitted to have been beneficial in some of the cases, the results of psycho-analysis have not impressed the author favourably. In the well-illustrated account of general paralysis of the insane some reference might have been made to Noguchi's demonstration of the presence of spirochaetes in the substance of the brain, which has made the term central or parenchymatous syphilis preferable to the more familiar "parasyphilis," and to the conception that the clinical manifestations of "parasyphilis" are an expression of the reaction and necrosis of hypersensitized areas of the nervous system evoked by the reappearance of the *Spirochaeta pallida* (McIntosh, Fildes, Head, and Fearnside). The Mental Deficiency Act of 1913 is fully referred to.

In the general section on treatment a fuller account is now given of psycho-analysis, which, while recognized as a valuable method of investigation that has explained the origin of certain nervous symptoms, is regarded, even apart from its objectionable character, as a method of treatment attended by no small dangers. In conclusion, the common sense, clinical insight, and practical advice on treatment should thoroughly recommend this well-written textbook to the medical profession.

NOTES ON BOOKS.

IN the fourth edition of *A Primer of Tropical Hygiene*,³ by Colonel R. J. BLACKHAM, is found in concise form information which, if put into practice, will reduce the sickness and mortality rate, not only among British residents, but among indigenous races. Great stress is laid on the importance of personal hygiene. Nearly every word in the book will also find an application to conditions found at home. The book is well written, and the whole subject of hygiene is dealt with in a brief, interesting, and instructive manner. Most would demur to the dogmatic

¹ *Psychological Medicine*. A Manual on Mental Diseases for Practitioners and Students. By Maurice Craig, M.D., F.R.C.P. Third edition. London: J. and A. Churchill. 1917. (Med. 8vo, pp. xii + 484; 27 plates. 15s. net.)

² *A Primer of Tropical Hygiene*. By Colonel R. J. Blackham, C.I.E., D.S.O. Fourth edition. Bombay: Claridge and Co. 1917. (Pp. 224, 1 rupee.)

¹ *Midwifery*. By Ten Teachers, under the direction of Comyns Berkeley, M.A., M.D., M.C., F.R.C.P. Edited by Comyns Berkeley, H. Russell Andrews, and J. S. Fairbairn. London: Edward Arnold. 1917. (Med. 8vo, pp. x + 736; 303 figures, 4 plates. 18s. net.)

statements that "pellagra is conveyed by midges," and that "acne is attributed to the action of the face mite." A few slips occur—for example, Pasteur Chamberlain is found twice on p. 82 where evidently Pasteur-Chamberland was intended, and on p. 167 carbonic acid is meant where carbonic acid appears in the text. The book will be found very useful to those attending lectures on tropical hygiene in connexion with the St. John Ambulance Association, under whose auspices it appears.

Professor COHEN's *Class Book of Organic Chemistry*⁴ is an admirable manual for first year medical students, who will find in it more than they require for examination purposes but not more than is good for them to know, and for senior science students in schools. Both the theoretical and the practical sides of organic chemistry are considered in it together. The general principles of the science are discussed first, then the paraffin compounds; lastly, the compounds of the aromatic series. Numerous tests for organic compounds are given, experiments and organic preparations are described, and questions dealing with the subject matter are set at the end of each chapter. The applications of organic chemistry to commerce are indicated, and the customary illustrations are given in the text. Describing illuminating oil, Professor Cohen gives a picture of a terra-cotta lamp from Lanuvium, a town in Latium that lies twenty miles from Rome, and looks across from the Alban hills to the Tyrrhene Sea. The book should be of great service to students of organic chemistry.

It has been said that the world in which we live is now governed by high explosives and low political intrigue. Those who wish to know about the latter need do no more than study the columns devoted to foreign news in the paper day by day. Those who want to learn much that is interesting about high explosives cannot do better than read Mr. MARSHALL'S *Short Account of Explosives*,⁵ a most opportune volume. Beginning with an account of black powder and similar mixtures, which have a vast field of service in industry, the book goes on to describe nitro-cellulose and nitro-glycerine, each the basis of a great series of high explosives. Two chapters are given to special military and commercial high explosives of all sorts. We are told that trinitrotoluene, also known as T.N.T. or trotyl in the British service, and elsewhere as tritolo, trinol, and trilit, was made in the laboratory in 1880, manufactured in 1891, and used for filling shells as long ago as 1902: an official account of the symptoms of poisoning by T.N.T. and the mixtures of it with ammonium nitrate, known by the names amatol and ammonal, will be found in the BRITISH MEDICAL JOURNAL of December 16th, 1916, on page 842. Other chapters deal with smokeless powders, fireworks, and the general properties of explosives, and a full account of the fuses and other means of detonating high explosives in both peace and war is added. Mr. Marshall writes clearly and has presented the lay public with a most interesting and intelligible account of the whole subject of explosives—as, indeed, was to be expected of the author of two massive volumes on the subject that have recently been published. His little book should have a wide popularity.

The thirty-seventh edition of Dr. H. W. GELL'S *Aid to the Injured and Sick*⁶ provides the lay public with a first-rate little manual of first aid. In its previous editions it has been before the world for thirty years. It is concisely and clearly written, and contains a very great deal of carefully chosen advice that should enable any one confronted with a medical or surgical emergency to carry on until the doctor comes.

The useful little book entitled, *Consumption: Treatment at Home and Rules for Living*, by Dr. H. WARREN CROWE, of Plymouth, has been adapted for use in India⁷ by Dr. C. A. SPRAWSON, of King George's Hospital, Lucknow. It contains a great deal of good advice, clearly and concisely put, mainly in the form of a set of rules to be followed by the consumptive at home.

⁴ *A Class Book of Organic Chemistry*. By J. B. Cohen, Ph.D., B.Sc., F.R.S. London: Macmillan and Co., Ltd. 1917. (Cr. 8vo, pp. 344; 62 figures. 4s. 6d.)

⁵ *A Short Account of Explosives*. By A. Marshall, A.C.G.I., F.I.C., F.C.S. London: J and A. Churchill. 1917. (4to, pp. viii + 96, with 29 illustrations. 5s. net.)

⁶ *Aid to the Injured and Sick*. By Henry Willingham Gell, M.A., M.B.Oxon., M.R.C.S. Thirty-ninth edition (revised). London: National Health Society. 1917. (Fcap. 8vo, pp. 40; 13 figures. 3d.)

⁷ *Consumption: Treatment at Home and Rules for Living*. By H. Warren Crowe, M.D.Oxon., and C. A. Sprawson, M.D., M.R.C.P. Lond. Adapted for India. Calcutta: Butterworth and Co. (India), Ltd. 1917. (Post 8vo, pp. ii + 41. 8 annas net.)

THE NEW VOLUNTARY FOOD RATIONS.

The following details of the new food rations, for the voluntary adoption of which the Food Controller strongly appeals, will be useful to medical men, who are likely to be consulted on the matter.

FOOD CONTROLLER'S NOTICE TO THE PUBLIC.

1. The position of the food supply is such that the utmost economy in the use of all kinds of food must be observed by all classes and by all persons.

2. In particular it is necessary that the strictest economy should be practised in the use of the staple foods: bread, flour, and other cereals; meat; butter, margarine, and lard; and sugar.

3. The weekly rations of these staple foods, which are stated in the following table for different classes of adults, according to their sex and occupation, should on no account be exceeded.

4. Children should receive their reasonable rations of these foods. Their individual needs differ so greatly that no definite ration is laid down for them.

Adult Rations per Head per Week.

Class.	Bread.	Other Cereals.	Meat.	Butter, Margarine, Lard, Oils, and Fats.	Sugar.
	lb. oz.	oz.	lb.	oz.	oz.
MEN.					
1. Men on very heavy industrial work, or on agricultural work	8 0				
2. Men on ordinary industrial or other manual work	7 0				
3. Men unoccupied or on sedentary work.	4 8	12	2	10	8
WOMEN.					
4. Women on heavy industrial work, or on agricultural work	5 0				
5. Women on ordinary industrial work or in domestic service	4 0				
6. Women unoccupied or on sedentary work	3 8				

The "bread" rations include all flour, whether used for bread or for cooking. Flour may be taken instead of bread at the rate of $\frac{1}{2}$ lb. of flour for every pound of bread.

The "other cereal" rations include oatmeal, rice, tapioca, sago, barley meal, corn-flour, maize meal, dried peas, beans and lentils, and all cereal products except bread and flour. The weight given is the weight of the dry article as bought. If the full bread ration is not used the amount saved can be taken in other cereals at the rate of $\frac{1}{2}$ lb. of cereals for every pound of bread saved.

The "meat" rations include the average amount of bone, which may be taken as one-quarter of the weight of the actual meat. Any parts of meat—such as rump steak, bacon, or suet—which are bought without bone must count for one-quarter more than their actual weight. On the other hand, any bone in excess of a quarter of the actual meat bought may be deducted. Poultry and rabbits may be counted at half their actual weight. The meat rations include suet.

Exchange of Bread and Meat.—Any person may take half a pound of meat over and above his meat ration in exchange for half a pound of bread to be deducted from his bread ration. Similarly, any person may take half a pound extra of bread in exchange for meat.

Milk and Cheese.—In addition to the economy necessary in regard to the foods mentioned above, it is essential that the consumption of milk and cheese shall be restricted as far as possible. These foods should be reserved for persons for whom they are indispensable.

Potatoes, Fresh Vegetables, and Fruit.—A more extensive use should be made of fresh vegetables and fruit, and, in particular, of potatoes, which are not rationed. This season's excellent potato crop supplies the means of observing the prescribed rations without privation, and it must not be wasted.

SOME CONSIDERATIONS ARISING OUT OF THE FOREGOING.

When compared with the scheme of voluntary rations issued early this year it will be seen that the main changes are that an attempt is made to adjust the amount of bread in relation to occupation and sex, that the amount of meat and sugar is reduced, and that "other cereals" and fats are rationed for the first time. Children are not rationed.

In order to arrive at an opinion on the nutritive value of the new rations the only means available is to estimate the calorie value, to compare it with estimates of the expenditure of energy for various classes of occupation and to note the amount to be made up from non-rationed foods.

While it is, for practical purposes, useless to carry the calculation to minute details in the following figures, it has for convenience been taken to the nearest whole number.

Taking first the rations which are not varied in accordance with occupation or sex we arrive at the following approximate results:

	Calories.
12 oz. "other cereals" a week = approximately	174 a day.
2 lb. meat " = "	297 "
10 oz. fats " = "	322 "
8 oz. sugar " = "	130 "
	923

Adding the variable ration we obtain the following results:

	Bread.	Total with other Rationed Foods.	To be made up from Non-rationed Foods.
MEN.	Weekly. Calories (daily).	Calories (daily).	Calories (daily).
1. Heavy work ...	8 lb. = 1,344	2,267	1,700
2. Ordinary industrial work	7 .. = 1,176	2,099	1,400
3. Sedentary work ...	4½ .. = 756	1,679	800
WOMEN.			
4. Heavy work ...	5 .. = 840	1,763	1,000
5. Ordinary industrial work or domestic service	4 .. = 672	1,595	800
6. Sedentary work ...	3½ .. = 588	1,511	500

In showing the amount of energy as expressed in calories required to make up the standard expenditure of energy beyond that supplied by rationed foods we have taken rates which may perhaps be considered pre-war—namely, for men in the three classes, 4,000, 3,500, and 2,500; and for women in the three classes, 2,800, 2,400, and 2,000. On this showing women come off better than men, but possibly the estimate of energy expended by women doing heavy industrial or agricultural work is a little too low.

The Food Controller makes a special appeal for more extensive use of fresh vegetables and fruit, and particularly of potatoes, of which the crop is excellent. It is, moreover, a perishable crop, and very liable to deterioration, even if carefully kept. On a rough estimate, allowing an average helping of potatoes at each of two meals in the day, and a fairly large quantity of vegetables and some fruit, 800 calories a day might be got from these sources. But this leaves a heavy deficit on men doing heavy or ordinary industrial work, and a deficit on women doing heavy work. The greater part might be made up without much difficulty from milk and cheese were it not that the Food Controller requires both to be restricted. Fish is not rationed, and an important addition can be made to diet at a cheap rate by using herrings, mackerel, and sprats. Two herrings, or three small herrings, will yield about 400 calories for 6d. or less. Salmon has about half the nutritive value of mutton, but so long as frozen Canadian salmon can be obtained at present prices, it is not an unduly expensive substitute for meat for persons in easy circumstances.

Perhaps a more useful way of looking at the matter is to take a family rather than an individual as the unit. Following what we understand to be the doctrine of Dr. Leonard Hill, we assume that a child over ten should be reckoned as requiring the same amount of food as a woman in domestic occupation. If we suppose a family of a father doing industrial work, his wife doing domestic work, and two children, we get a total energy expenditure of 9,500 calories and of receipts from bread and other rationed food 6,500, leaving 3,000 calories a day to be made up from non-rationed foods. Assuming that liberal use is made of potatoes, fresh vegetables and fruit, and fish, there should be no great difficulty in making up the 3,000 calories wanted, especially if the family purchases, say, 1 lb. of cheese a week and a pint of milk a day, for together they would yield about 600 calories a day.

BREAD RATIONS IN OTHER COUNTRIES.

It may be interesting to compare the figures for the amount of bread allowed in various belligerent and neutral

countries, published in a recent issue of the JOURNAL, with the new voluntary rations in this country. Reduced to grams the daily quantity of bread is in Great Britain, for men, 520, 455, and 292 in the three classes, and for women, 325, 260, and 228 in the three classes. In Germany the ration is between 260 and 280 a head a day; in Austria about the same; in Switzerland, Italy, and Holland, about 250; in Sweden about 260, and in Denmark about 215. No account is taken of the quality of the bread, and in Germany and Austria it is probably much inferior to the standard bread in this country. In France the allowance of bread is high; according to a recent statement by M. Gley at the Académie de Médecine it is 500 grams a day, but by supplementary allowances to which certain persons are entitled the total may be raised to as much as 900 grams a day; but even the lower amount is not always to be purchased. It is proposed now to reduce the allowance to 400 grams a head a day, without distinction of age or sex, with a supplementary allowance of 100 to 200 for persons engaged in laborious occupations. The French working classes are perhaps even more dependent on bread than British. M. Gley counsels them to make more use of potatoes cooked after the English manner, which is not commonly followed in France.

WORKERS' FOOD.

A new edition, revised with the assistance of Captain M. Greenwood, R.A.M.C., of Dr. Leonard Hill's report to the Health of Munition Workers Committee on workers' food, has been issued.¹ It was, unfortunately, prepared before the new rations were fixed, but it contains many useful suggestions. The only point to which we will at the moment refer is the insistence on the importance of establishing canteens at all munition works. It appears that a great deal remains to be done in this direction, for down to October, 1917, there were about 710 canteens in munition works employing about 920,000 people; this is only about 45 per cent. of all munition workers, so that there is no canteen provision for 55 per cent. Canteens, of course, do not cover the whole feeding of the workers, and where eight-hour shifts are worked the food taken elsewhere must form a large proportion of the total.

THE NOURISHING VALUE OF FOODS.

Professor W. H. Thompson, of Dublin, now scientific adviser to the Ministry of Food, has issued a second edition, revised and rearranged, of his pamphlet entitled *Foods and Their Relative Nourishing Value*.² It is a very practical handbook, opening with a section on the importance of the kitchen, in the course of which the author observes that cooking in town dwellings of the industrial classes is often extremely difficult owing to the absence of cooking arrangements and utensils. The composition and energy value of the more common foods are dealt with in a series of notes illustrated by diagrams, and there are excellent sections on the selection of foods, and on the need for making dishes attractive and the diet varied. In an appendix twenty-four recipes for using maize products in various ways are given.

THE COCAINE AND OPIUM REGULATIONS.

FROM time to time we have reproduced and explained in the JOURNAL and SUPPLEMENT various Orders in Council, issued under the Defence of the Realm Act, with regard to the sale of cocaine and opium. As it appears that misapprehensions still exist, it may be well to summarize once again the duties imposed on medical practitioners by these Orders.

The original Regulation relating to cocaine and opium was made under an Order in Council dated July 28th, 1916, and was numbered 40 B, by which number it is still known. Its text was published in the SUPPLEMENT of August 5th, 1916. The drastic restrictions upon the sale of cocaine were not extended to the prescribing and dispensing of opium in the form of ordinary medicinal preparations, opium being defined for the purpose of the Regulation as raw opium, or powdered, or granulated opium.³ Cocaine,

¹ Cd. 8798. Price 2d.

² Dublin: The University Press. Price 4d.; post free 4½d. This pamphlet is sold at the net cost of issue.

³ BRITISH MEDICAL JOURNAL, August 12th, 1916, p. 229.

on the other hand, was defined as including all preparations, salts, derivatives, or admixtures containing one part or more of cocaine in one thousand parts. The Regulations as to the distribution of cocaine make it an offence to be in possession of the drug, or to sell or to give it away, except under stated conditions. Thus cocaine may only be supplied either (a) to an authorized person, or (b) in accordance with the written prescription of a duly qualified medical practitioner.

Duly qualified medical practitioners are "authorized persons," and are, therefore, entitled to purchase and to be in possession of cocaine; but they may not prescribe or supply it to other persons except in accordance with the conditions laid down in the regulation. These conditions are as follows: A written prescription must be made out, which must be dated and signed with the prescriber's full name, qualifications, and address, and marked "Not to be repeated." The total amount of cocaine to be supplied on a prescription must be specified, but in the case of a proprietary medicine it is sufficient to state the amount of the medicine to be supplied. Cocaine must not be supplied more than once on the same prescription. The prescription must be retained on the premises where it is dispensed, and must be produced for inspection to any person authorized for the purpose by the Home Office. Chemists are forbidden to dispense cocaine on any prescription which is not in compliance with the requirements. It is understood that these requirements do not apply to cocaine *personally administered* by a medical practitioner; otherwise it will be noted that medical men who dispense their own medicines are bound by the same rules of procedure as the pharmacist. A prescription issued for National Health Insurance purposes on the form provided by the Insurance Committee need not be marked with the practitioner's address and qualifications, nor with the words "Not to be repeated."

Every person who has dealings in cocaine or opium is bound to keep records of his dealings in accordance with the provisions of the regulation. These have recently been amended, and are now as follows:

(a) He shall enter or cause to be entered in a book kept for the purpose such particulars with respect to all dealings in cocaine or opium effected by him as the Secretary of State may prescribe.

(b) He shall make the entry with respect to any transaction on the day on which the transaction is effected.

(c) Where he carries on business at more than one set of premises he shall keep a separate book in respect of every set of premises.

(d) He shall keep the book in some part of the premises to which it relates, so that it shall at all reasonable times be available for inspection by any person authorized in that behalf by the Secretary of State, and shall allow any person so authorized at all reasonable times to inspect it.

(e) He shall not cancel, obliterate, or alter any entry in the book, or make therein any entry which is untrue in any particular.

If any person fails to comply with any of the provisions aforesaid he shall be guilty of a summary offence against these regulations.

The precise form in which the record of dealings in cocaine and opium must be kept was reproduced in the SUPPLEMENT of August 12th, 1916. Medical practitioners dispensing their own drugs must keep a record in that form and in accordance with the above requirements whenever they dispense cocaine or preparations containing cocaine. As explained above, records of dealings in opium are not required except in the case of crude, powdered or granulated opium.

In the JOURNAL of December 9th, 1916, we published certain amendments to Regulation 40B. Under these a medical practitioner giving a prescription for the supply of cocaine otherwise than in accordance with the conditions laid down is made liable to a penalty, and a Secretary of State has power to direct that any medical practitioner convicted of any offence against the regulation shall cease to be an authorized person for the purposes of the regulation. It was also ruled that every article containing cocaine must be marked with the amount and percentage of cocaine contained in it. The latest amendments to Regulation 40B include stringent provisions for the prevention of opium smoking, but leave unaffected the sections dealing directly with the responsibilities of medical practitioners summarized above.

The report, published in the JOURNAL of November 3rd, 1917, of the prosecution of a firm of chemists for the

irregular sale of cocaine indicates that medical practitioners as well as chemists have not everywhere made themselves familiar with their duties under Regulation 40B. It is very important that they should do so. A print (October, 1917) of the Defence of the Realm Regulations which gives the revised terms of Regulation 40B can be obtained, price 6d., through any bookseller, or directly from H.M. Stationery Office, Imperial House, Kingsway, W.C.2.

THE PROBLEM OF THE SURGICAL TREATMENT OF DISABLED MEN.

A LECTURE on the problem of the disabled soldier and sailor in its surgical and industrial aspects was given at the Royal Institute of Public Health by Colonel Sir ROBERT JONES, C.B., Inspector of Military Orthopaedics, on November 14th, when King MANUEL was in the chair.

Sir ROBERT JONES said that wounded and disabled men formed a serious proportion of the population. They must be helped to remain an essential part of the economic man power of the nation—*independent producers and wage earners*, not helpless dependants. Fully 50 per cent. of the wounded in this war suffered from injuries which either were or might become physical disabilities; the proper treatment of these disabilities depended on the employment of methods commonly adopted by orthopaedic surgeons. In establishing Military Orthopaedic Centres the aim was to make the equipment of each complete. Each special department was directed by a specially trained surgeon, and these heads of departments were expected to hold consultations on doubtful cases; in this way each department learnt its own limitations and the strength of others. Orthopaedics in relation to military surgery should be defined as the treatment by operation, by manipulation, by reconstruction, and by re-education, of disabilities to arms and legs arising from injury or disease. Undoubtedly this was a wide definition, but it agreed with the circumstances. The orthopaedics of war might be divided into preventive and corrective. Speaking first of corrective orthopaedics, he said that owing to the fact that most gunshot wounds were already septic when they reached them, the energies of surgeons at the front had been taxed by the effort to save life, and it was inevitable that many cases reached England with various types of deformity and considerable shortening of the limb. The first duty of the orthopaedic surgeon was to consider how the limb—a fractured thigh, for instance—might be lengthened and lateral deflexion, which produced almost complete loss of function of the limb in walking, remedied. If, when the patient had been made to walk with an apparatus which prevented fresh shortening of the limb, he were then discharged, he would be improved but not cured; he was therefore retained in the orthopaedic centre until his joints became supple and his muscles were developed by intensive methods, including special forms of electric massage and exercises. Again, in the case of a stiff wrist or stiff elbow, with, perhaps, loss of part of one of the bones of the forearm, the surgeon first mobilized the joints, and then, if need be, grafted a piece of shin bone into the arm, the case being kept in hospital until the function of the arm was well on the way to restoration. In the same way, in cases of nerve injury it was necessary in the Orthopaedic Centre, first, to mobilize the joints and afterwards to operate by nerve suture or tendon transplantation. In the case of a man with a helpless flail hand certain muscles, which could be spared in the front of the forearm, were attached to paralysed tendons; in three months the patient might be able to raise his hand. How it was that muscles which had been engaged in flexing the wrist-joint should afterwards respond to a stimulus to extend the fingers was a curious psychological problem which remained for solution. Another problem with which the military orthopaedic surgeon had to deal was to decide if the elbow-joint, for instance, must be stiff, what was the best position in which to fix it. Usually a stiff elbow fixed at a suitable angle was better than a weak joint; but men engaged in certain trades would find a movable though weak elbow more useful than a stiff joint. All such factors must be considered when the choice of treatment was being made, and the patient must be consulted.

A great change in the *moral* of the men in orthopaedic centres had been brought about by the progress of military orthopaedics. At first they had grounds for fearing that if they accepted treatment designed for partial or complete restoration of function their pensions would be reduced. Now the mental attitude of the patient was altered by the fact that pensions were based on physical disability without reference to earning power, and that there were penalties in the form of reductions if treatment were refused. Men were now open to the persuasion of the hospital staff and of cured comrades; they derived direct benefit, mental and physical, from curative workshops. Such workshops had been in existence for many years at hospitals for cripples, but they were first established with purposeful intent as to special exercises in connexion with the Military Orthopaedic Hospital at Shepherd's Bush. The governing principle of curative work was that active movements—that is to say, voluntary movements—were of infinitely greater value than passive movements—those imposed from without. When the vast installations of Zander instruments and the way they were employed were considered, it was amazing that more tragedies did not take place. One gentle movement in every direction of a stiff elbow might overcome adhesions; to repeat the movements in a machine only endangered the tissues by direct irritation.

Exercises practised in curative workshops were of two kinds—direct and indirect. The ingenuity of the instructor was shown in devising direct curative work suitable to each case, but the indirect method was often the best; for example, when a man with a stiff ankle was set to plane or saw wood he unconsciously used the ankle as he became interested in the work his hands were doing. Again, if a man with stiff fingers who could not hold any tool was given something to do with the other hand, the crippled hand would come to the rescue in a difficulty and soon become useful.

There were now orthopaedic centres started, or on the point of starting, in London (Shepherd's Bush), Liverpool, Bristol, Cardiff, Leeds, Oxford, Newcastle, Birmingham, Reading, Netley, Edinburgh, Aberdeen, Glasgow, Dublin, and Belfast. Moreover, the various centres were being expanded. At Leeds, where six months ago there were 250 beds, there are now 1,800; in Liverpool, which started with 200, there are now 1,400. Owing to the control surgeons at the front had obtained over gas gangrene and sepsis the number of amputations was diminishing. Further expansion of orthopaedic centres had been authorized with the object of getting cases directly from the front in order that the occurrence of deformity might be anticipated and prevented. In this way the problems with which surgeons at these centres would have to deal would be simplified; a shortened limb could be lengthened without operation, a crooked limb moulded straight; patience and tenacity at this period would save the soldier a long period of suffering and enable him to be discharged to fight or work with the least possible delay.

If a man was discharged from the army to civil life he passed under the care of the Ministry of Pensions, which possessed great responsibilities and great powers for good. It could not compel a pensioner to undergo training, but it could bring pressure to bear upon him, for if treatment short of operation was refused, the pension was reduced, while bonuses were given to men who trained, and if they were married a separation allowance. Many pensioners would require treatment for two or more years, but it could be carried on while they worked or trained. This involved a scheme of great magnitude and administrative problems of great delicacy. The mentality of the wounded—war weary and sick of hospital life—must be understood, and the motto should be "from hospital life to industry." The kinds of industry which they could follow after the war should be explained to them, and they should be pulled back from the blind alleys of labour. The pensions machine must work sweetly and softly, lubricated by human kindness. There must be continuity of treatment from the moment a man left hospital until recovery was complete. Patients discharged from orthopaedic centres to civil life fell into two groups—Orthopaedic A, consisting of the partially disabled who required further treatment of an orthopaedic kind, and Orthopaedic B, who required a certain amount of treatment of a general kind. The Orthopaedic Centres

supplied to the first class a ticket giving a note of his condition, with suggestions to the pensions authorities as to the treatment he required. When accommodation was adequate the pensioner might attend the orthopaedic centre as an out-patient. In Newcastle permanent buildings grouped around the Victoria Infirmary were being established in the middle of the town; in other places, as in Liverpool, where the orthopaedic centre was five miles from the city, an annexe for out-patients was needed. An orthopaedic annexe, whether on the same site as the centre or on another, must supply an out-patient institute where massage and electricity could be provided, and a simple installation of hydrotherapy; it must also supply facilities for re-education and training; curative workshops would not be required, for pensioners would be sufficiently advanced to undergo educational training, which could often be given to them in the technical schools. The annexe should also be provided with hostels and billets where pensioners from a distance could stay for treatment or training, or both; there should also be an employment bureau. There would be a difficulty in remote places, which would have to be met by local authorities combining to establish hostels around which could be grouped the means of treatment and training. Facilities would be afforded for practitioners in towns to take part in the work of the centres, and gain experience of the methods and results of treatment. The great bulk of the work, however, would fall on the country doctors, who were generally a very receptive body of men. They would be asked to undergo training in the centres, and would be helped by periodical visits of inspectors with special orthopaedic knowledge. Cases which had undergone nerve suture ought to return periodically to the Orthopaedic Centres for examination as to the rate of return of sensation and the progress of muscular recovery, which must be accurately recorded from time to time—highly specialized work. The Pensions Ministry should encourage and pay the expenses of the pensioner for these visits. Success could only be attained when suitable conditions were provided. The treatment must be skilled, it must be continuous, and it must be lengthy; there must be a long period of watchful care after the surgeon had taken the first step towards cure.

When new Government departments are created it is very necessary that their responsibilities should be clearly defined; they should at the earliest moment know their respective powers and their limitations. Any difficulties of a departmental kind which interfered with the smooth working of the machine should be adjusted. When the nation was expectant of difficulties of a financial or departmental kind must be swept away. The medical profession was ready and anxious to do its part in the solving of a problem in which the whole profession was concerned. Its members should be given responsibilities sufficient to enlist their best energies, but they should be enabled to feel that the scheme, the success of which must depend largely on their efforts, is well thought out to the final end.

SURGEON-CAPTAIN ROBERT ASHTON BOSTOCK, formerly regimental surgeon to the Scots Guards, who died on August 7th of illness contracted on active service, left £71,365.

MM. EDM. and ET. SERGEANT described to a recent meeting of the Académie des Sciences in Paris a method of freeing an area from mosquitoes which takes advantage of the fact that the interval from the laying of the egg to the appearance of a perfect insect is, in Europe, three or four weeks. The actual duration depends a great deal upon the temperature, and in a tropical climate may be as short as seven or ten days, but for the Mediterranean littoral they put it at three weeks. Where it is necessary to have a collection of water near the house, MM. Sergeant propose that two receptacles should be prepared and filled and emptied alternately at the interval of about a week. The larvae hatched from eggs laid in the water by the female mosquito will be killed off while the receptacle for the water is dry, and in this way none would ever be able to develop into the perfect insect. They consider that the method would be much less expensive than any other in use, and on this ground alone their suggestion seems worthy of note, as there may be a good many places in which it could be applied, at any rate on a small scale.

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THE NEW VOLUNTARY RATIONS.

THE difference between the new and the old ration regulations which has most struck the public is the attempt to grade the consumption of bread according to occupation and sex, but it is to be noticed that the amount of meat and sugar is reduced, and that for the first time the amounts of "other cereals" and of fats (butter, margarine, lard, and oils) are specified. The general effect of the new ration of bread is to increase the quantity allowed. The maximum was formerly 4 lb. all round; this amount is now allowed for women on ordinary industrial work or in domestic service. It rises to 5 lb. for women on agricultural or heavy industrial work, to 7 lb. for men on ordinary industrial or other manual work, and to 8 lb. for men on very heavy industrial work or on agricultural work. The allowance for persons leading sedentary lives is for men $4\frac{1}{2}$ lb., for women $3\frac{1}{2}$ lb. For "other cereals," and for meat, fats, and sugar the allowance is not varied according to occupation or sex.

The additional allowance to men and women in heavy manual work is undoubtedly right; the only question is whether it is sufficient. It will certainly have to be supplemented by other foods rich in carbohydrates, but for this purpose dependence may for the present chiefly be placed on potatoes, although "other cereals" will help. Under the head of other cereals are classed for convenience not only oatmeal, barley meal, rice, tapioca, and maize products, but also dried pulses (peas, beans, and lentils). It is regrettable that the position with regard to cheese has altered, and that the Food Controller finds it necessary to ask that its use shall be restricted, for it is not only a popular but a useful and valuable article of diet, which, had it been plentiful, would have gone some way to make up for the reduction in the amount of meat and fats.

The Food Controller and his scientific advisers have acted wisely in making it plain that children are not to be rationed. In the first place, it would have been very difficult to do so without making the instructions far too complicated to be easily understood; and, in the second place, if anybody is to go short, it should not be the children. School children and young adults need a generous diet, for healthy growth is impossible if food is insufficient. The case is quite other with middle-aged and elderly persons; even when the manner of life is fairly active, the approach of age, which slows all the processes of the body, should be understood to call for a reduction of the amount of food habitually consumed. So also with younger persons leading sedentary lives who had for the most part got into the way, before the war, of eating too much, especially too much meat. Both classes will be all the better and more vigorous, physically and mentally, for a reduction of the amount of the foods now rationed that they have been in the habit of taking. Both classes also will do well to make vegetables and fruit a larger part of their diet.

The aspect of the new allowances for adults which will interest the medical profession most is whether,

with the limited rations of staple articles of food now proposed, the diet will be sufficient for persons who are doing hard work. The answer must be that it will probably fall below pre-war standards, but not very much below, when the constitution of the population as to occupation, sex, and age is taken into account. It must be remembered that fish, potatoes, vegetables, and fruit are not rationed.

A difficulty from which no scheme of food control can escape is that the rations prescribed or suggested must vary owing to fluctuations in the amount of various staple articles of diet in the country or in sight. The events of the last few months have illustrated this, for whereas there has been a failure of the cereal harvest in certain countries in Europe, there has been, in this country in particular, a copious potato harvest, due partly to the favourable season and partly to the success of the efforts to bring a larger area under cultivation. In France the average yield of the wheat harvest for the ten years before the war was 88 million quintals (tons) and the country imported 10 million in addition; last year the yield was only 40 million tons. Britain, France, and Italy must be considered as a unit for the purpose of buying grain, and these countries have in fact appointed a Wheat Executive, which, it would appear, acts in the main through a Wheat Commission sitting daily in London. The Wheat Commission buys in Australia, Canada, America, India, and Argentina. But it cannot always get delivery of what it buys, for the difficulty of transport is great, owing to the lack of shipping, due in some part to submarine sinkings, but largely to the diversion of so many ships to the transport of troops and for their supply in food and munitions. The Wheat Commission, for example, has paid for fourteen million quarters of wheat purchased from the Australian Government, but after the purchase was complete the shipping scarcity became acute and the great bulk of this wheat is still in Australia.

It must be understood that to prescribe maximum rations voluntarily or compulsorily is not the same thing as to undertake to supply the quantity permitted; the retail supply must depend largely on the actual stocks in the country, subject to such control as the Food Controller, with an eye to the future, can exercise. It is said, for instance, that flour for bread making is for the moment plentiful in this country, but it is estimated that before our next harvest several months' supplies must be brought from overseas. The rise in the price of wheat, due to shortage or threatened shortage of the stocks available for France, Italy, and the British Isles, may be partly controlled by such legislation as that which has come into force in the United States of America and in Canada, by which the price of wheat is fixed. Nevertheless, the decision of the Food Controller that wheat must be sold at a price allowing the public to purchase a 4 lb. loaf for 9d. will, it is estimated on the basis of consumption last month, cost the Wheat Commission £40,000,000 a year. The supplies of rice, sago, and tapioca have practically kept pace with the increased demands, while potatoes are at present abundant in this country, and the Food Controller feels justified in asking people to eat potatoes in place of bread. Sugar, on the other hand, has become scarcer, so that the available stocks are barely sufficient to supply the $\frac{1}{2}$ lb. a week a head now allowed. Fats, again, are still scarce; wholesale firms have little or no butter, and though the home manufacture of margarine is increasing, the supplies are not plentiful, and it has been necessary for the Controller to advance the price of lard. Bacon is scarce, so is cheese; eggs are

almost unprocurable, but this scarcity will be relieved when the hens begin to lay again freely after Christmas. The supplies of pulses, butter-beans and lentils, are limited. On the other hand, the home-grown crop of apples was sufficiently good to make it possible to meet all requirements for the moment, but the future is uncertain, since a supply for spring could only be procured by allowing imports to be resumed. Speaking generally, the fluctuations in the price of foods of all kinds have followed pretty closely the fluctuations in the world supply, and the international control now being exercised has checked profiteering, if it has not altogether put a stop to it.

The position of the country as to meat has not been clearly stated: apparently it has not been fully ascertained. The Food Controller has recently appointed live-stock commissioners in each of the food control areas of Great Britain. There are eleven such areas in England and two in Wales, while in Scotland there are six areas, each with a deputy commissioner, and one commissioner for the whole country. A census of live stock will be taken in each area to form the basis for determining the quota to be furnished. The commissioners will control farmers, auctioneers, and wholesale meat dealers with the object of ensuring that the call on the live stock of the country shall be evenly distributed. They will not be concerned with retail distribution, which will continue to be controlled, under the supervision of the Divisional Food Commissioners, by the Food Control Committees, which are responsible for the fixing of retail prices in accordance with the Food Controller's orders.

This country is going through a period of test and trial such as it has not known since the beginning of the nineteenth century. In some respects—in the toll of life—we are worse off than our ancestors, and the natural inclination is to ask to be given some definite job to help the country. Those who have not got such a job envy those who have, and will perhaps find but cold comfort in the statement of the Minister of National Service last Monday that economy and saving together constitute the first degree of national service, to work for the State the second degree. Economy in consumption, careful buying with an eye to the price of foods and relative nutritive value of each, and the saving of waste in the kitchen and at the table have become national duties in the first degree. The response of the housekeepers of the country to the first appeal voluntarily to ration their households was on the whole very creditable. But efforts have relaxed, especially since the price of bread was reduced—a measure which not unnaturally gave the impression, the wish being father to the thought, that the talk about shortage of wheat had been exaggerated. We know that it was not, and that the position is serious. We may hope that voluntary effort will be sufficient to enable us to win through. If not, compulsory rationing will have to be instituted, at great cost to the country and great inconvenience to the housekeeper.

THE PREVENTION OF BERIBERI AND SCURVY IN WAR.

IN an experimental research into the distribution in foodstuffs, especially of those suitable for rationing armies, of the substances necessary to prevent beriberi and scurvy, Miss H. Chick and Miss M. Hume¹ have made some definite discoveries which have the obvious merit, not always attached to scientific

advances, that they can at once be applied to the prevention of disease. Those two deficiency diseases, due to a want of accessory food factors or vitamins, as Funk called them in 1912, have been the subject of more investigation than rickets, pellagra, and some less known diseases of cattle commonly placed in the same group. But in view of the outbreaks of beriberi and scurvy among the troops in Mesopotamia any further light on their successful prevention is most opportune, and no doubt after the war the problems of rickets already undertaken by the Medical Research Committee will receive full attention.

The anti-beriberi vitamine is shown to be very widespread in natural foodstuffs, but mainly in the seeds of plants, such as cereals and edible pulses, and in the eggs of animals, where it provides for the well-being of the offspring during its early life. As a diet of decorticated or polished rice causes beriberi, and as the addition of the rice polishings and their extracts prevents or cures the disease, it has generally been held that the anti-beriberi vitamine is situated in the cuticle of the husked grain, in the layer of cells (aleurone layer) immediately under the pericarp. The authors establish the important point that the largest amount of the vitamine is deposited in the germ or embryo, which is also removed in the process of milling, and show that it is extremely resistant to drying; it can withstand exposure to a temperature of 100° C. for two hours, but is destroyed by a temperature of 120° C. under pressure. White wheat bread is deficient in the vitamine, and if used as the exclusive food will cause beriberi. Yeast is rich in the vitamine, but milk, cheese, and potatoes are poor; meat and other vegetables are moderately endowed in this respect, though they compare badly with eggs and the seeds of plants. The embryo and the bran of wheat should therefore, as in whole-meal bread and standard flour, be given to troops on active service, especially when the rations are mainly tinned, as these are devoid of vitamins on account of previous sterilization at high temperatures. Ordinary yeast is very disagreeable, but a palatable preparation has been provided in the form of soup cubes, and considerable quantities have recently been sent out to Mesopotamia. Though expensive, eggs, fresh or dried, should, at any rate, be given to hospital patients, who are otherwise often on a diet poor in the vitamine. Here it may be pointed out that, under the clinical label of beriberi, cases of acute polyneuritis, due to infection or toxæmia of undetermined or doubtful origin, may sometimes be included, and that all cases described as beriberi are not necessarily due to deficiency of the vitamine. This is rather a difficult question, and further investigation of the apparent exceptions to the view that beriberi is a deficiency disease is needed. For example, in the Gallipoli campaign a disease resembling beriberi was thought to be due, as Hamilton Wright previously suggested, to a specific duodenitis which provided the toxins responsible for the polyneuritis, but Wilcox and others upheld the vitamine hypothesis by pointing out that patients with intestinal disorders are often fed on tinned milk and other invalid articles of diet which are practically devoid of vitamins.

Turning now to the anti-scurvy vitamine, it is much restricted in its distribution as compared with that of the anti-beriberi vitamine, and is not collected into concentrated deposits. Present in all living tissues of plants and to a much less degree of animals, it is absent from dried vegetables and seeds, the vitamine being extremely susceptible to drying and comparatively easily destroyed by heat. Fresh fruit juices, cabbage, and onions, are specially rich in the anti-

¹ H. Chick and M. Hume, *Trans. Soc. Trop. Med. and Hyg.*, London, 1917, x. pp. 141-178.

ascorbic vitamin, potatoes and fresh meat are of less value, and milk is very poor in this respect. It appears that preserved lime-juice which was formerly so successful is now very feeble in preventing or curing scurvy; this failure, presumably due to some modern change in the method of preservation, is being investigated by the authors. Although dried seeds do not contain any vitamin, this accessory food factor is created afresh when they are moistened and as a result germinate. It therefore follows that in the absence of fresh fruit and vegetables, germinated pulses should be added to the diet after suitable preparation, the manner of which is described in an appendix to the paper. The dried seeds, which must be whole, should be soaked in water for twelve to twenty-four hours according to the temperature (90° to 50° F.), and after the water is poured away the seeds are allowed to germinate for twelve to forty-eight hours according to the temperature (80° to 50° F.). The germinated pulses should then be cooked and eaten as soon as possible after germination as it is important that they should not become dry.

A diet deficient in both these vitamins may naturally cause both beriberi and scurvy; but scurvy takes longer than beriberi to appear and, according to Hehr, does not develop under four months. The various degrees in which the two diseases may blend was shown in the "Rand scurvy" seen some few years ago.

PRINCIPLES OF ORTHOPAEDIC TREATMENT.

In his lectures at the Royal College of Surgeons of England during the present winter session Professor A. Keith will deal with anatomical and physiological principles underlying the treatment of injuries to muscles, joints, and bones. The after-treatment of injured soldiers has compelled a review of the principles on which the practice of orthopaedic surgeons is founded. The principles must be based on a knowledge of the behaviour of muscles under normal and abnormal conditions. Professor Keith will review the principles and practice of John Hunter on November 23rd, of John Hilton on November 26th, of Hugh Owen Thomas on November 28th, and of Stromeyer, Adams, Wolff, and others on November 30th. The researches of modern neurologists will receive full attention in the lectures to be given in the following week. The first, on December 3rd, will deal with the application of discoveries made by Marshall Hall, C. E. Beever, and Duchenne, while in those on December 5th and 7th the bearing of the discoveries of British neurologists on orthopaedic practice will be discussed and explained. The lecture on December 10th will be devoted to the principles underlying the practice of modern British orthopaedic surgeons, that on December 12th to the American school of orthopaedic surgeons, and the last lecture, on December 14th, to orthopaedic practice in France and Italy. The lectures, which will be illustrated by specimens from the army medical collection now on exhibition in the museum, will be given on each day at 5 p.m., and are open to all medical men. The second series of the course will be given in January.

THE PHYSIOLOGY OF FLYING.

The great expansion of the air services during the war has led to an accumulation of knowledge by medical men engaged in looking after aerodromes and in the examination of candidates for aviation. In this country a few articles on the subject have recently appeared, such as those by Staff Surgeon H. V. Wells,¹ who employed the term "aerosthenia" to describe nervous symptoms arising usually in pupils unsuited for flying, and by Temporary

Surgeon H. G. Anderson,² and no doubt others are in preparation. In France, the birthplace of modern aviation, much has been done both before and since August, 1914, and a useful summary of this has recently been given by Binet,³ who has been investigating the psychomotor and emotional reactions in flying men by means of an instrument designed by Langlois. The pulse rate quickens during the ascent and slows during the descent, but is quicker after landing than it was before the start. There is considerable difference of opinion as to the behaviour of the arterial blood pressure; some state that it is raised, others that it falls, and according to Gemelli, an Italian observer, the systolic pressure falls and the diastolic rises. The respirations become more rapid and shallow during the ascent, slow down during the descent, and after landing are more frequent than before the flight. Vision becomes more acute, whereas hearing is impaired, and headache and noises in the ears occur. The auditory disturbances can usually be relieved by swallowing. Sleepiness, which may persist after landing, is not uncommon; tremor due to fatigue and delay in the psychomotor reactions may be noted. These symptoms vary in degree in different persons, and this variable coefficient has been called by Bonnier the "manostatic capacity," which depends on centres in the lower part of the medulla concerned with the maintenance of equilibrium between the pressures inside and outside the body. When exaggerated, these disorders constitute airman's asthenia, and include extreme fatigue, giddiness, headache, tremor, loss of confidence, low blood pressure, unstable pulse, and delay in the psychomotor reactions. Such individuals are ineligible for aviation. Among the causes of these symptoms attention is naturally directed to changes in the atmospheric pressure, excessive exposure to wind and cold, mental strain, and physical fatigue. Much discussion has taken place as to the mode of action of diminished atmospheric pressure, and it may be pointed out that Mosso attributed mountain sickness to a diminution of the amount of CO_2 in the blood or acapnia, a condition which Yandell Henderson considers to be responsible for surgical shock. Luciani vigorously opposes Mosso's view. The influence of a deficiency of oxygen still remains as a problem requiring further elucidation. The necessary qualifications of an aviator are normal acuity of vision and colour vision, normal binocular field of vision; normal hearing, healthy middle and internal ears, and especially perfect power of balance; healthy respiratory and cardio-vascular systems; and a calm mental state without any exaggeration of the reflexes, but with the power of rapid and accurate response as tested by examination of the psychomotor reactions. The normal visual ($\frac{1}{15}$ second), auditory ($\frac{1}{10}$), and tactile ($\frac{1}{15}$) reactions are delayed in alcoholics, morphinomaniacs, convalescents from infective diseases, shock, head injuries, fatigue, and mental distraction.

A CHEMICAL TEST FOR THE EARLY DIAGNOSIS OF ENTERIC FEVER.

DR. E. DE SILVESTRI of Turin has recently published⁴ an account of a simple test for typhoid and the paratyphoid fevers that should prove of great service if—and there is, alas! always an if about these simple diagnostic tests—it turns out to be as effective in other hands as it is in those of its discoverer. It is a urinary test, a colour reaction, and is applied by carefully floating 3 c.cm. of the filtered suspected urine on to 2 c.cm. of iron perchloride solution acidified by the addition of four or five drops of the purest sulphuric acid in a test tube. If a chestnut-coloured or yellow-brown ring forms at the level of contact between the urine and the acidified iron perchloride, the result is said to be positive and the case one of the enteric group of

¹H. V. Wells, *Journ. Roy. Nav. Med. Serv.*, London, 1915, i, 55-60; 1916, ii, 65-71.

²H. G. Anderson, *ibid.*, 1917, iii, 328-331, and *BRITISH MEDICAL JOURNAL*, 1917, ii, p. 124.

³L. Binet, *Rev. gén. des sciences*, Paris, 1917, xxviii, 540-515.

⁴*Medicina Nuova*, Biella, 1917, N. 27 and 28.

fevers. The coloration spreads rapidly up into the supernatant urine; it is not discharged by heat or by shaking. If albumin is present, it should be got rid of before the test is applied. The strength of the perchloride solution employed is not stated; Dr. de Silvestri describes it as the "official solution of perchloride of iron," and this is probably the strong solution of the Italian pharmacopoeia, containing 10 per cent. of iron or 29 per cent. of ferric chloride. The strength of the solution of pure sulphuric acid used is not specified. A positive reaction is obtained almost regularly after the first few days of an attack of typhoid or paratyphoid fever, and generally disappears in the third week, returning again if a relapse occurs. A positive reaction is also seen after antityphoid inoculation, but for how long is not stated. Sometimes, too, a positive reaction is seen in febrile tuberculosis, influenza, rheumatic fever, and other diseases characterized by high temperatures. In these instances, however, the reaction is negative at the outset of the disease, only becoming positive when the fever is fully developed; so that a positive reaction is still of value for the early diagnosis of fevers of the enteric group, with the qualification that it must not be employed if phenolic drugs (such as salicylic acid or its derivatives) have been exhibited. Dr. de Silvestri has found a positive reaction in 95 per cent. of some 200 cases of typhoid and paratyphoid fever in which he has applied his test. It will be interesting to see if other observers obtain equally satisfactory results with this simple method of diagnosis.

CHINA MEDICAL BOARD.

FROM time to time we have noted the praiseworthy efforts made by the Rockefeller Foundation for the promotion of scientific medicine in China. In 1914 a commission left the United States for China, and upon its return made a detailed report to the Foundation, with the result that before that year was out the China Medical Board was created. The aim of the board is to promote the gradual and orderly development of a comprehensive and efficient system of medicine in China. The report of its first year's work was published early in 1916; the second report records co-operation with the several missionary societies in strengthening their medical schools and hospitals by means of grants in aid. The main work of the board, however, has been, and is, the founding of two medical schools—one at Peking, the other at Shanghai—of the same type as the better medical schools of the United States and of Europe. It appears that the reorganization of the Peking Union Medical College has already been undertaken, upon a plan agreeable to the trustees and to the Chinese Government. In accordance with the recommendation of the Commission the English language has been determined upon as the medium of instruction, and the Chinese language will not be required of all members of the faculty. Dr. Franklin C. McLean, from the Rockefeller Institute Hospital, is the first professor of medicine and physician-in-chief. Owing to the fact that students in preparatory schools and colleges in China do not at present receive sufficient instruction in science to enable them to undertake the work of a high grade medical school, the board has had to decide whether to aid a number of colleges to strengthen their scientific departments, or to create a school of its own. The latter policy was favoured as a temporary arrangement, and the immediate intention is to appoint a pre-medical school at Peking. It is hoped, however, that the colleges of North China will be able in a few years to advance their courses in science sufficiently to prepare students for the medical school. In April, 1916, the China Medical Board proposed the establishment of a medical school at Shanghai; this was approved by the Rockefeller Foundation, and sufficient funds were set apart to provide the plant and maintain the school. In addition to giving direct aid to missionary hospitals the board hopes that when its two medical

schools are well established it may be possible for missionary doctors to be released for periodical post-graduate courses therein. This policy should prove of great benefit to medical missionaries and their patients. The total amount appropriated to mission hospitals for expenditure during the year 1916 was more than 158,500 dollars, including handsome sums contributed to the Union Hospital at Nanking for buildings, equipment, and general expenses. Post-graduate scholarships and fellowships have also been granted to medical missionaries and to Chinese doctors, nurses, and pharmacists.

RADIUM IN CANCER.

A REPORT has been issued by the Cancer Committee of Harvard University¹ giving the results of the use of about 235 milligrams of radium in the treatment of 642 cases of cancer and allied conditions at the Collis P. Huntington Memorial Hospital from September, 1913, to January, 1916. The conclusion of the authors of the report, Drs. W. Duane and R. Greenough, is that in many cases of advanced, inoperable, and recurrent cancer radium therapy may do good in relieving pain, diminishing discharge, checking hæmorrhage, lessening the size or even causing total disappearance of the growth, and improving the general condition. The beneficial effect on the patient's mind must also be taken into account. In a very small number of advanced cases the improvement was such as to warrant a radical operation. In about 35 per cent. of superficial types of cancer without metastasis, and in a much smaller number of metastatic cancers, radium is capable of doing away with the clinical manifestations of the disease. In a limited number of cases recurrence took place even after apparent destruction of the lesion. In keratosis, papilloma, and other affections of the skin regarded as pre-cancerous, radium was effective in abolishing the clinical manifestations in from 48 to 60 per cent. It proved of special value in recurrent and inoperable carcinoma of the cervix or body of the uterus, inoperable squamous carcinoma of the tongue, jaw, and buccal mucous membrane, and in non-metastatic epidermoid cancers. On the other hand, radium was of little benefit in recurrent or inoperable carcinoma of the breast, stomach, intestine, glands of the neck, cancer of the tongue, mouth, and lips, and in deep-seated metastatic extension of cancer from any region. Its use as a preventive of recurrence after operation is not recommended. Where the affected area is superficial and accessible radium may be used with benefit, but not after operation for breast cancer. The combination of radium treatment and operation gave satisfactory results in several cases, and is adapted to the more advanced cases of rodent ulcer.

THE CLIMATE OF BAGDAD.

SURGEON-GENERAL ENATT, in his essay on the medico-military topography of the Persian Gulf and Valley of the Euphrates and Tigris, founded on a journey made in 1873 and published in the Army Medical Department Report of 1874, said that the weather of Bagdad from November to March was pleasant though cold. Rain, he said, fell in January and February to the amount of 25 in. in twenty-nine rainy days. In April the weather began to get very warm, and in May a fierce heat reigned; a hot wind blowing over the heated and unwatered desert burnt up everything. Residents who could afford the luxury built up screens of camel thorn, a prickly succulent plant: these screens being well watered, the heated wind blowing through them became a cool breeze. In June, also, the weather was very hot, and, with a southerly wind, enervating, for, as it was loaded with moisture from the Persian Gulf, there was no evaporation from the skin. In July and August, both very hot months, the nights were cool, and as there was no dew every one slept on the flat housetops. The thermometer, he stated, rose highest

¹ Boston Med. and Surg. Journal, September 13th, 1917.

in August—107° F.—and was lowest in January, when it fell to 45° F. We learn from *Nature* that Professor Filippo Eredia has recently published a memoir on the climate of Bagdad in the *Bollettino* of the Royal Italian Biographical Society. It was founded on a mission dispatched under Dr. A. Lanzani in 1908. According to the observations of this mission it appears that the mean annual temperature is 73° F., ranging from 94.5° in July and August to 48.9° in January. The mean of the daily maxima is 86°, the mean monthly values ranging from 109.9° in August to 59.5° in January. The mean of the night minima is 60.1°, highest in July, 79.5°, and lowest in January, 38.1°. The highest temperature recorded was 122°, and frost is not uncommon from November to February. The mean daily range of temperature varies from 33° in August and September to 20° in December. The relative humidity is 58, rising to 80 per cent. of saturation in December and January, and falling to 38 per cent. in June. The mean cloud amount (overcast sky = 100) is only 16, the extremes being 29 in March and 1 in July. Various authorities place the annual rainfall between 6.94 in. and 9.04 in., practically all of which falls between November and April. June, July, and September are rainless, but slight showers have fallen in May, August, and October.

GERMAN SOCIETIES AND BRITISH MEN OF SCIENCE.

It appears that certain Fellows of the Royal Society view with displeasure the practice of some of their colleagues of appending to their names in the year book of the society and in various directories the fact of their membership of German academies and scientific societies as an honour which they value. It is suggested that it would be more consistent with the actual state of affairs were such mention omitted. It is pointed out that the declaration of war by Germany was received with enthusiasm by practically every section of the German nation, and that the professors who formed the backbone of the German scientific academies and societies were prominent as a whole in arousing this enthusiasm. It was largely due to them, it is added, that a belief was created in German minds that Germany was superior to other nations and that in consequence it was only right that German power over other nations should be extended. No German scientific academy or society has, so far as is known, made any protest against the many infringements of humanity and of international law which have been characteristic of the German conduct of the war. As the Fellows of the Royal Society may be assumed to reprobate the German Government in bringing on the war and its methods of conducting it as much as any other section of British folk, their colleagues who have taken the lead in this matter invite them to drop the mention of membership of German scientific societies or academies, with a view to bringing home to German scientific men that learning and research cannot be divorced from public conduct. Among those who have signed a circular letter intimating their intention to take this course are Sir David Ferrier, Sir James Dewar, Sir W. H. Perkin (Oxford), Sir Ronald Ross, Professor J. N. Langley, Professor C. S. Sherrington, Professor E. H. Starling, and Dr. W. M. Bayliss.

NIGHT BLINDNESS.

THE late Mr. Nettleship gave a great deal of time to the study of night blindness, and obtained a number of interesting pedigrees. He was able to induce two cases, which figured in these pedigrees as being of the congenital type, to submit themselves to spectroscopic examination by Sir William Abney and Professor Watson. The results of the examination have recently been communicated to the Royal Society. The interesting fact appeared that in the extinction of the different rays of the spectrum all light disappeared throughout the spectrum at the same moment

that the colour vanished, and that the colour vanished to the normal eye at the same point that it did to the colour-blind. This pointed to the fact that the colourless part of the rays had failed to give any sensation of light. As normal eyes see in a faint light with these colourless rays, it is to be presumed that the night-blind owe their blindness in faint lights to the absence of certain retinal processes which the normal eyes possess.

EARLY SYMPTOMS OF TETANUS

THE importance of recognizing the onset of tetanus at the earliest possible moment is generally recognized, but the diagnosis is sometimes delayed because the true meaning of the earliest symptoms is not understood. The initial symptom may be pain in the back with no assignable cause, but in men who have been wounded any anomalous symptom should be suspected as a hint that tetanus may be about to develop. As an instance, the case of a man with a gunshot wound of the buttock may be mentioned; the foreign body was removed, but six weeks later he complained of urgency of micturition, with difficulty and finally inability to pass urine. Catheterization revealed great spasm of the sphincter and the force of the bladder's contraction almost expelled the catheter; he was little relieved by drawing off the urine, and during the later stages had almost continuous spasm of the bladder. The ordinary symptoms of tetanus developed four days after the difficulty in micturition began, and he died.

A MINISTRY OF HEALTH.

ON November 13th representatives of the Ministry of Health Committee, which has been appointed by the Council, held a conference at the offices of the Association with representatives of the Joint Committee of Approved Societies, in order to discuss the scheme for a Ministry of Health which the latter has prepared and embodied in a bill.¹ Both parties to the conference were agreed as to the need for a Ministry of Health, and there was complete agreement on the principle that the central organization must not be a department of a Department of State, but a Ministry created for the sole purpose of dealing with matters concerned with the health of the community. Opinion was divided as to the expediency of insisting that reorganization of local health administration should take place simultaneously with central reorganization. After an interesting debate on the general aspects of the matter, it was decided that a further conference should be held between three or four representatives from each side, with the object of examining in more detail the various proposals that have been made, and of ascertaining the precise points upon which there is agreement or disagreement. It is hoped that this will clear the ground for future consideration, and indicate how far, if at all, joint action is possible between the insurance organizations and the British Medical Association.

A MUNITION WORKS SURGERY.

IN the current issue of the *Dilution of Labour Bulletin* appears an abstract of a paper by Dr. Mark R. Taylor on the working of a surgery at a munition factory where some 2,500 men and women are employed in the making of shells. The organization for the treatment of accidents at this works has been in existence for eighteen months. The staff consists of a part-time medical officer, assisted by nurses, two of whom are always on duty. The medical officer attends daily at the surgery to see cases which have been held over for his inspection or are in need of re-dressing, and examines new workers for physical defects before engagement. He also treats at his own house patients sent to him by the nurses on duty. Every accident, however trivial, is reported at once and the worker sent to the surgery. Thus every wound is dressed within

¹ BRITISH MEDICAL JOURNAL, October 27th, 1917, p. 559.

a few minutes of its occurrence, and is cured for until healed. The results of the treatment of accidents have been classified into three periods of six months each. They show that the percentage of workers losing time on account of injuries became less when the system was fully established. Analysis of the results points very strongly to the value of close medical supervision in munition works and of the immediate treatment of injuries no matter how slight. In the same factory an outbreak of dermatitis was investigated by Dr. Taylor and Mr. L. H. Debenham, B.Sc., and was traced to the use of lubricating oil containing micro-organisms similar to those cultivated from sores on the workers' hands. The most effective means of preventing this condition was found to be the installation and regular use of efficient washing accommodation. Dr. Taylor's paper is of special interest at the present time when all munition works are required to possess ambulance facilities under competent supervision. In the memorandum on sickness and injury issued last year by the Health of Munition Workers Committee, attention was drawn to the urgent need of improvement in the provision made for treating accidents in munition factories, simple first aid organization being required rather than elaborate provision for the treatment of minor injuries.

Medical Notes in Parliament.

The Representation of London University.—It is an evidence at once of the tact and parliamentary strength of Sir Philip Magnus that he was able last week to secure the separate representation of London University under the new Reform Bill. The Government proposal, adopted from the Commissioners' report, was to group the University of London for parliamentary representation with the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, Bristol, and Wales as a joint constituency returning three members. Sir Philip Magnus pleaded that London University should be allowed to keep its identity, and Sir George Cave ultimately made the concession—the only amendment to the redistribution scheme which was accepted. The total number of university representatives remains the same, inasmuch as the group formed by the remaining universities will in future have two members. The numerous medical graduates of the university will have the greater pleasure in noticing the personal achievement of Sir Philip Magnus, seeing that he has so often undertaken to present the views of the medical profession in regard to various matters before the House of Commons.

Proposed Air Force Medical Service.—In moving the second reading of the Air Force Bill, which proposes to unify existing air services under one Ministry, Major Baird said that one of the most important needs was for a specialized medical service. Research into the methods of prevention and cure of the disabilities to which flying men were subject had advanced very rapidly; but so long as the flying services remained appendages of the army and navy it was difficult to provide for the study of these medical matters and for the special treatment of the patient. Knowledge on the subject was limited almost entirely to those few medical officers and civil practitioners who had had considerable numbers of flying men continuously under their care, and it was necessary at once to take special measures to provide separate accommodation for the cases and separate staffs to concentrate on the problems which had arisen. The mere selection of candidates for the flying services had become a highly specialized business, and the standard of fitness required for flying was diverging from the standard required for the ordinary naval and military services. There were many minor physical imperfections which rendered a man unfit for flying, but which if taken in time might be removed or cured. Still more important, many precautions had to be taken to enable pilots who had obtained their certificates to maintain their fitness under the severe conditions of modern air warfare. These were only examples of the

necessity for securing a body of men whose sole business should be to concentrate on that particular branch of medical science which was necessary for the welfare and well-being of our flying men.

Powers of Local Authorities as to Child Mortality.—In answer to Mr. Anderson, Mr. Hayes Fisher said that in 1916 the number of deaths of children under five years of age registered in England and Wales was 109,966. It was not possible to state exactly how many of these were due to preventable causes, but he was satisfied that if the local authorities in England and Wales were given the same powers as local authorities in Scotland and Ireland, and if they used them as there was reason to believe they would, a great reduction in the number of deaths, not only of infants, but of mothers, would be effected. The Local Government Board had for some time been anxious to secure for local authorities the extension of powers, and local authorities had pressed for it, but, owing to opposition from insurance organizations, the legislation had been delayed.

Amending Insurance Bill.—The present intention is that the second reading of the amending Insurance Bill, the scope of which is described in the SUPPLEMENT, shall be taken in the House of Commons early next week. There has been some lobby talk of opposition by approved societies on account of the proposals for varying the allocation of contributions and other financial changes proposed. But it is understood that Sir Edwin Cornwall and the Insurance Commissioners were in consultation with representatives of approved societies when preparing the measure, and the hope of the Government is that it may be carried through Parliament more or less as an agreed measure, any discussions on possible amendments to be conducted in a conciliatory spirit. If there be serious opposition to the bill there is little chance of its passage this session.

The Army Medical Service in France.—Major David Davies asked whether the Director-General of Army Medical Services had entire control over the Royal Army Medical Corps attached to the British Expeditionary Force in France. Mr. Macpherson: No; the Commander-in-Chief in each theatre of war exercises entire control over all troops under his command.

Hospital Stoppages of Army Pay.—General Croft asked Mr. Macpherson whether the announcement some weeks ago that hospital stoppages were to be discontinued applied to officers. Mr. Forster replied that the announcement made dealt only with the pay of men. The question of officers would not be overlooked.

Shell Shock and Neurasthenia.—Colonel Clive asked a question as to shell shock patients at the 4th London General Hospital at Denmark Hill and other similar cases at Golders Green, suggesting that their condition was aggravated by air raids, and that they should be removed to a quieter area. Mr. Macpherson replied that it might be possible to discontinue the neurological centre in London as a treatment centre in connection with changes now being made. The inquiry as to Golders Green should be addressed to the Minister for Pensions. In reply to another question, Mr. Macpherson said that neurasthenic cases varied much in degree, and it had not been thought necessary to impose by regulation any period which should elapse before a neurasthenic returned to duty. The matter was, however, now being reconsidered in the light of the experience gained regarding these cases.

The Renewal of Artificial Limbs.—In reply to Major Chapple, Sir Arthur Griffith-Boscawen said it was recognized that a large proportion of the men who were fitted with artificial limbs had to return for the limb to be refitted within six months or a year, but it was not possible from available statistics to state the exact proportion. The refitting was necessitated by shrinking of the stump, but this shrinking would not take place simply as the result of the passage of time, but also as the result of the pressure of the socket of an artificial limb. There was no evidence that the limbs were being fitted prematurely. The policy of supplying a provisional limb of a simple type before the fitting of the permanent limb was one on which surgical opinion was divided. It had been adopted in some cases, and its wider adoption was under consideration.

Provision for Disabled Nurses.—In reply to Major Chapple, Sir A. Griffith-Boscawen said that he had seen in the newspapers the appeal for subscriptions to provide endowment for the College of Nursing and a benevolent fund for individual nurses themselves. The provision made by the State for nurses disabled through war service was set out in the warrant of last August. This provision was on a far more liberal scale than any previously given, and he did not doubt that the organizers of the fund would take account of the assistance provided in deciding how their fund should be applied.

THE WAR.

THE WORK OF THE ARMY MEDICAL SERVICE IN THE RECENT FLANDERS ACTIONS.

SPECIAL ORDER BY GENERAL GOUGH.

A SPECIAL ORDER was issued under date October 30th by direction of General Sir H. de la P. Gough, praising the manner in which the work on the Passchendaele-Ypres front has been carried on in the army under his command. The Order runs as follows:

"The Army Commander desires me to express his appreciation of the excellent work which has been, and is still being, done by the Medical Services in connexion with the active operations on this front. He considers that the manner in which this work has been performed reflects the greatest credit on all concerned.

"The evacuation of sick and wounded from the front to the Casualty Clearing Stations has been most carefully organized and successfully carried out, while the professional skill and attention displayed at the Casualty Clearing Stations, together with increased comfort provided for the patients, has led to highly satisfactory results being obtained."

These high terms of commendation will not be a surprise to our readers, who will remember that earlier in the year an equally high compliment was paid to the medical services by General Plumer, soon after the conclusion of the Messines offensive.

It is clear, therefore, that the medical service working under Sir Arthur Sloggett, the Director-General of Medical Services in France, is fully maintaining the reputation for high efficiency that it has won, and that the opinion to this effect entertained by the general public at home has the authoritative confirmation of the combatant branches of the British Expeditionary Force. Nothing does more to sustain the moral of men engaged in heavy fighting than the knowledge that if they happen to "stop something," their injuries will receive skilled and careful medical attention forthwith. Sir Arthur Sloggett's chief lieutenants in the armies engaged in recent operations are Surgeon-General Robert Porter, C.B., and Surgeon-General Bruce Skinner, C.M.G.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Wounded.

Surgeon J. J. Keatley, R.N.
Surgeon W. P. Starforth, R.N.

ARMY.

Killed in Action.

CAPTAIN K. A. MACCUSH, C.A.M.C.

Captain K. A. MacCush, Canadian Army Medical Corps, was reported as wounded in the casualty list published on November 7th, and in that of the following day as having died of his wounds.

Died of Wounds.

CAPTAIN W. G. MCCONNELL, R.A.M.C.

Captain William Gardiner McConnell, R.A.M.C., died of wounds on October 13th, aged 26 years. He was the second son of the late Mr. John McConnell, Brookeboro', co. Fermanagh, and of Mrs. McConnell, Toronto, Canada. He was educated at the Royal School, Cavan, and at the Royal College of Surgeons, Dublin, taking the diplomas L.R.C.P.I. and L.R.C.S.I. in March, 1915. He took a temporary commission as lieutenant in the R.A.M.C. on October 1st, 1915, and was promoted captain in August, 1917. He was married whilst on leave from France, only a month before his death.

Died on Service.

CAPTAIN H. L. HESLOP, R.A.M.C.(T.F.).

Captain Harold Linton Heslop, R.A.M.C.(T.F.), died on October 30th of acute gastritis at a casualty clearing station, aged 36 years. He was educated at Durham University, where he graduated B.S. in 1903, and M.D. in 1906. After acting as house-surgeon of the Tynemouth

Jubilee Infirmary, he went into practice in Sunderland, where he was honorary assistant surgeon to the Children's Hospital. He joined the 7th (Territorial) Battalion of the Durham Light Infantry, as lieutenant and medical officer, on January 11th, 1910, was promoted to captain on January 11th, 1913, and went to the front with his battalion early in April, 1915. He leaves a widow and one child.

Wounded.

Lieut.-Colonel H. Fulton, R.A.M.C.
Major N. E. Kirkwood, M.C., Australian A.M.C.
Major J. Muirhead, Australian A.M.C.
Captain W. R. Addis, R.A.M.C. (temporary).
Captain J. Gapp, R.A.M.C. (temporary).
Captain A. E. Huxtable, R.A.M.C.(T.F.).
Captain W. P. Jepson, R.A.M.C.(S.R.).
Captain T. J. Kelly, R.A.M.C. (temporary).
Captain D. Macnair, R.A.M.C.(T.F.).
Captain H. S. Moore, R.A.M.C. (temporary).
*Captain J. Morris, M.C., R.A.M.C.(T.F.).
Captain M. A. Power, R.A.M.C. (temporary).
Captain J. F. M. Sloan, M.C., R.A.M.C. (temporary).
Captain K. H. Stokes, R.A.M.C. (temporary).
Captain C. Wynne, R.A.M.C. (temporary).
Lieutenant D. W. Anderson, R.A.M.C. (temporary).
Lieutenant A. P. Draper, R.A.M.C. (temporary).
Lieutenant J. A. C. George, M.C., R.A.M.C. (temporary).
Lieutenant E. H. Good, R.A.M.C. (temporary).
Lieutenant W. H. Orton, R.A.M.C. (temporary).
Sister E. I. Devenish-Meares, Q.A.I.M.N.S.R.

DEATHS AMONG SONS OF MEDICAL MEN.

Butler, Edward Lawrence, Cadet, elder son of Major A. Butler, R.A.M.C.(T.F.), of Port Glasgow, killed October 21st, aged 20.

Douglas, Ian Victor, M.C., Second Lieutenant Royal Garrison Artillery, youngest son of Dr. Thomas Douglas of Sapperton, formerly of Cape Town, killed October 25th, aged 20.

Turrell, H. G., Second Lieutenant Oxford and Bucks Light Infantry, only son of Dr. Turrell of Oxford, died at St. Thomas's Hospital on November 3rd of wounds received on August 23rd, aged 19.

Williams, O. S. G., Lieutenant Royal Engineers, youngest son of the late Dr. Morgan Williams of Cardiff, killed October 23th. He had twice been wounded, and returned to the front for the sixth time in September.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

NOTES.

INTERALLIED SURGICAL CONFERENCE.

A SURGICAL conference attended by representatives of the military medical services of the allied powers was opened at the French Army Medical School, Val-de-Grâce, Paris, on November 5th by M. Justin Godart, Under Secretary of State for the French military medical service. This conference, the third of its kind, was the first attended by American surgeons in addition to those of Great Britain, France, Belgium, Italy, Portugal, Serbia, and Japan. The conference sat for several days and discussed a number of important subjects, including the treatment of injuries of the joints, the late results of fractures of the femur, late secondary results of brain wounds, and the functional results of operations on the peripheral nerves.

GARDEN CITIES FOR THE DISABLED.

A scheme for the establishment of village settlements in which the restorative treatment of officers and men disabled in the war may be combined with industrial and social reconstruction has been made public by a provisional committee, of which Dr. R. Fortescue Fox is chairman; the other medical members are Sir Robert Armstrong-Jones, Dr. Egbert Morland, Sir George Savage, and Mr. Wilfred Trotter. The main objects of the scheme are: (1) To restore discharged disabled soldiers and sailors to health of mind and body; (2) to train them for settlement in villages and on the land; (3) to encourage the founding of small self-supplying village communities where local industries and handicrafts may be pursued on sound lines. An essential feature of the scheme is the encouragement of home life, self-government, and self-development. While the main purpose will be to heal and train as many men as

possible and pass them on to begin life elsewhere; a certain number of selected men will have opportunities to settle with their families and form the basis of a permanent village settlement. The committee wish to begin with a site of one square mile as a centre for a thousand disabled men at a time; of these the majority would be trained in agriculture and kindred subjects, the rest would be taught handicrafts and business pursuits. The period of treatment and training would vary according to circumstances, but three months will be the minimum. Medical considerations will determine the hours of work, and of curative treatment. The following types of case are considered most likely to benefit by such a scheme; (1) Cases of shell-shock, neurasthenia, and depression; (2) men crippled by wounds or by stiff joints or wasted muscles; (3) amputation cases; (4) certain cases recovering from fevers, and delicate men for whom a country life is prescribed. Incurables will not be received, nor those still requiring surgical aid or hospital treatment. The patients will not be segregated according to kinds of disability, but will live, work, and be treated in common, in order to avoid the intensive effects of grouping together numbers of men suffering from a particular form of abnormality. In selecting a trade or course of training each case will be considered upon its merits, with special regard to medical needs, natural tastes and abilities, and the prospects of financial success. The aim of the workshops will be to reproduce the best features of the old craft guilds, as opposed to the modern factory system. It is hoped that the presence of their wives and children will induce the men to settle down happily to prolonged periods of training; this, with the substitution of self-government for military discipline should prove one of the most attractive features of the scheme. Much will depend upon the personal qualities of the staff, and on the care with which the men are selected. The committee recognize that the cost of the scheme will be heavy, but they hope to convince the Government, as well as public and private benefactors, that the results will more than repay the relatively heavy expense. From the foregoing outline it will be seen that the idea, although ambitious, has strong claims for sympathetic consideration. The honorary secretary is Miss Hilda A. Fox, 36, Devonshire Place, W.1.

SHELLING OF HOSPITALS.

According to a statement issued by the Rumanian Embassy the town of Galatz was bombarded by the enemy on October 11th and 12th. Altogether 170 shells and bombs fell on the town. The principal hospital, in which there were 650 wounded and nurses, was hit by thirty-two shells. Several patients and nurses were dangerously wounded, the chapel was destroyed, and the hospital had to be evacuated. The Rumanian Government raises the strongest protest against this bombardment of a hospital, and, in accordance with Article 3 of the Hague Convention of October 18th, 1907, will hold the enemy responsible for all the damage done.

Scotland.

The Hawick Town Council has arranged to establish a maternity and child welfare centre with office and consulting rooms. A health visitor will be appointed and will reside at the centre. Bailie Wilson has given £500 towards starting a child welfare centre and the gift of a house for a day nursery is expected.

MANUAL CURATIVE WORKSHOPS.

The manual curative workshops erected as an annexe of the orthopaedic department of the Scottish National Red Cross General Hospital, Bellahouston, Glasgow, from funds contributed by the workers of Messrs. Weir's Holm Foundry, Cathcart, was opened by Lady Weir on November 5th. The sum of £8,000, out of the £14,000 collected since September, 1914, has been allocated for the purpose. The gift was accepted on behalf of the Scottish Branch of the Red Cross Society by Sir George T. Beaton, K.C.B., who has written a pamphlet on the purpose and equipment of curative workshops. Those at Bellahouston include shops for carpenters and joiners, leather workers, tailors, and boot repairers. There is also a smithy in which metal splints can be made and a room for moulding and fitting. It is hoped also to establish a small printing press and a painter's shop. These shops are not designed to give men permanent occupation, but

mainly with the object of hastening recovery, though at the same time the aptitude of men for any special trade will be discovered.

AFTER-CARE COLONY FOR TUBERCULOUS SOLDIERS.

At a meeting of the Joint Institutional Committee of the Scottish Red Cross and the Ministry of Pensions in Edinburgh, on November 10th, under the presidency of Sir A. Griffith-Boscawen, Parliamentary Secretary to the Ministry of Pensions, a discussion took place on the subject of tuberculosis. It was stated that the Minister of Pensions had come to the conclusion that the present system of treatment in a sanatorium for a limited period was insufficient, and that he proposed as an experiment to institute a more prolonged course of treatment combined with industrial training in an after-care colony. Sir R. W. Philip, who attended, gave particulars of the colony at Polton, administered by the Edinburgh Corporation, and explained his views as to its possible use for soldiers and its extension. The matter was referred to a committee.

REPORT OF THE ROYAL COMMISSION ON HOUSING.

We mentioned recently that the Royal Commission on housing in Scotland, appointed five years ago, had presented its report, and quoted the Commissioners' summary of the nature and magnitude of the evils to be remedied. The report is very voluminous, containing 460 pages, 110 being occupied by the minority report. Neither report is particularly well put together; in neither are the recommendations collected and arranged so as to show the interdependence of the various sets of recommendations scattered through the report; neither report is provided with an index. It is not easy, therefore, to give an abstract, and any voluntary organization which undertook to do this, and to prepare an index, would render a real service, for the facts and discussions contained in the two reports are undoubtedly of importance, not only to Scotland, but as a contribution to the housing question generally. The percentage of one roomed houses in Scotland is very high. In 1911 it was for the whole of Scotland 12.8; in Edinburgh it was 9.5; in Glasgow (the extended city) it was 20.1. The percentage of two-roomed houses in Scotland is 40.0; in Edinburgh, 31.4; and in Glasgow, 46.3. The figures with regard to overcrowding are also very unsatisfactory. In Scotland in 1911 the percentage of the total population living more than two in a room was 45.1; more than three in a room, 21.9; and more than four in a room, 8.6. In Edinburgh the percentages were 32.6, 12.7, 4.1 respectively. In Glasgow 13.8 per cent. of the population live in one room; 48.4 per cent. in two rooms, and 21.1 per cent. in three rooms.

The majority report contains an instructive story of the history of housing legislation; it dates back to 1855, when the Dwelling Houses (Scotland) Act was passed. The failure of this and subsequent Acts both in Scotland and England led to the appointment of a Royal Commission in 1884, which, though it mainly investigated conditions in England, put on record evidence sufficient to show that the housing conditions in Scotland at that time were very bad. Better things were hoped from the Housing of the Working Classes Act, 1890, which repealed all the previous Acts, and gave full powers for providing healthy dwellings. Then followed the Public Health Act for Scotland in 1897, and the application of the Housing Amendment Acts to Scotland in 1899, and the passage of the Housing and Town Planning Act in the same year. Yet the Commissioners say that the housing conditions of Scotland at the beginning of the twentieth century were "little if any better than they were fifty years before; in some ways they were worse. In many areas they were worse, because of the inevitable overcrowding resulting from the influx of rural dwellers in the towns, the result of the industrial revolution which had been going on for fifty years, and because the building of healthy houses had not kept pace with the increase in the population. Private enterprise had, prior to the war, almost completely ceased to provide working-class houses."

The Commissioners discuss at great length the reason why this had happened, and agree that the main reason, shortly, is that even before the war the cost of building three-roomed houses with sanitary and domestic conveniences was so large that the rent the possible inhabitants could pay was not economic. The architectural inspector

of the Local Government Board put the cost before the war at £225 in and around the industrial areas, and £275 north and south of those areas. It is estimated that the cost under war conditions would be £450 at least, and the Commissioners think it unsafe to assume that on an average during the next fourteen years such houses could be built for less than £350 each. They estimate (1) that 121,430 additional houses are required to get rid of the overcrowding due to more than three persons in a room, and to take the place of houses requiring instant demolition; and (2) that, in addition, 114,560 houses are required to take the place of 50 per cent. of the one-room houses, and 15 per cent. of the two-roomed houses. On the basis of £350 a house, these 235,990 houses would cost £82,596,500. They then calculate that at least one-third of the cost will be uneconomic and must be contributed by the State in some form or other. The higher rate of interest now commanded by money influences the finance of any scheme to a very serious degree.

The majority propose that the expenditure of this eighty-two millions odd should be spread over fourteen years; this would mean an expenditure of about six millions a year, of which the State subsidy would supply two millions. They advise that the State grant should be funded and the difference between the house rentals and the total outgoings made up to the local authorities each year; at the end of seven years the State should make a valuation of the houses erected during that period and wipe off the whole loss by paying the difference between the cost of the houses and the ascertained value. The majority, while holding that for a period of years after the war it will be impossible to build such houses at a cost which would yield a commercial return, admit that such a state of matters may not always prevail; the minority agree that there must be an element of subvention in housing finance after the war until the rate of interest and building cost return to more normal levels. But they hold that a fixed proportionate grant is not necessary in all districts, and desire to give more encouragement to building societies and owner occupiers. Further, they express the view, with which many, including not a few employers, will agree, that employers have a responsibility, of which they cannot wisely be relieved, for the housing of their workers. The arguments are strong for the "tied" house in agricultural districts, that is to say, a farmer should be able to make sure that the cottages attached to the farm are used by men working on the farm. The majority are strongly opposed to subsidizing private enterprise, but the minority, being anxious to encourage building societies and the owner occupier, consider that private enterprise ought to be encouraged, and believe that about a quarter of the total capital expenditure might thus be obtained.

Ireland.

QUEEN'S UNIVERSITY, Belfast, has accepted the offer of Mr. J. H. Stirling of Belfast of a gift of war stock to found a silver medal in the department of pathology, in honour of Colonel J. G. Adami, F.R.S., Professor of Pathology in McGill University, Montreal. The medal will be awarded annually and will be known as the Adami medal.

In the paragraph on the treatment of venereal disease in Ireland, which appeared in this column last week, it was stated that the Local Government Board for Ireland would repay 25 per cent. of the approved expenditure incurred under the regulations by sanitary authorities. The figure should have been 75 per cent.

The resignation of Captain William Ormsby, R.A.M.C., formerly medical officer for the Ballyleague Dispensary District of the Roscommon Union, has been accepted. Captain Ormsby has been on active service since war broke out, and at the first battle of Ypres was so severely wounded that amputation of the leg was considered necessary. He is still in France.

ULSTER MEDICAL SOCIETY.

The opening meeting of this society was held in the Medical Institute, Belfast, on November 8th. The outgoing President, Mr. Robert Campbell, F.R.C.S., occupied

the chair, and introduced his successor, Dr. William D. Donnan of Holywood, who gave an opening address, in the course of which he mentioned the advances in medical science brought about by the war, and gave some personal recollections of his student days, and the advances in surgery during the last twenty-one years. The second half of the paper was devoted to the relations of chemical and chemico-physical science with medicine. The living cell was an essential chemical machine, and one by one its products, which were formerly supposed to be purely "vital," had been produced synthetically in the laboratory. Enzymes, toxins, and the potentialities of colloidal matter were discussed.

Sir John Byers, in an amusing and telling speech, proposed a vote of thanks to Dr. Donnan for his address, and to Mr. Campbell for his labours during the past year; this was seconded by Dr. McKisack, and acknowledged.

Professor Lindsay, vice-chairman of the Ulster Branch of the National Council for Combating Venereal Diseases, made a short statement on the present position in regard to the prevention and treatment of these diseases. Sir John Byers asked whether the Local Government Board and the Public Health Committee were to be allowed to put forward a scheme without consultation with the profession; such consultation was ordered in the papers of the Boards in England and Scotland; he proposed a resolution asking the Boards that the profession should be consulted; this was seconded by Mr. R. Campbell, and after a number of members had joined in the discussion, was passed unanimously.

England and Wales.

INSANE AND MENTAL DEFICIENTS IN 1916.

PART I of the Report of the Board of Control for the year 1916 has recently appeared in modest pamphlet form of 73 pages, in lieu of the voluminous Blue Book of pre-war days. It again records a diminution in the number of notified insane, the number under care in England and Wales being 134,029 on January 1st, 1917, as compared with 140,466 on January 1st, 1915. The statistics show a falling off of 3,159 during the year 1916; if the average annual increase noted during the ten years previous to 1915 had been maintained, the number estimated for January 1st, 1917, would have been 144,968, nearly 10,000 in excess of the actual number recorded. The relative sex percentages under care in 1916 were: males 45.7, females 54.3, against 46.2 and 53.8 respectively in 1914. The fact that on January 1st, 1917, there were nearly 2,000 mental and nervous cases under observation in military hospitals, of whom a certain number will probably eventually be certified as insane, would appear partly to account for the disparity in the two sexes. The diminution was mainly amongst rate-aided cases (the so-called pauper class), the private patients under care on January 1st, 1917, being 9,876 (males 3,765, females, 6,111), a decrease of 25 on the figures of the previous year; the criminal patients numbered 1,028. The total admissions during 1916 were 20,701 (472 less than in 1915); those discharged recovered 6,839, and "relieved" or not recovered 2,962; and the deaths were 13,608, or 219 in excess of those in 1915.

Information is given as to the number of male attendants who had joined the colours up to the end of 1916. The total number of male attendants on lunatic patients in institutions (not including staff otherwise employed) was at the commencement of the war 6,496, of whom 5,289 were of military age; of these 2,681 had joined before the operation of the Military Service Acts, 1916, when the Board recommended 922 for permanent and 601 for temporary exemption, but of the latter all but 27 had been called up by January 1st, 1917. Thus it would seem that more than 50 per cent. of the original number of asylum attendants have been serving in the army, and this percentage would be considerably larger if the reservists mobilized at the outbreak of war were included.

The total expenditure in connexion with county and borough asylums for maintenance and structural expenses in 1916 was £3,575,451, and the average weekly cost of maintenance 11s. 7d. per patient. The number of suicides reported was exceptionally low—only 4 within asylum

precincts, though 18 deaths had resulted from self-inflicted injuries, in 9 cases committed previous to admission, in 4 during absence on trial, and in 1 after escape. Cases of dysentery and diarrhoea showed an increase in six of the larger asylums and a decrease in five; open-air treatment had been tried with beneficial results; 648 deaths from these causes were recorded.

As the result of war conditions local authorities have done comparatively little to meet the obligations imposed on them by the Mental Deficiency Act, 1913. So far 6,836 cases (3,093 males and 3,743 females) have been brought under the supervision of the Board of Control, either in certified institutions or houses, approved homes under guardianship, or notified. Eight new institutions were certified during 1916, bringing up the total of certified institutions to forty-four, in addition to which some thirty institutions had been approved under Section 37; and there were nine certified houses and 21 approved homes in operation at the end of 1916.

Canada.

THE CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

At the seventeenth annual convention of the Canadian Association for the Prevention of Tuberculosis at Ottawa on September 26th last, under the presidency of the Hon. J. W. Daniel, M.D., of St. John, New Brunswick, the Secretary (Dr. George D. Porter), in submitting a report, said that the general interest in tuberculosis and its prevention had been deepened by the war; the present situation in France had been an object lesson to the world on the importance of preventive measures. In Canada there were 1,194 tuberculous soldiers under treatment at an average cost of about 1,300 dollars a year for each patient. Of these, about 35 per cent. had never been overseas. In addition, there were hundreds of Canadian soldiers undergoing treatment for tuberculosis in England. During the past year the association had been greatly assisted in its educational campaign by the Government, which had granted an allowance to cover the cost of all literature distributed, and also franking privileges. In 1914 the sanatorium accommodation in Canada was about two thousand beds; since the war began this accommodation had been greatly increased by the Military Hospitals Commission. Sanatoriums already in existence had been enlarged and many of them were now devoted exclusively to military patients. The Government had accepted responsibility for the tuberculous soldier, and it was to be hoped that it would now recognize its responsibility to the civilian patient and lend its aid to the antituberculosis movement, which up to the present time had been entirely voluntary. The Secretary closed his report with an acknowledgement of the indebtedness of the association to the Imperial Order of Daughters of the Empire and the Victorian Order of Nurses, who had lent continuously both co-operation and support. Several papers dealing with the military aspects of tuberculosis were read.

In a paper on tuberculo-is and maternity Dr. D. A. Stewart of the Ninette Sanatorium, Winnipeg, said that in Canada each year no fewer than 2,400 tuberculous mothers gave birth to children, and in the province of Ontario 700 of the 63,000 children born in a year were the offspring of tuberculous mothers.

The presidential address was delivered in the evening by the Hon. J. W. Daniel, M.D., who gave a brief review of the work already accomplished by the association; he reminded his hearers that in the province of Ontario the death-rate from tuberculosis had been reduced from 149 to 91 per 100,000. The public address was given by Dr. W. A. Evans, of Chicago, the President of the United States Public Health Association. Dr. J. A. MacLado, of Ottawa, was elected President for the year 1917-18.

Resolutions were passed in favour of the establishment of tuberculosis clinics in all cities, the extension of the anti-tuberculosis movement to the training and for the protection of the youth of the country, the examination of recruits by chest specialists, and the pasteurization of all milk and cream used in the manufacture of butter. The question of a Federal Bureau of Public Health was again

brought up, and it was resolved to urge upon the Government the necessity for establishing such a department.

THE CANADIAN PUBLIC HEALTH ASSOCIATION.

The sixth annual congress of the Canadian Public Health Association took place at Ottawa on September 27th and 28th, the two days following the meeting of the Association for the Prevention of Tuberculosis. Dr. J. D. Pagé, Chief Immigration Office at Quebec, was in the chair. Among the various subjects discussed, that of national health insurance was of particular interest in that it was the first time the question had been considered at length at a medical meeting in Canada. Dr. Charles J. Hastings, of Toronto, advocated a system on the lines of the Insurance Act now in force in Great Britain. The question is one that is attracting a good deal of attention just now in Canada; it is probable that some such measure will be passed in the near future, and in his annual address the President of the Canadian Medical Association, Dr. A. D. Blackader of Montreal pointed out to members of the profession the advisability of giving careful consideration to this question.

A discussion took place on the prevention of venereal disease, during which Captain Gordon Bates, C.A.M.C., of Toronto, spoke of the alarming prevalence of the disease; he urged that the facts should be laid frankly before the public, and that the time had come when more efficient measures should be adopted to prevent the spread of the disease among the civilian population; in the army periodical inspection and quarantine had been adopted. A campaign had recently been inaugurated in the province of Ontario to prevent the spread of the disease and to educate the public, and two deputations, consisting of members of the profession, the chief of police, and city aldermen, recently waited on the Ontario Government with the request that venereal disease be classed and treated as a contagious disease.

Dr. Pagé, the president, took as the theme of his address immigration problems in Canada. The methods of inspection employed by the Canadian Government, he said, were far behind those in use in the United States, where the steamship companies are held responsible for the class of immigrants brought to the country. A number of other papers dealing with various aspects of public health work were read. Dr. W. H. Hattie of Halifax, Nova Scotia, was elected president of the association for the ensuing twelve months.

Correspondence.

THE BRITISH MEDICAL ASSOCIATION AND ORGANIZATION OF THE PROFESSION.

SIR,—There are now several "unions" and "associations" purporting to organize the profession, apparently all started upon the supposition that the British Medical Association is unfitted to do the work. By "British Medical Association," as far as I can see, they mean "the officials," whom they consider liable for all mistakes, shortcomings, and even the "cumbersome constitution." Herein lies the fallacy and the root evil causing subdivision.

The British Medical Association is of the profession, for the profession, and by the profession, who can make of it what they please; the only conditions being that they find out what they want, and work unitedly to attain their object, going on the committees or putting men on who can express their desires, following the work that is being done, and assisting by writing to those committees their (constructive) ideas if unable to do more active work.

General practitioners years ago altered the constitution to please themselves, made the British Medical Association democratic, and yet time after time since the Insurance Act have members rendered the work of a whole year useless through neglecting to advise, help, or criticize until the final stage, that is, the Annual Representative Meeting, when they have vetoed or "returned for further consideration" plans which, had they taken the trouble to understand them, could have been used in a slightly altered condition forthwith.

New bodies are, in my opinion, redundant and destructive to unity of the profession, and to belong to two or

three is waste of money; let all such bodies present constructive policies to the British Medical Association, and the need for their separate existence will cease, when all joining the one Association the profession would become the strongest "union" known to the United Kingdom, trade unions not excepted.

The one weakness which appeared to me in 1912 to exist, and for which I pointed out a remedy by circular letter to all Local Medical Committees early in 1913, is that there is not sufficient opportunity for personal verbal presentation and discussion of important matters (as opposed to lengthy printed reports). I was co-opted on the State Sickness Insurance Committee then considering organization. I proposed all areas to be arranged into twelve groups for the whole United Kingdom, each group to have a whole-time paid medical secretary (or agent), who should interview small parties of practitioners, ascertaining their views, presenting them properly to the British Medical Association, where they would be collated and discussed; and, afterwards, should arrange small informal meetings at doctors' houses, where the results could be laid before them whereby data for a well-considered, universally acceptable policy could be collected.

Such was embodied in one section of the "Special Fund" sent to Divisions several times and thrown out by the Annual Representative Meeting, though I admit it was somewhat swamped by such items as life and sickness insurance, etc., not acceptable to me. Had these been eliminated by the Annual Representative Meeting the organization part could have been worked at about 10s. a head to the profession.

Is it not yet possible for the Panel and Local Medical Committees to group themselves in some such way and see that these twelve men shall next year be elected on the Insurance Acts Committee? These men would get into touch with those not members of the British Medical Association, who, finding valuable work done for them, would surely join, so rendering the smaller bodies unnecessary. Local Medical Committees are purposely included, as all branches of the profession, whether accepting work under it or not, will soon be affected by the Insurance Act, and the profession as a whole, sinking "panel" and "non-panel," should join for the good of the whole; at present there seems a danger of "panel" losing sight of this.

As it is, about 5 per cent. to 10 per cent. of men attend meetings, and but few of the remainder ever take the trouble to return even prepaid question forms. Consequently hardly anyone outside the Committees, Panel or British Medical Association, knows what is going on till it is finished and issued as regulations or policy, as may be, when there is a great hue and cry about being "let down" and "not consulted," whereas the man who wears the shoe must show where it pinches before it can be eased, so the practitioners should point out difficulties to the British Medical Association, not only to each other.—I am, etc.,

Ealing, W., Oct. 21st.

HARDING H. TOMKINS.

THE REMUNERATION OF RURAL PRACTITIONERS.

SIR,—As the value of money has so altered and all insured persons are earning increased wages, all insured persons can afford to contribute 6d. a week—possibly the employer should contribute an extra 1d. This would give the Government 10d. a head a week (most clubs pay out about 2s. a week in sickness for each 1d. contributed). The patients would then receive in sickness, men, 12s.; women, 10s.; the doctor, 10s. per member, without dispensing; and the chemist, 3s.—I am, etc.,

Andover, Nov. 11th.

J. BATTEN COMBE.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—The Rural giant has good naturedly been sleeping while his betters have been arranging his toil and its reward. Now he has begun to stir and mutter in his sleep. Perhaps he will soon sit upright and rub his eyes.

What have the Commissioners offered to Rural men in the way of mileage? They have actually said very little about the matter. What they seem virtually to say to us is this: "We expect you to make your way unaided

within a circle whose diameter shall not exceed six miles. If you are a pedestrian you may walk. If you prefer you may cycle. If you own a car you may use it, naturally at your own expense. You will incidentally (at least in the day time) enjoy the beauties of Nature both in summer and in winter, while the fresh air and exercise will prove beneficial to your personal health." But how long should a man be content with rubbing his eyes?—I am, etc.

October 23rd.

CALIBAN.

SIR,—I beg to protest against the flagrant misstatement in the latest memorandum of the Commissioners, which you publish on page 72 of SUPPLEMENT (October 20th).

Section 11. The difficulties are inherent in the particular system of remuneration which the profession in 1911-12 made a condition of acceptance of service under the Insurance Acts.

In the agreement signed January, 1913—Terms of service:

Section 8. The practitioner shall immediately after April 14th, 1913, furnish an account stating the number of insured persons on his list.

Each practitioner was definitely promised (December, 1912):

Section 22. If he has 1,000 insured persons on his list for the year he will receive at least £325. With 6d. for tuberculosis and 6d. for drugs it will be £375.

This was a plan so simple, honest, and straightforward as to be almost above criticism. The difficulties are inherent in the Commissioners' plan, which is so cumbersome and different as to be almost beneath criticism. Insured person days were never dreamt of in our diplomacy. In fact, for no list of 1,000 insured persons, however carefully kept, has there ever been paid the £375 promised. That insurance rate was agreed to for ordinary times in which the rate on the healthy lives paid for the attendance on the sick. Conscription, by taking the healthy and leaving all the sick, has deprived panel practitioners of about a million pounds a year for doing the same work. The Commissioners say (Section 17) the result is "obviously" an "over-payment" because thereby a greater number drop out of benefit during the first half of the year! They say, in consequence, many women become insured persons, women who paid us better as private patients for less sickness than war work causes. And they use conscription as an excuse for giving us discharged soldiers to doctor. To induce us to attend for nothing the disabled soldiers, on account of whom nothing is paid into the central pool (Section 18), they hide behind the unquoted statement of some unnamed actuary who certainly never said an unlimited class of permanent invalids was balanced by the odd days without benefit of a much smaller class. He would certainly tell the Commissioners that to pay only the average rate for the specially diseased and aged classes left by conscription is to under-pay insurance practitioners.

We know the rate for insurance is higher the shorter the period. To insure for one day the rate is much higher than for a year. We agreed to a yearly rate. (Quarterly in the second agreement.) But we are paid for insured person days and denied the higher rate involved.

That payment is postponed and we are deprived of the interest accrued. List inflation is deliberately rewarded so as to deprive us of payment for the unassigned class who have not chosen a doctor.

I remember that the Commissioners are paid to control the funds from which doctors are paid, and that they have, in fact, well earned their salaries by repeatedly altering their method of calculating, so that each time we doctors should get less, until their cumbersome administration costs more than the total funds which the panel doctors get all together.

Remember and demand the right of audit and straightforward settlement.—I am, etc.,

Croydon, Oct. 22nd.

T. ARCH. DICKES.

THE PROVISION OF MEDICAL TREATMENT FOR DISCHARGED DISABLED SOLDIERS AND SAILORS.

SIR,—Will you allow me to deal with this subject from the non-panel point of view, and thus, I hope, to relieve in some measure at least the minds of certain practitioners who seem to think their interests may be compromised by non-panel practitioners having the opportunity of sharing in the remuneration for attendance under the statutory

provisions now made? I appeal to the Association for active support in this matter.

The conditions asked for by non-panel practitioners, also unanimously supported at the annual meetings of the Edinburgh Branch and the Edinburgh and Leith Division of the British Medical Association, were:

1. That any provision made for medical attendance on discharged disabled soldiers and sailors ought to be outside the National Insurance Acts.
2. That this provision ought to be made under conditions which will allow of these persons being attended by any registered medical practitioner they may respectively choose.

No. 1 was lost by the terms of the National Insurance (Part 1 Amendment), Act, 1917. No. 2 is now lost through the regulations under the 1917 Act. Instead of letting it be open to these men to have their medical benefit from any registered medical practitioner they may choose they can only have it from such as are already on the panel, or, if not on the panel, as enter into an agreement "for the treatment of any invalided soldier who may apply to him for treatment upon the same terms and subject to the same conditions as are contained in the agreement for the time being in force between the Committee and practitioners on the panel," etc. (see National Insurance, Benefits of Invalided Seamen and Soldiers Regulations (Scotland) 1917, page 4, par. 9, and Memorandum 234/L.C. (Scotland), page 6, par. 29). The usual capitation method of payment is replaced by one of payment according to attendance, but this may only be temporary.

Those practitioners, therefore, who have felt bound to refrain from joining the panels, because they held the conditions of service to be derogatory to the profession and against the public interest, have the same objections to undertaking attendance on discharged disabled soldiers and sailors under the conditions now imposed. Many of those who will come within the scope of these provisions were previously attended as private patients, some by non-panel practitioners, others by insurance practitioners in their private capacity, and in either case would presumably have continued to be so attended after their discharge from service. We hold that these men who have suffered in the service of their country deserve better than to be told that the Government makes medical provision for them only under the conditions of the National Insurance Acts. Surely it would have been possible to have made the provisions more generous and acceptable all round.

The Council of the National Medical Union has unanimously passed, and the Medical Guild (Scotland), at its annual meeting, has unanimously endorsed, the following resolution:

That the National Medical Union advises its members and all other non-panel medical practitioners to refrain from attending discharged disabled soldiers and sailors under the "Special Arrangements" of the Insurance Commissioners, but encourages treatment in their private capacity.

The National Medical Union and the Medical Guild are not opposed to the principle of health insurance, but they are opposed to the conditions and regulations by which medical benefit is administered under the panel system of the existing National Insurance Acts. The provisions now made for discharged disabled soldiers and sailors are therefore such as they decline to subscribe to, and your anxious correspondents and others similarly minded need have no fear for their pool, so far, at least, as the members of these bodies are concerned.—I am, etc.,

Edinburgh, Nov. 8th.

JOHN STEVENS.

THE CONFERENCE OF LOCAL MEDICAL AND PANEL COMMITTEES.

SIR,—In the SUPPLEMENT of October 27th I notice a report of the Conference of Representatives of Local Medical and Panel Committees. Curiosity prompted me to see whether the "representatives" of insurance practitioners had as yet awakened to the fact that Manchester and Salford, whose system of administration is entirely and fundamentally different to that of the rest of the country, were absolutely unrepresented on the Insurance Acts Committee. The mere fact that these two towns represent roughly one-twentieth of the entire insured population would seem to give them some little right to representation: but, coupled with the fact that the "Salford scheme" is still worked, and worked successfully there, it

strikes me that no committee that ignored these towns could hope to be considered representative.—I am, etc.,

November 5th.

STANLEY HODGSON,
Captain R.A.M.C.(T.F.).

CEREBRO-SPINAL FEVER AND ITS TREATMENT.

SIR,—Dr. Stewart's letter in your issue of October 6th, 1917, with reference to the treatment of cerebro-spinal fever, is of considerable interest, but I have some little difficulty in appreciating the value of his table.

Dr. Stewart indicates 22 mild cases with 6 deaths, or a mortality of 27 per cent.; and the second series of 24 cases with 10 deaths, or a mortality of 41.6 per cent., is described as mostly composed of mild cases, but surely a case of disease resulting in death cannot be described correctly as mild.

The third group, with a mortality of 41 per cent., composed of all types of cases, does not give a favourable impression of the subcutaneous use of antimeningococcus serum in addition to intrathecal injection.

The final group, composed entirely of severe cases, yields a mortality of 39 per cent., which, by a new and ingenious method in vital statistics, can be made to fall to 17.6 per cent. Dr. Stewart's method of excluding hopeless cases and those over 35 years of age, is not, in my opinion, justifiable, since it brings into play the fatal confusion arising from the personal factor. Two practitioners equally competent, if asked to classify a given case of cerebro-spinal fever as mild, severe, hopeless, etc., may arrive at divergent conclusions. Thus, some of the mild fatal cases enumerated by Dr. Stewart might conceivably be called severe by an equally competent observer.

I may be pardoned if I apply the statistical method introduced by Dr. Stewart to my own series of 41 cases of cerebro-spinal fever treated during 1917.

No. of Cases.	Recoveries.	Deaths.	Mortality.
41	24	17	41.4 per cent.

This is practically the same gross figure as Dr. Stewart's for his second and third groups, but is 2.2 per cent. worse than his final group, and 3.4 per cent. worse than his total mortality for all groups.

I classify my cases as follows:

Group.	Recoveries.	Deaths.	Total.	Percentage of Deaths.
Mild	6	—	6	—
Moderate severity ...	11	—	11	—
Great severity... ..	7	5	12	41.6
Hopeless	—	12	12	100.0
Total	24	17	41	41.4

If we deduct the hopeless group altogether, we get 29 cases with 5 deaths, or a mortality of 17.2 per cent. The only treatment adopted was repeated lumbar puncture, with intrathecal serum injection. The number of punctures varied from 2 to 22 in individual cases, and the amount of serum given from 50 to 250 c.c.m. as a maximum.

Dr. Stewart's statistical method is illegitimate. The use of the word "cured" is to my mind open to the objection that its opposite is "killed." It appears to be less objectionable to use the term "recovery." In that case the opposite term "death" may be taken to represent the triumph of malign forces in spite of the efforts of doctor and patient.—I am, etc.,

A. M. N. PRINGLE, M.B., C.M., D.P.H.,
Medical Officer of Health, Ipswich;
Superintendent, Borough Isolation Hospital.

Ipswich, Oct. 17th.

UNNECESSARY SPECTACLES.

SIR,—Military ophthalmic surgeons are very busy and generally overworked, and I venture to make a suggestion which would, I think, lessen this work to some extent. A considerable saving of time and trouble might be effected by the avoidance of indiscriminate ordering of glasses for hospital patients suffering from headaches or

other subjective symptoms. It is the commonest thing to have sent to the ophthalmic department of military hospitals, from the medical and surgical sides, numerous patients who are there recovering from wounds, dysentery, trench nephritis, or some debilitating illness. Usually these men are of military age, have never worn glasses, and are passing through a temporary period of ill health.

In the usual routine the ophthalmic surgeon examines these cases, discovers some error of refraction, and orders glasses. This is frequently unnecessary; the cases could be treated by ordinary rest to the eyes, the avoidance of all "close" work, and the use of a weak solution of atropine with dark glasses or a shade. I am sure from long experience that this procedure would eliminate the necessity of ordering spectacles in a large percentage of cases, and would lessen the work which is sent to the ophthalmic surgeon, as well as save the country a considerable amount of money, whilst at the same time efficiently treating symptoms which are only temporary.

It may be urged that glasses are given to enable the patient to read and amuse himself by means of books, etc., during his period of convalescence. Men who have been accustomed to much reading might find the treatment suggested irksome, but it is bad policy to encourage these cases to use their eyes, as it is likely to prolong their stay in hospital; it would be much better to put them to some light occupation about the ward and to forbid all reading, writing, etc.

When a man is confined to his bed, he should be advised as to the temporary nature of the trouble and encouraged to amuse himself by other means than by his eyes. I am quite aware that in the treatment of shell shock and allied conditions, the re-education of the soldier by means of needle-work and handicrafts of various sorts is sometimes effective and that the use of the eyes for fine work is part of the means by which this re-education is carried out. These cases, however, do not constitute a large number and might be specially considered. I would urge that glasses should never be ordered for combatant soldiers except for the one purpose of making an inefficient man efficient, or raising him from one category to another. It is quite useless to force a soldier to wear glasses who is unwilling to do so, and even the man who fancies that glasses will help him will discard them as soon as he regains his health.

I think if these points were acted upon by military ophthalmic surgeons much time and money would be saved by obviating the issue of numerous pairs of glasses which are very little used. It is not generally known how enormous an organization the Army Spectacle Department has become, representing thousands of pairs of spectacles provided at great cost of time and money, which are invaluable where they are ordered rightly, but allowing of great waste if sufficient discrimination is not exercised in ordering them. No one can doubt for a moment that glasses should be ordered where they are likely to be of effective use, but every case should be considered from a commonsense point of view by the ophthalmic surgeon, who should not forget that the War Office looks on him as an expert and in his own particular work expects him to make a final decision in most cases.—I am, etc.,

ARTHUR W. ORMOND, Major R.A.M.C.T.,

Surgeon-in-charge, Ophthalmic Department,
London, W., Oct. 13th. 2nd London General Hospital.

THE SENSE OF PROJECTION IN FLYING OFFICERS.

SIR,—In my examination of flying officers and of cadets qualifying as airmen, I have noticed that if a man had a good "sense of projection" he made a good aeronautist; and conversely, that every good flying officer has a well-developed sense of projection. This test seems to me to be almost decisive of a man's fitness for flying. By sense of projection I mean the ordinary test—that a man having looked at a small object, such as the tip of the finger, held at some distance, will afterwards be able quickly and accurately to touch it with the eyes closed.—I am, etc.,

J. C. McWALTER, M.D., LL.D., D.P.H.

THE CURE OF INGUINAL HERNIA.

SIR,—I delayed the publication of my article "The Cure of Inguinal Hernia" for some years, and wrote the article

with some reluctance, for the reasons brought to notice by Mr. Cuning's letter. That is because it is difficult to describe an operation depending upon new technique applied to old principles without appearing to describe the old operation.

A large number of surgeons have done me the honour of watching demonstrations of the operation, and have adopted this method in their practice. The fact that all who have seen the operation agree that it is new to them determined its publication.

The essential principle is that the sac is not dissected out, it is merely incised, and the peritoneum is grasped from within the sac at the level of the internal abdominal ring. Mr. Cuning emphasizes the importance of high ligation in the operation; there is no possibility of low ligation. It may be said that so far as the preparation of the neck of the sac for ligation is concerned in this operation we begin where other operations end.

I am indebted to Mr. Charles Bennett for raising several points which do not appear to have been brought out sufficiently clearly in my article. The finding of the sac would appear to be difficult through so small an incision, but in practice we have not found it so. The coverings of the cord can easily be drawn through the aperture in the external oblique, and once the spermatic fascia is divided the sac is easily found if the wound has been infiltrated with analgesic solution. I use this in liberal quantity, using from one to one and a half syringefuls of a Gray's syringe for the operation.

Treves (*Surgical Anatomy*) draws attention to the fact that the mesentery of the small intestine must be abnormally long if an enterocoele occurs. I think the omentum must be abnormally long to produce an epiplocele. The vast majority of cases coming under my observation contain only omentum.

The retraction of the parietal peritoneum is greater when this method is employed than when the sac is dissected by the ordinary method and we have satisfied ourselves that the neck retracted sufficiently towards the middle line to lie behind the rectus muscle.

Suturing the conjoined transversalis and internal oblique muscles to Poupart's ligament is a simple matter if the lower edge of the aperture in the external oblique is drawn downwards sufficiently to expose Poupart's ligament, and the needle is just passed through Poupart's ligament. The femoral vessels are then not placed in jeopardy. I do not attempt to suture the conjoined tendon beyond the muscular portion which appears in the wound. Cases requiring reconstruction of the inguinal canal, and the very rarely occurring cases of direct hernia are treated by enlarging the incision and the performance of a typical Bassini operation.—I am etc.,

November 8th.

ALFRED J. HULL.

RECURRENCE OF ADENOIDS AND TONSILS.

SIR,—In the JOURNAL of October 20th, p. 539, Dr. J. Lewis Thomas has raised a question in rhinology concerning which I should like to make some comments.

I quite agree with Dr. Thomas that the operation for the removal of enlarged tonsils and post-nasal growths is too often followed in children by little relief owing to the fact that the obstruction has some other cause; Dr. Thomas says that, as far as septum deformity is concerned, very little can be done. With this I do not agree. A deviated septum in a child, provided there is no marked spur, which if present can be removed easily, may be bent into shape with an Asch's blade; and if this is not sufficient, a submucous resection may be done as the child grows older.

The turbinate will probably become reduced in size on its own account, but, if not, a puncture cautery will do this, and in many cases the asthma, if present, will in consequence improve.

If Dr. Thomas takes a series of cases of septum deviation and enlarged turbinate, he will often find on each a small white spot, which in course of time becomes an ulcer, showing that these have been in contact, and is mostly to be observed while the child is asleep.

I have records of many such cases, with improvement and cure of asthma after treatment.—I am, etc.,

Chichester, Oct. 20th.

ARTHUR M. BARFORD.

FRANCE'S SURVIVAL-RATE.

SIR,—The misleading nature of the statement in your useful summary of Professor Richet's report on the "depopulation" of France, that "the excess of births over deaths grows smaller," may be shown by the following table:

French Five-yearly Registers, per 1,000 of Population,

	1875-1882.	1883-1887.	1888-1892.	1893-1897.	1898-1902.	1903-1907.	1908-1912.	1913.
Births	25.0	24.2	22.5	22.3	21.7	20.6	19.4	19.0
Deaths	22.5	22.3	22.2	22.1	20.7	19.6	18.6	17.7
Survival-rate	2.5	1.9	0.3	0.2	1.0	1.0	0.8	1.3

It will be seen that since the period 1888-92 the excess of births over deaths has increased. Moreover, if the survival-rate really depends on the birth-rate, why was the population growing faster when the birth-rate was 19.4 than when it was 22.5? It is surely time it were realized that if a country increases its food supply (home-grown or imported) very slowly, it can only increase its population very slowly—that is, can only have a very low survival-rate, and therefore should have a very low birth-rate.—I am, etc.,

London, S.W., Nov. 3rd.

BINNIE DUNLOP, M.B., Ch.B.

** The statement to which our correspondent takes exception is Professor Richet's ("l'excédent des naissances sur les décès est en France de plus en plus petit"), and does not seem to us misleading. Professor Richet did not say that the decline of the survival-rate was absolutely uniform, but that the trend was downwards—a phenomenon which is sufficiently evident in the figures quoted by Dr. Dunlop. The last sentence of Dr. Dunlop deals with a question which is, in our judgement, a matter of opinion for the discussion of which we cannot at present find space.

LAY RADIOGRAPHERS.

SIR,—I notice from your issue of November 10th that the Medico-Political Committee of the Association has taken up the question of lay radiographers. Let me urge upon the Committee to go a step further and include "medical electricity," as lay bodies, unfortunately supported by some qualified medical men and women, are granting certificates of competency in this subject to lay people, and patients are treated by them. It is absurd to argue that they only treat patients under medical supervision. That is more the exception than the rule; they ought not to be treating patients at all; these methods work out to the great detriment of the public and the profession, and the part played by registered practitioners in aiding and abetting them is deserving of investigation.—I am, etc.,

November 13th.

ELECTRO-THERAPEUTIST.

THE FUTURE OF THE POOR LAW MEDICAL SERVICE.

SIR,—If those engaged in the Poor Law medical service will send me short and decisive replies to the question, "Do you wish the Poor Law medical service to be merged into the present and future general insurance scheme?" I will tabulate the results and make them known.—I am, etc.,

A. WITHERS GREEN,

Honorary Secretary Poor Law Medical Officers' Association, Wardrobe Place, E.C.4.

November 5th.

IT is reported that the health of the French army in Macedonia showed a considerable improvement during the first nine months of this year as compared with last year. The typhoid admission-rate was 1.38 per 1,000, and that of dysentery 7.43. Malaria is still the most serious cause of disability, but even here there has been a notable decline. In August the rate was 23.8 in 1917, as compared with 39.16 in 1916, and in September it was 29 in 1917, as compared with 74.6 in 1916. It is further to be noted that only about one-sixth of the admissions in September were new cases. The improvement is attributed to attention to the sanitation of localities, to the free distribution of mosquito nets, and to a daily dose of quinine, the taking of which is carefully supervised.

Obituary.

EDMUND PRICE, M.B., C.M.E.DIN.,

RADIOLOGIST TO CHALMERS HOSPITAL, EDINBURGH.

By the death of Dr. Edmund Price, which occurred in somewhat tragic circumstances on October 27th, the medical profession in Edinburgh has sustained a loss, and his relations and many friends are mourning to-day the passing away of one who up to the moment of his death appeared to be in his usual vigorous state of health. His may be said to be one of the many instances in these times of a man sacrificing his life at the call of duty, for, though leading a busy professional life in which there was small opportunity for leisure, Dr. Price at the age of 54 joined the 1st Battalion City of Edinburgh Volunteers when it was inaugurated. With them he drilled regularly, sometimes standing guard all night, and it was while attending manoeuvres with his battalion that he met his unexpected and untimely death.

Earnestness of purpose, thoroughness in whatever work he undertook, and unselfishness, were the chief characteristics of the man. His desire when war broke out was to do all he could to help. In addition to his volunteering, he started a course of lectures on ambulance work to the Scottish Women's First Aid Corps, and it was only the day before his death that he was making inquiry as to how he could be of service on the new medical boards that are shortly to be established. There was a quiet dignity about him always tempered by a strong sense of humour. He was a steadfast friend and a delightful companion. In every sense he was a dependable man, and everything he did had the stamp of thoroughness and conscientiousness about it.

Edmund Frederick Tanney Price was the son of Dr. A. G. Price, I.M.S. Four of his brothers were medical men, and he is survived by—besides his widow and a married daughter—three sons, two of whom are qualified and serving in His Majesty's forces, while the third is a medical student. Edmund Price was born in India fifty-five years ago; he received his early education there, and later at Edinburgh University, where he graduated in 1884. For twenty-two years he was well known and highly esteemed as a successful general practitioner in Edinburgh; he obtained a wide knowledge of his profession, and amassed a large amount of clinical material which was to stand him in good stead when he took up x-ray work. This had been attracting his attention for some years, and so fascinated him that in 1906 he determined to specialize in it. His work as a radiographer was quickly recognized to be of a very high order. He was as skilful as he was painstaking, and could always be relied upon to produce the best possible plates. He made a careful study both of the anatomical and clinical aspects of his speciality, and, moreover, took the opportunity, whenever possible, of being present at the operations on patients whom he had x-rayed. By these means he acquired great experience in the interpretation of his plates, so that the profession came to value his opinion and to appreciate the assistance he was able to render them. His caution in not being led into reading more in his plates than was warranted gave him a well-earned reputation as a trustworthy expert witness. With regard to the therapeutical side of his speciality, Dr. Price recognized its limitations, and this attitude served still further to gain for him the confidence of the profession. In 1907 Dr. Price was appointed radiologist to Chalmers Hospital, an appointment he held till the time of his death. He was a member of the Obstetrical Society, the Edinburgh Medico-Chirurgical Society, and the Royal Society of Medicine. Among his contributions to the literature of radiology was a paper published in 1911 on "The diagnosis of urinary calculi by means of the x rays," and an article in the *Edinburgh Medical Journal* in 1914, entitled "The Röntgen ray and bismuth meal method as an aid in the diagnosis of some alimentary diseases." In addition, he contributed the x-ray illustrations of the *Manual of Surgical Anatomy* (Beesley and Johnston).

Dr. Price's life was too fully occupied by his professional work to allow of much time for other outlets for his energetic nature, but two things appealed to him strongly—ambulance work and volunteering. He was, since 1888, a most successful lecturer and examiner under the

St. Andrew's Ambulance Association, and did excellent work in this connexion; while his association with the Volunteers dates back to the time when, as a student, he joined the 4th Battalion Royal Scots. T. J. T.

WILLIAM GRAHAM, M.D.,

MEDICAL SUPERINTENDENT BELFAST DISTRICT ASYLUM.

THE news of the unexpected death of Dr. William Graham, Medical Superintendent of the Belfast District Lunatic Asylum and Medical Officer in Charge of the War Hospital, Belfast, was received with the greatest regret by all who knew him. He was the personification of strength and energy; nothing seemed to tire him; the rate he walked at and the distances he covered were the envy of many a young man. He kept himself in the best condition, physical and mental. About three weeks ago, while passing through the village of Newtonbreda, returning from town to the asylum, his ankle suddenly bent and he fell heavily and fractured the upper part of the femur. Three days before his death there were signs of an embolus; these recurred on November 5th, and he died suddenly on the night of that day. He was about 56 years of age.

Dr. Graham graduated in the old Royal University in 1882. He studied mental diseases in London and on the Continent, and was appointed assistant medical officer in the Belfast Lunatic Asylum. In 1884 he was elected resident medical superintendent of the County Armagh Asylum, and was then the youngest occupant of such a post in Ireland. In 1896 he succeeded the late Dr. Merrick as resident medical superintendent of the Belfast Lunatic Asylum, and many memorable and important reforms marked his tenure of office. He had a fine humanitarian spirit, had deep sympathy with the insane, and was endowed with great powers of organization; he insisted on a high standard of efficiency; much liberty was allowed the patient, fresh air and outdoor work; consequently very little bodily restraint was ever needed. Largely to his initiative was due the establishment of the villa colony system at Purdysburn; the old asylum buildings on the Grosvenor Road—built in 1829—were out of date, and congested; the large demesne of Purdysburn, about five miles from the city, was purchased; it consisted of 295 acres, and was subsequently enlarged by the acquisition of adjacent grounds. As each villa was completed, a batch of patients was removed to the new site, where the utmost liberty compatible with their safety was allowed, and congenial occupation assigned. The institution is not yet completed, and further work has been arrested by the war. When the Grosvenor Road buildings were taken over by the military authorities as an ear hospital, he was given control with the rank of lieutenant-colonel.

Dr. Graham's annual reports were always welcomed by the daily newspapers, and large quotations on the general subject of insanity and its causes, on its prevention, on the necessity of healthy mental culture and mental cleanliness, appeared in their columns. He pointed out the dangers and errors of our education and of our social fabric in clear and incisive terms; these reports were intended to have and had an educative effect on the public, which tables of statistics never achieve.

His favourite relaxation was hunting, and his colours were victorious in more than one local race meeting. He is survived by his widow, with whom the deepest sympathy is felt, and two brothers, one of whom is Dr. Samuel Graham, medical superintendent of the County Antrim Asylum.

NEIL OMAN, M.D. EDIN.,

PORT SURGEON, GIBRALTAR.

At Gibraltar, on October 8th, Dr. Neil Oman, the president of the local Branch of the British Medical Association, passed away at the advanced age of 82. A native of Wick, he studied at Edinburgh University, and after a brilliant course there graduated M.B., C.M. in 1865. Subsequently he was class assistant to Sir J. Y. Simpson, and was intimately associated with the early triumphs of chloroform anaesthesia. He took the M.D. in 1871, and remained in Scotland practising his profession till 1879, when he removed to Malta. During the course of ten busy years there he occupied a foremost place in the life of the island, working with untiring energy during epidemics of

diphtheria and cholera, initiating and maintaining classes for the St. John Ambulance, and yet finding time to interest himself in music, painting, and etching.

In 1889 he began practice in Gibraltar, and continued to work there until three months ago. At the time of his death he held the appointment of port surgeon, but he had previously held other appointments in the colony. He was beloved by his patients and held in the highest esteem by the whole community. His generosity to the poor was great, but so quietly was his help afforded that its extent will never be fully known.

With Dr. Oman has passed away an interesting link with the past and a straightforward practitioner of the best type.

DR. CLEMENT MICHAEL ROGERSON, of Huddersfield, died on November 3rd from blood poisoning, which followed the pricking of his right thumb while repairing the hood of his motor car. He was 50 years of age, and was the son of the late Mr. Rogerson, chemist, of Bradford. He was educated at the Bradford Grammar School, where he secured several scholarships, and graduated M.B. Lond. with honours in 1892, and M.D. three years later. After filling the posts of house-physician and assistant laryngologist at the Leeds General Infirmary, he settled in practice at Huddersfield. He was a member of the Huddersfield Division of the British Medical Association, and leaves a widow, one son, and a daughter.

DR. GEORGE FREDERICK ODHAMS died at Norwich on October 26th, aged 56. He was educated at the University of Edinburgh and Guy's Hospital Medical School; he graduated M.B., C.M. Edin. in 1887, and M.D. three years later. After serving as house-physician to the Edinburgh Royal Infirmary and as assistant to the professor of clinical medicine in the university, he joined Mr. F. C. Bailey of Norwich as partner, and on the latter's death succeeded to the practice; in recent years he was in partnership with Dr. Nutman. He held the offices of district medical officer of the Norwich Union, surgeon to the Institute for the Indigent Blind, and consulting surgeon to the Norwich Lying-in Charity. He was elected a member of the Norwich Town Council in 1902 and served on various committees connected therewith. He was appointed a Justice of the Peace in 1909. He was a member of the Norwich Division of the British Medical Association, and was president of the Norwich Medical War Committee. He is survived by his widow and a daughter.

DR. ALPHONSE BOISSARD, a well-known obstetrician of Paris, who died on September 7th, was born in 1852. He gained the post of interne in 1879, was *chef de clinique* under Pinard, and was appointed accoucheur to the hospitals in 1891. After serving as assistant to Budin at the Maternité he became obstetric physician to the Tenon Hospital in 1898, afterwards passing in a similar capacity to the Saint Louis, and later to the Lariboisière. He was the author of memoirs on induced labour, rapid forced dilatation of the cervix, emptying the uterus in cases of retention of the dead fetus, dystocia, fetal monstrosities, treatment of puerperal infection by fixation abscess, and many other subjects. He made researches on the formation of the sexes and telephony, and took a practical interest in puericulture. He was president of the Paris Obstetrical Society in 1911.

DR. WALTER FOWLER, son of the late Dr. Robert Fowler of London, died at Bendigo, Victoria, Australia, on July 26th, aged 59. He won the Tancred studentship at Gonville and Caius College, Cambridge, about 1876, and subsequently joined Guy's Hospital Medical School. He took the diplomas of M.R.C.S. Eng. and L.S.A. in 1883, became F.R.C.S. in the following year, and graduated M.B., B.C. Camb. in 1885. He was house-surgeon at Guy's Hospital in 1883 and commenced practice in Birmingham in 1885, where he held an out-patient surgical appointment at the Queen's Hospital. On the death of his father in 1886 he succeeded to his practice in Bishopsgate Street, removing subsequently to Finsbury Pavement. A few years later, owing to ill health, he migrated with his wife and two children to Australia. After nine years' private practice in Echuca, Victoria, he became resident medical

officer to the Bendigo Hospital, where he was responsible for a large amount of surgical work and was held in high esteem as a surgeon. Failing health compelled his retirement in 1912. He leaves a widow, two sons, and a daughter.

DEPUTY SURGEON-GENERAL JOHN DAVIDGE, Army Medical Staff (retired), died at Hove on October 23rd, aged 86. After taking the diploma of L.R.C.S.I., he entered the army as an assistant surgeon on August 5th, 1858, nearly sixty years ago. He became surgeon on August 5th, 1870, surgeon-major on March 1st, 1873, and retired as brigade surgeon, with an honorary step on retirement, on October 4th, 1886. He served on the North-east Frontier of India, in the Bhutan campaign of 1865-66, receiving the medal and clasp, and in Egypt in 1882, receiving the medal and the Khedive's bronze star.

MAJOR-GENERAL T. ROSATI, surgeon-general of the Italian navy, recently died at the age of 57. He was formerly professor of diseases of the ear and throat in the University of Naples.

Universities and Colleges.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on October 24th.

Examiners.—The following were appointed examiners for the second examination for medical degrees, Part II, in the session 1917-18: Anatomy: Professor J. E. S. Frazer (St. Mary's Hospital Medical School), together with the external examiner, Professor R. W. Reid (chairman). Pharmacology: Dr. E. Mellanby (King's College for Women), together with the external examiner, Professor R. B. Wild (chairman). Physiology: Dr. J. Mellanby (St. Thomas's Hospital Medical School), together with the external examiner, Professor D. N. Paton (chairman).

Regulations in Medicine for Internal Students (War).—The regulations (September, 1917) were amended to provide that during the continuance of the war internal students who at the first examination for medical degrees in December complete that examination by passing in the subject in which they have previously been referred, and students who, having obtained exemption in two subjects of the first examination for medical degrees in December, will be admitted to the second examination for medical degrees, Part I, in the following March, provided that they shall, after the date of reference or exemption, have attended as internal students for the prescribed number of hours courses of lectures and practical work for that examination.

Committees.—Sir Frederick Taylor has been elected chairman of the Committee of Medical Members of the Senate, and Sir David Ferrier chairman of the Laboratory Committee.

ST. THOMAS'S HOSPITAL.

The Grainger Testimonial Prize of 30 guineas at St. Thomas's Hospital, given for a series of specimens illustrative of recent anatomical and physiological research, has been awarded to R. S. Foss.

UNIVERSITY OF GLASGOW.

At a graduation ceremony held in the Randolph Hall of the University on November 10th, Principal Sir Donald MacAlister conferred the following medical degrees:

M.D.—R. T. Leiper, J. L. Boyd, W. H. McKinstry, D. Smith, S. H. Bennett.

¹ With honours. ² With commendation.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary Council was held on November 8th, when Colonel Charters J. Symonds, A.M.S., Vice-President, was in the chair.

Diplomas of membership were granted to eighty-seven candidates found qualified at the recent examinations.

Sir Herbert Waterhouse was elected to represent the College on the Managing Committee of the Schiff Home of Recovery and Sir George Makins and Sir John Bland-Sutton to represent the College on the Board of Scientific Societies.

CONJOINT BOARD IN ENGLAND.

The diplomas of L.R.C.P. and M.R.C.S. have been conferred upon the following candidates who have passed the final examination:

Esawy Ahmed, E. B. Ash, Ruth Balfour, N. A. H. Barlow, G. E. Birkett, J. A. Birrell, A. Blackstock, Numa Sylla Bonard, G. Bourne, J. W. Brash, A. Bulleid, H. B. Bullen, F. Cameron, W. A. Clements, B. S. Collings, J. D. Constantin, G. W. Coombes, J. R. Cox, E. H. T. Cummings, D. R. Curnock, W. L. Dandridge, Hari Das, T. Davies, L. P. de Abrew, B. G. Derry, W. L. de Silva, J. D. Dimock, J. S. Ellis, M. W. Giffin, Satyapriya Ghosh, E. A. Gibb, J. C. Gio, C. H. Gilmour, L. C. Goumet, Lilian M. Griffiths, D. V. Halstead, E. C. Hinde, W. O. Holst, P. G. Horsburgh, R. Hunter, J. W. D. Hyde, C. V. Isard, T. G. James, N. K. Jenkins, M. H. Jupe, Nai Kamchorn, D. J. A.

Lewis, Emily C. Lewis, T. P. Lloyd, Alice L. Lloyd-Williams, A. V. Lopes, J. G. McCann, J. S. Matthews, L. C. Moore, A. H. Morris, W. P. Nelson, J. W. McK. Nichol, W. D. Nicol, F. C. Odling, D. F. Pantou, C. S. Parker, R. W. Payne, C. F. Rainer, H. Ratnarajah, F. N. Reynolds, H. E. Rhodes, Helen Roth, H. B. Russell, Khan Sahib, J. J. Savage, S. C. Shaw, C. Shaw-Crisp, C. E. A. Shepherd, Charlotte A. Shields, M. O. Simpson, Rani Sinha, B. L. Skeggs, R. C. W. Staley, H. Taylor, H. G. Taylor, O. S. Thompson, J. F. Twort, P. Ward, C. H. Warner, A. W. Wells, A. Winfield, K. M. C. Woodruff, E. B. Woolf, I. H. Zortman.

Medical News.

DR. CARREL being detained in America by official duties, the Harben lectures he was to have delivered at the end of this month have been postponed.

SIR WILLIAM MACEWEN, C.B., Dr. Robert Kennedy, and Dr. John Macintyre have been appointed Deputy Lieutenants of the county of the City of Glasgow.

SIR ARTHUR NEWSHOLME will give the Lady Priestley Memorial Lecture of the National Health Society on Wednesday next at 3 p.m., at the house of the Royal Society of Medicine. The subject is "The child and the home"; Mr. Hayes Fisher will preside.

At the quarterly meeting of the Medico-Psychological Association on Tuesday, November 27th, at 3 p.m., at the rooms of the Medical Society of London, Chandos Street, Cavendish Square, Drs. David Orr and R. G. Rows will contribute a paper, illustrated by lantern slides, on experimental toxic-infections of the central nervous system.

CAPTAIN KEYWORTH has brought out a third edition of his little pamphlet *Easy Italian and How to Pronounce It*, in the expectation that it will be found useful by British troops now in Italy. It contains a short vocabulary and a few simple phrases. It is published (price 3d.) by Combridges, 56, Church Road, Hove, and can be obtained at many of the principal stores and shops in London.

ALDERMAN A. MACGREGOR SINCLAIR, M.B., C.M.Aberd., Surgeon to the Victoria Hospital, Burnley, has been elected Mayor of Burnley for the third year in succession. No previous mayor of Burnley has served for more than two years in succession. Dr. MacGregor Sinclair has the confidence of all parties. His work as chairman of the tribunal has been arduous and has been carried out faithfully and justly to all concerned.

THE Royal Society has awarded the Copley medal to Dr. E. Roux, Director of the Pasteur Institute, Paris, for his services to bacteriology and as a pioneer in serum-therapy, the Buchanan medal to Sir Almroth Wright for his contributions to preventive medicine, and the Hughes medal to Professor C. G. Barkla for his researches in x-ray radiation.

THE new scheme for voluntary rations contains the statement that the consumption of milk and cheese should be restricted as far as possible, these foods being reserved for persons for whom they are indispensable. As it is difficult to think of a person for whom cheese is indispensable, it may be assumed that the last clause has in view the need of children for milk. In Paris steps are being taken to ensure that children under three years of age and the sick should have preference in obtaining milk. Persons desiring to take advantage of the system must obtain a ticket and hand it in with a medical certificate at the mayor's office, when the quantity of milk to be delivered daily will be fixed.

As already announced, Dr. Christopher Addison, Minister of Reconstruction, will deliver an address on "Health problems and reconstruction," at the Central Hall, Westminster, on Saturday, November 24th, at 12 noon. Mr. H. Kingsley Wood, L.C.C. (Chairman, Faculty of Insurance), will be in the chair, and among those who intend to be present are Dr. Alfred Cox, Dr. H. B. Brackenbury, and Messrs. W. A. Appleton, C.B.E. (General Federation of Trade Unions), Edwin Potts, L.L.B. (National Association of Insurance Committees), W. Edwards (Refuge Assurance Co.), William Marlow (Ancient Order of Foresters), C. Tuckfield (National Deposit), F. Coysh (Holloway Union), and P. Rockliff (London Insurance Committee). Tickets can be obtained free on application to 3 and 4, Sicilian House, Southampton Row, W.C.1; 112, City Road, E.C.1, or to the office of this JOURNAL.

DURING their visit to Bath on November 9th, the King and Queen made a brief inspection of the Combe Park War Hospital, which now has accommodation for 1,200 patients. The principal bathing establishments were also visited, and Their Majesties were shown some of the methods of treatment, more especially those which are applicable to wounded and invalided soldiers. At the outbreak of war the Bath Corporation offered the Government free

treatment for all wounded and invalided officers and men sent by the naval and military authorities. This offer was accepted, and thousands of the military cases have been treated without interfering with the accommodation for civilians. Including hydrotherapeutic measures at the Royal Mineral Water Hospital, which has admitted 2,275 military patients, the contribution of the hot springs of Bath towards the cure and relief of soldiers of all ranks consists of treatments numbering nearly 160,000.

J. L. BAKER and H. F. E. Hulton reported to a recent meeting of the Society of Public Analysts the result of the analysis of peeled chestnuts and peeled acorns. The percentage of starch in three specimens of chestnuts averaged 44.2, but in a fourth specimen was as low as 21.9. The amount of cane sugar varied from 8.1 to 17.5, possibly in relation to the degree of ripeness. Diastase present behaved like the diastase of an ungerminated cereal. The percentage of starch in two specimens of peeled acorns was 57.1 and 55.7 respectively. There was very little cane sugar in either specimen, but some reducing sugars. No diastase could be found in the acorn either before or after germination.

THE fifteenth annual report of the Gordon Memorial College at Khartoum, for 1916, states that the research work of the college, which is one of its most valuable features, has, unfortunately, had to be curtailed, and the staff has for the time being confined its energies almost solely to matters of immediate practical application to Sudan problems. The paramount claims of various war services upon the staff, together with the growing shortage in the supply of reagents and other chemicals, have brought many branches of work practically to a standstill. Dr. Chalmers, in his report on the work of the Wellcome Tropical Research Laboratories, expresses the hope that some arrangement will be made for the resumption of the publication of full reports on the lines of those issued by Dr. Andrew Balfour. The research work of the bacteriological section has been maintained, but the routine examinations were many less than in 1915, when there was an epidemic of cerebro-spinal meningitis. Work on streptococcal infections included an inquiry into the puerperal fevers of the Sudan.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Atiology*, Westrand, London; telephone, 2631, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

HOMES FOR INCURABLES.

A CONSIDERABLE number of requests are received for the publication of inquiries for homes for persons suffering from various chronic crippling conditions, especially chronic nervous and rheumatic disorders. Two recent inquiries refer to a woman, aged 23, able to pay 5s. a week, and to a young man suffering from specific cerebro-spinal disease, able to do light out-of-door work.

The publication of such requests, often accompanied by a description of the symptoms, occupies space which can ill be spared, very rarely elicits any reply, seldom or never any satisfactory reply. The accommodation provided in homes for incurables and other charitable institutions is limited and admission to the large institutions is usually by election (subscribers' votes), with all that that entails. Other smaller institutions admit by payment. These are mostly for women. If the annual income available is sufficient, the best course seems to be to set up the sufferer in a local cottage with an attendant. If only a small weekly payment can be provided, a respectable cottager may be found in the neighbourhood willing to take the case. The clergy and district visitors are usually willing to exercise some supervision. If the patient has no resources, there remains only the Poor Law infirmary or workhouse.

TREATMENT OF PEDICULOSIS PUBIS.

MAJOR WALTER BARTY, C.A.M.C., writes to condemn the treatment of pediculosis pubis by shaving and application of mercurial ointments. The discomfort of the shaving, he says, is great, particularly when the armpits and hairy parts of the chest, arms, and legs, are covered with parasites, as often happens with patients infected from blankets. He recommends in its place the application to all parts of the body of petrol (gasoline) which he has seen employed for years. It gives instant relief and appears to destroy the lice and the nits almost immediately. It causes no discomfort and the odour quickly disappears. When petrol is not available, paraffin (coal-oil or kerosene) may be employed in the same manner. This, however, causes a burning sensation and may even take the skin off in the fork and over the scrotum so that the excess should be quickly wiped off or bathed off with soap and warm water. He adds that the usual precautions must be taken with the clothing, but where ordinary sterilization is impossible the free use in them of petrol or paraffin will be found quite effective.

POISONING BY LABURNUM SEEDS.

DR. G. F. SYDENHAM (Dulverton, Somerset) writes: I saw two cases of poisoning by the seeds of laburnum on October 22nd at 7 p.m. in children aged respectively 5 and 3. They had been very sick and vomited up both husk and berry. They were unconscious, with very dilated pupils, which did not act to light. The temperature was not raised; the pulse, so far as it could be counted, was very feeble. The heart sounds were feeble. There were no convulsions and no diarrhoea. The treatment was expectant. Both children were comparatively well next morning.

In this connexion I may say I have a curious freak in my garden. Twenty years ago I planted a small bush of lilac laburnum. This year the tree as it now is had three distinct coloured flowers on it—lilac, a deep purple, and yellow. The different colours were on separate branches. Each branch was a distinct colour.

According to Wynter Blyth's *Poisons: Their Effects and Detection*, the active principle is an alkaloid (cytisine) which occurs in many plants belonging to the Leguminosae, but is best obtained from the seeds of laburnum. The same alkaloid, or one nearly allied to it, occurs in the flowers, bark, wood, and root of laburnum (*Cytisus laburnum*). The symptoms of poisoning by cytisine are mainly referable to the gastro-intestinal tract, and consist of acute pain in the stomach, vomiting, and diarrhoea. In 155 cases, 120 of which were instances of accidental poisoning of children, collected from the medical literature by Falck, there were only four deaths—2.6 per cent. The symptoms produced by eating the root, which, like other parts of the tree, is sweet, are more severe, vomiting being followed by narcosis, convulsive movements of the limbs, and dilatation of the pupils.

AN INQUEST ON A LEG.

LIEUTENANT W. A. MURRAY, M.B., D.T.M., R.A.M.C. (London), writes: The note by Mr. Norman Porritt in your issue of October 13th reminds me of an incident that occurred to me last year when I was acting as civil surgeon of Chittagong, Bengal. I received a notice from the police to perform a *post-mortem* examination, and on going to the mortuary found a solitary leg on the table. A glance was enough to show that it had been amputated by a surgeon, and on further examination I recognized it as one I had myself amputated in hospital the day before for disease (I forget now what). The explanation was this: Amputated limbs, tumours, and other such products of hospital activity were put into a receptacle which was emptied and the contents removed daily by the municipal sweepers, to be taken with the night-soil to be dug in at the trenching ground outside the town. On the day in question a heavy rainstorm had occurred while the sweepers were on their way to the trenching ground, so, in order to save themselves further trouble, they had emptied their carts into the nearest ditch and made off; the night-soil and other matters had been washed away by the heavy rain, but the leg being heavy had remained and been found by the police, who solemnly sent it to the mortuary for examination. The story is interesting or amusing according to the way it is regarded.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *postea restante* letters addressed either in initials or numbers.

An Address

ON

MODERN ANTISEPTICS.

DELIVERED AT A MEETING OF THE HUNTERIAN SOCIETY
ON NOVEMBER 7TH, 1917.

BY

LIEUT.-COLONEL SIR ALFRED PEARCE GOULD,
R.C.V.O.

THE great conceptions of the early workers with antiseptics were: (1) That all wound diseases are due to infection with living organisms—at first always spoken of as "germs," the "germs of disease." (2) That these "germs" gain access to a wound from without, and chiefly through the air. (3) That these "germs" can be killed by treatment with sufficiently powerful antiseptics, and if and when this is done, healing of a wound proceeds without interruption. The aim of these early antiseptic surgeons was to prevent infection of wounds, and the early triumphs of antiseptic surgery were gained in the prevention of those terrible complications which had up to that time been the bane of surgery.

This prevention of wound infection marked, of course, an enormous advance in surgical knowledge and practice. By careful antiseptic measures—and the same is true of "aseptic surgery"—the healing of wounds in civil practice has for years proceeded with almost unbroken uniformity. Secondary haemorrhage has become a surgical rarity, and wounds have healed without complications under conditions which demonstrated the futility of attributing the previously frequent disasters to "reaction," or to "hospitalism."

The demonstration that wound complications are the result of infection from without and can be prevented by appropriate germicidal measures was, then, the first great contribution of antiseptic surgery, and a splendid contribution it has been!

Since the war, however, surgeons have been called upon to treat, in unprecedented numbers, wounds already gravely infected, and they have been faced, as never before, with the problem of the cure of infected wounds. It is not surprising that the dressings employed as part of the preventive treatment of surgical and recent wounds have proved ineffectual in dealing with wounds already deeply infected. Surgeons experiencing this and yet convinced of the value of antiseptic treatment and of the accuracy of the observations upon which it rests, have sought to add to the efficiency of their antiseptic measures by using in the first place more powerful germicides, and then by using these germicides in a more efficient manner. To this they have added in certain cases the use of serums and vaccines.

But the mere recovery of the patient and the healing of the wound that has been infected is only part of the aim of the surgeon. Knowing as he does that by the use of antiseptics in such a way as to prevent the development of pathogenic organisms in a wound he can ensure rapid and unchecked healing of wounds, he necessarily has asked himself whether antiseptics cannot eradicate these same organisms from tissues in which they are already growing, and leave the tissues free to heal in the same painless, feverless, and rapid way as when no infection has occurred. This is the problem presented to-day to the antiseptic surgeon.

THE CURE OF INFECTED WOUNDS.

Just as the early antiseptic surgical work followed and was based upon certain laboratory experiments, especially those of Pasteur on fermentation, so we have demonstrations—experiments if you like—that have a very direct bearing upon the modern antiseptic problem, which is the cure of already infected wounds. The experiments cannot be a matter of test tubes or flasks, they must be carried out in living animal tissues already the seat of infection. An acute abscess allowed to burst, or merely opened by the surgeon, and not "treated" in any other way, is such an experiment. Up to the moment of letting out the pus, a bacterial invasion runs riot in the tissues forming the so-called "abscess wall," and it is this area of the entire lesion that is the source of the patient's pain, fever and danger. Immediately the pus is evacuated the whole picture changes—the infection is arrested, the invaded tissues are sterilized, and, given certain favourable con-

ditions, the damage that has been done is quickly and completely repaired. This result is brought about by the application to the infected tissue of a highly cellular fluid, locally produced, which has a germicidal effect—what I would for the present purpose call an "autogenous antiseptic"—aided by the evacuation of the mass of liquefied tissue, dead leucocytes, and living, moribund, and dead bacteria, which we call pus. Whenever we see an acute abscess burst and heal very rapidly, we are sure that certain particular agents have contributed to that result: (1) the application to every part of the invaded tissue of a potent autogenous germicide; (2) the preservation of the living tissues from all injury, and (3) the evacuation of all dead matter—the pus. There are, of course, many similar experiments performed for us, bearing upon the problem of the cure of infected tissues, but the life-history of an acute abscess is as instructive as any, and is very familiar.

"THE AUTOGENOUS ANTISEPTIC."

The problem of modern antiseptics is first of all how best to sterilize an already deeply invaded tissue, and I submit that the solution of that problem will probably be found in a close imitation of nature's method of effecting this object. But before referring to some of the features of "natural antiseptics," we must notice two points: the first is, that nature plays her healing part in every case of tissue infection, and that whatever additional means the surgeon may use, he is always backed up by nature, and must never think that success depends wholly upon his efforts. In these cases the *vis medicatrix naturae* is very real, it can never be dispensed with, and happily cannot be put out of action, even if the surgeon wished it.

Then we have to ask the question whether this "autogenous antiseptic" is enough for our purpose, and whether having cleansed a wound and possibly provided means of drainage, it will suffice to accomplish all else that is needed to sterilize an infected wound. I think the answer to that question should be in the negative. Great and beneficent as is nature's germicidal power, experience shows that it is often slow and laborious, and is incapable of effecting that rapid repair of wounds which is most urgently desirable. I say this because there are surgeons who treat gravely infected wounds by so-called "boric fomentations," made by soaking boric lint in boiling water and wringing out the fluid. By this means the acid is dissolved out of the lint, and a dressing which at its best is possessed of but feeble antiseptic powers has its germicide carefully removed, and the wet "boric lint" is merely a hot and moist aseptic application. As such it may be of value in stimulating the flow of the natural antiseptic, and in soothing the irritated nerves, but it must not be regarded as an external or heterogeneous antiseptic dressing.

Taking the natural method of sterilizing infected wounds as our model, we learn that the surgeon should—

1. Use an efficient germicide; of these he has several from which to choose.

2. He should use an antiseptic which is innocuous to living tissues. It is opposed to "natural antiseptics" to use a caustic antiseptic such as pure carbolic acid, or a substance poisonous when absorbed into the blood stream, like the various salts of mercury. No doubt we have all seen good results in cases in which either of these classes of antiseptics has been used, but such treatment is certainly opposed to the antiseptic process employed by nature, and requires some special condition to justify it.

3. Next the efficient but harmless antiseptic should be applied continuously to the entire infected surface or tissue. How often surgeons have done little more than mix some antiseptic with the discharge after it has escaped from a wound, or have applied an efficient antiseptic for a few minutes once or twice in twenty-four hours! We need to visualize as far as we can in every case the actually invaded tissues, and to secure that our antiseptic finds its way to every spot in the germ-laden tissues.

4. Another lesson is the necessity for the rapid removal from the wound of all dead and dying tissue, all used-up antiseptic, dead bacteria, and tissue detritus. This, too, should be effected early, and should be neither intermittent nor dependent upon such violent measures as strong irrigation or firm pressure.

5. If the surgeon does all this, he will, I fear, fall short of the natural process in one important particular, in which

So far as I know we have at present no means of imitating it. Nature applies her antiseptic to an invaded tissue from within out; she assails first and with most vigour the van of the invading host—the most vigorous and active of the rapidly multiplying bacteria. The surgeon, on the other hand, seems to be tied down to attacking the invading host from the rear, in the hope that his antiseptic will soak in so far as to overtake the advanced lines of the invaders.

MODERN ANTISEPTICS.

If these are the lessons we learn from nature's method of curing an infected tissue, what is the practical application of them in our modern antiseptic treatments? I think these treatments may be conveniently put into three categories. There is, first of all, the use of an antiseptic which is at once very highly germicidal and innocuous to human tissues; of these flavine may be regarded as an excellent example. There is, secondly, the frequent gentle application of a potent germicide to the whole surface of a wound until the discharge from the wound is clinically sterile, and then the surgical closure of the wound. And, lastly, the immediate closure of the wound with a sufficient amount of reliable germicide within it to sterilize the whole of the infected area of tissue.

The first—the use of such antiseptic as brilliant green and flavine—calls for no special comment just now. These drugs are certainly good antiseptics, and are a valuable addition to the surgeon's armamentarium, but their use, so far as I can see, does not introduce any new method or new principle of treatment; it is merely alleged to be attended with more success than is commonly met with when other antiseptics are used in the same way.

The second method is that introduced by Carrel. The third is associated with the name of Professor Morison. These are new methods of treatment, and as such deserve special notice.

Carrel's Method.

I had the advantage in April last of seeing, along with some other British surgeons, the Carrel treatment of wounds as carried out in his hospital at Compiègne, and by M. Tuffier and M. Clutro in Paris. The results were certainly most striking. I saw whole series of cases of compound fractures—not one or two selected cases—healing well and without a single drop of pus. I was impressed as much as anything with an experience on my first visit to M. Tuffier's military hospital in Paris. Along one whole side of a ward each bed was occupied with a case of chronic empyema, all the cases but two having followed upon gunshot wounds of the chest, and all of them having lasted for many months before coming under M. Tuffier's care. The treatment had consisted in making a free opening in a dependent part of the cavity and then in applying Dakin's fluid by Carrel's method, as far as possible, to the whole surface of the cavity. A daily enumeration of the bacteria in a smear of the discharge was made, and as soon as the number had fallen to one in a field, or less, and had remained at this level for three consecutive days, the skin edges of the wound had been raised from the chest wall and united, quite regardless of the presence or size of any pneumothorax or unobliterated portion of the pleural cavity so shut in. In every case we saw—and we saw all in the ward—the wound was healed and the man was well. The aim of the Carrel treatment is to obtain "clinical sterilization" of the wound and then to close the wound and secure union of the applied surfaces. It is laid down as a canon that no wound that has been infected should be closed until it has been proved to be practically sterile by thrice-repeated bacteriological examination.

I cannot give any better evidence of the confidence of the surgeons in Paris who are carrying out this treatment with scrupulous precision, than to quote the notice placed in a conspicuous position in each of M. Tuffier's military wards. It reads: "Tout blessé qui suppose a le droit d'en demander la raison à son chirurgien." Or I can quote M. Tuffier's own words to me: "I can sterilize any wound by this treatment."

As our report on this method of treatment was published in the *BRITISH MEDICAL JOURNAL* for November 3rd (p. 597), I need now only say:

1. That the germicidal effect is produced by the two-hourly bathing of the whole area of the wound with a potent antiseptic, such as Dakin's solution or eusol. This

can only be accomplished when the tubes are carefully placed and distributed. It is not enough simply to place one or more tubes in a wound, and to turn a stream of antiseptic through them from time to time. The method of treatment must be carried out exactly and with scrupulous attention to detail, and by the surgeon himself, if the best results are to be obtained. It must not be handed over to a nurse or any unskilled attendant. It is necessary to say this, as I know the treatment has been condemned on the result of its use under conditions other than those insisted on by M. Carrel.

2. The cleansing of the wound is effected largely by the flow of fluid from the deeper parts of the wound towards the outer dressing; this, too, will not be effected unless the antiseptic is distributed over every part of the wound surface.

3. When one has got into the routine, and if provided with a sufficient number of trained nurses, the treatment is not complicated or difficult; indeed, it lessens the nurses' work as compared with that entailed in some other treatments.

4. Closure of the wound is not attended with danger if it is postponed until the discharge from it is demonstrably free from organisms, or very nearly so.

Morison's Method.

The Morison treatment is quite different in method. It consists in first of all removing from the surface of the wound as completely as possible all dead and dying tissue and tissue detritus, all accumulations of discharge and of bacteria as well as of blood clot and all other "foreign" matter. This is done by vigorous friction of every part of the wound, followed by "drying" of the wound by spirit. An antiseptic paste (bipp) is then smeared over the entire wound surface and rubbed in, and then at once the wound is closed with sutures and covered with a dressing that is not disturbed for twelve days or so, when it is expected that the wound will be found healed or healing well.

The Morison treatment of wounds is, in my opinion, the highest attainment yet achieved. Deliberately to sew up a wound known to be gravely infected after a single "treatment" and trust to sterilization being effected by the enclosed antiseptic is a bold procedure which when successful—as it is in Professor Morison's hands—well merits the description of "brilliant." I have not been able to see Professor Morison's cases, but I have read of them and heard of them from eye-witnesses, and I can have no doubt of the results—the brilliant results—which are obtained. The technique is very definite and must be carried out with great care. As in Carrel's method, it is twofold. On the one hand the dead and dying material is most thoroughly removed by vigorous friction. Then a potent antiseptic (bipp) is most carefully applied to every part of the infected surface in sufficient but not excessive quantity.

Professor Morison's treatment cannot be summed up in the one word "bipp" any more than Carrel's can in the one word "tube." Each method of treatment depends for success upon a very careful technique, and it must be carried out in every detail with scrupulous care. Let me repeat, that the aim of each is the same—the sterilization of the previously infected wound and its closure so as to secure rapid union with the minimum of scar tissue. Carrel proceeds in stages—first the sterilization, and only after that has been attained does he suture the wound. Morison combines them in one "treatment" with far less labour and less cost in dressings.

It is not for me to pass judgement upon these methods; I would merely express my belief that if the task of modern antiseptics is to "cure" and quickly heal infected wounds, there is good reason to believe that we are now possessed of means by which that task can be accomplished. If we look back with just pride upon the triumph of Lister and his associates in rendering possible and commonplace the prevention of wound complications, we are entitled to be just as proud of the further surgical triumph by which infected wounds can be sterilized and healed as if no infection had ever occurred. Those of us who remember the opposition to Lister's early teaching and practice recognize that it sprang not from jealousy or indifference, but from a failure to entertain and aim at a higher standard of surgical success than his critics were

already familiar with. The surgeon's "works" were limited and conditioned by his "faith." It was because Lister "dreamed dreams" that he worked away with carbolic putty. And so it will be to-day. We have all been familiar with the slow healing by granulation of these sorely infected wounds and with the resulting extensive scarring. The teaching of "modern antiseptics" demands not only the practice of new technique, it calls perhaps even more for the raising of a new standard of surgical work, for new faith, for the visualizing of new possibilities, and success will only come to those who have an enlarged and brighter hope.

FURTHER OBSERVATIONS ON THE RESULTS OF BLOOD TRANSFUSION IN WAR SURGERY,

WITH SPECIAL REFERENCE TO THE RESULTS IN
PRIMARY HAEMORRHAGE.

BY

L. BRUCE ROBERTSON, B.A., M.B. TORONTO,
MAJOR C.A.M.C.

With a Note by

C. GORDON WATSON, C.M.G., F.R.C.S., COLONEL A.M.S.,
CONSULTING SURGEON B.E.F.

In a previous paper¹ the results of blood transfusion in a few cases of secondary haemorrhage were given, with a description of the Lindeman syringe-cannula method.² Since that time opportunity has arisen of extending its application to cases of severe primary haemorrhage (accompanied by shock). The results of these cases are presented in this paper. In four cases of this series the citrate method was used; one case was done with the Unger two-way stopcock, the remainder by the Lindeman syringe-cannula method. The results have shown:

1. That certain cases heretofore considered as inoperable, and others as exceedingly bad surgical risks, may often be revived to a degree which not only permits of radical operative measures, but ensures a good prospect of ultimate recovery.

2. That in other cases in which the post-operative condition is one of progressively increasing shock, due to the initial loss of blood and to the severity of the operative measures required, blood transfusion is a permanent resuscitative measure of extreme value.

It has been the unhappy lot of every surgeon in a casualty clearing station to have cases admitted under his care which required immediate operative attention, but were in such a collapsed and exsanguine condition that operation was out of the question. In certain of these cases a short operation (frequently amputation) is all the operative treatment immediately necessary, but the patient is unfit to withstand any operation owing to loss of blood and shock. Case 10 is typical of this class.

The Time for Blood Transfusion.

If the bleeding point can be controlled, as in the case of a shattered leg or thigh, the ideal time is as soon as the patient is seen. If operative interference is necessary before the bleeding can be controlled—for example, in intra-abdominal haemorrhage—blood transfusion may be carried out before the patient leaves the operating table. Usually, however, one is tempted to employ the ordinary resuscitative measures before resorting to blood transfusion, but it is unwise to wait too long.

Clinical observation appears to show that some degenerative changes take place in the organism when the exsanguinated condition persists for more than a few hours. If the patient is allowed to reach this stage he does not receive the same amount of benefit from the transfusion as when given earlier. For this reason it is advisable to give the blood as soon as possible after admission if circumstances permit.

Other great factors besides loss of blood in the production of shock are loss of body heat and physical exhaustion. After blood transfusion these other factors may be combated by providing warmth and rest for a few hours before operation. Acidosis incident to the shocked condition may be treated by the administration of sodium

bicarbonate. It is obvious that in severely wounded and exsanguinated patients there is a greater liability to the development of severe infection during their subsequent progress than if the anaemia were decreased by the addition of fresh blood.

The benefit of blood transfusion has its limitations, and it should not be used indiscriminately. It is, for example, of more limited value where gas gangrene has already developed, and should not be done unless the infected area can be either brought under control by excision or free drainage, or eliminated by amputation.

Amount of Blood to be Transfused.

This depends largely upon the giving capacity of the donor and the receiving capacity of the patient. A small patient will require proportionately less blood than a large heavily-built patient to produce the same effect on pulse and blood pressure. In severe primary haemorrhage 700 to 1,000 c.cm. may be regarded as an average amount, and will usually tide the patient over his crisis. Smaller amounts have been given with some success, but the most immediate and lasting improvement has been obtained with the large amounts. Cardiac dilatation in these exsanguinated recipients has not been observed even with the larger amounts. In transfusing 1,000 or 1,200 c.cm. the intervals between the injections of the blood-filled syringes should be longer towards the later part than at the beginning of the procedure, and the minimum amount of saline should be introduced into the recipient's vein between the injections of the blood-filled syringes.

The effects of loss of blood will show themselves at different times in the donor according to his size and robustness, the amount of blood, the rate at which it is removed, and the particular method employed. An impressionable donor will exhibit symptoms earlier than one of phlegmatic temperament. In none of the donors has anything more than temporary disturbance been observed. This coincides with the observations made by Colonel Fullerton,³ who had the opportunity of keeping donors under observation for some considerable time after they had given blood to patients.

The advisability of transfusing blood in the following cases was determined by the general condition of the patient, the pulse, and evidence of severe haemorrhage, the prospect of recovery after transfusion and operation, and in the later cases the blood pressure. A wounded man who has lost much blood and has a blood pressure below 90 mm. Hg is not a good subject for operation; with a blood pressure below 70 mm. Hg he is in a precarious condition. Loss of blood intensifies to a very great degree the amount of shock produced by traumatism, and in the majority of such cases the immediate issue depends upon control or elimination of the effects of haemorrhage.

Immediate Results.

In the cases of severe primary haemorrhage accompanied by shock, blood transfusion frequently produces an immediate and almost incredible improvement. The change from a pallid, sometimes semi-conscious patient with a rapid flickering pulse to a comparatively healthy-looking, conscious and comfortable patient with a slower and fuller pulse is dramatic evidence of the value of the transfused blood. The blood-pressure readings before and after show the remarkable change produced by the new blood. In those cases in which readings were taken during the subsequent forty-eight hours it was shown that this rise in blood pressure was well maintained. This is in marked contrast to the transient effect on the blood pressure of normal saline injections. The chart illustrates the gradual fall in pulse rate and rise in blood pressure during the blood transfusion. The immediate result of the transfusion is that it places the patient more on a footing with a man similarly wounded who has not lost more than a moderate amount of blood.

REPORTS OF CASES.

CASE 1.—G.S.W. Femur and Femoral Vessels: Amputation: Death.

Rfn. T. M. Admitted November 23rd, 1916, in extreme collapse. Compound fracture of left femur; femoral vessels severed. Intravenous saline was followed by temporary improvement for some hours, but condition was still inoperable. Blood transfusion (800 c.cm. by Unger two-way stopcock) followed by immediate improvement. Amputation of blood and fracture. Death in thirty-six hours from gas gangrene. Blood transfusion too far gone.

CASE 2.—G.S.W. Knee: Amputation: Recovery.

Pte. J. S. S. Admitted December 10th, 1916. Shattering fracture of leg involving knee-joint; profuse bleeding. He had received intravenous saline at the field ambulance. He was in a condition of collapse; pulse 134 and barely perceptible. Blood transfusion (500 c.cm. by citrate method) was followed by moderate but definite improvement. Two hours later amputation above knee. Next morning the pulse was 82, and the general condition immensely improved. Further progress uneventful. Evacuated to base in two weeks. A note from England four months later stated that reamputation had been done; stump healed rapidly; patient's health good.

CASE 3.—G.S.W. both Knees and Feet: Haemoglobinuria: Death.

Driver F. H. Admitted December 29th, 1916, in poor condition. Left foot blown away; severe compound fracture of right foot, and penetrating wounds of both knee-joints. Anti-shock measures were carried out, and when some improvement had taken place the wounds were dealt with. Post-operative condition bad. One litre of gelatin solution (Hogan) intravenously was followed by some improvement. On the following morning the condition was very poor; blood transfusion (750 c.cm. citrate method) was followed by marked reaction, but some improvement which was only temporary. He died in twenty hours. Haemoglobinuria present. There is no doubt that death was hastened by the occurrence of haemolysis.

CASE 4.—G.S.W. Shoulder: Evacuated to Base: Death Two Months Later.

Sapper B. O. J. Admitted January 6th, 1917, under the care of Captain S. J. Streight, C.A.M.C.; had bled profusely from a ragged perforating wound of the left shoulder. Compound fracture of scapula and head of humerus. Anti-shock measures were instituted, and twelve hours later operation was done; the shattered head of humerus was removed and torn circumflex vessels tied. His post-operative condition became progressively worse. Six hours after operation blood transfusion (760 c.cm. by citrate method) was followed by immediate improvement. Before transfusion the blood pressure was: systolic 75, diastolic 40; next morning: systolic 100, and diastolic 75. Improvement progressive. Evacuated to base four days later. Two months later he died at a base hospital from empyema following pneumonia. The progress of the wound had been slow but good.

CASE 5.—G.S.W. both Lower Limbs: Death from Shock.

Pte. R. F. Admitted February 3rd, 1917, in collapse; severe multiple wounds of both lower limbs (left leg almost severed) and left forearm and hand. Anti-shock measures were instituted, and ten hours later, when some improvement had occurred, operation was done. Intravenous saline at operation. Post-operative condition very poor. Blood transfusion (660 c.cm. by citrate method), five hours later, was followed by slight improvement which was not maintained. Died seven hours later from shock.

CASE 6.—G.S.W. Popliteal Artery: Amputation: Gas Gangrene: Death from Pulmonary Embolus.

Pte. T. D. Admitted in night of February 7th, 1917, in very poor condition. A shell fragment had severed the left popliteal artery, and his condition had been so bad that he had been unfit for transport from the field ambulance for several hours. Anti-shock measures were instituted, and some hours later blood transfusion (700 c.cm.) was done. Three hours later amputation was performed above the seat of injury. The patient withstood the operation well, but gas gangrene was present in the stump the next day; the infection was controlled by free incision. Five days after amputation he died very suddenly with signs of pulmonary embolus. Necropsy disclosed a long clot extending from the tied end of the femoral vein to its junction with the internal iliac vein.

CASE 7.—Penetrating Wound of Abdomen: Gas Infection: Death.

Pte. A. T. H. Admitted February 27th, 1917, with penetrating bullet wound of the abdomen. Sixteen hours after laparotomy the pulse became much weaker and more rapid. Blood transfusion (1,000 c.cm.) was followed by remarkable and immediate improvement, the pulse dropping from 140 to 108 after transfusion. The patient died thirty hours later from gas bacillus infection in a large retroperitoneal haematoma.

CASE 8.—G.S.W. Forearm: Circular Amputation: Secondary Amputation: Evacuated to Base.

Pte. T. Admitted April 21st, 1917 (under the care of Captain William Beggs, C.A.M.C.), in severe collapse. Bleeding from a shattered forearm had been profuse. Anti-shock measures were taken and five hours later circular amputation was performed. The post-operative condition became progressively worse for five hours when blood transfusion (1,160 c.cm.) was done and was followed by immediate improvement. Before transfusion: radial pulse 120 and barely perceptible, lips and face colourless; after transfusion: pulse 85 and of good tension; the face showed much improved colour. Four days later secondary amputation, flaps closed. Evacuated to base on the fourth day in excellent condition.

CASE 9.—Multiple G.S.W.: Eventually Evacuated to England in Satisfactory Condition.

Lieut. Cpl. F. was admitted under the care of Captain Beggs, C.A.M.C., with severe multiple wounds of arms and legs.

General condition very poor. Anti-shock measures for some hours; the left leg was then amputated and other wounds dealt with. The following day the general condition was poor; blood transfusion (500 c.cm.) was followed by immediate improvement. Further progress steady though slow. Evacuated to base on fourth day. Note received from base to the effect that the patient had been evacuated to England in satisfactory condition after severe illness.

CASE 10.—Multiple G.S.W.: Popliteal Vessels Torn: Evacuated to Base.

Lieut. V. Admitted May 17th, 1917; wounded seven hours previously. Left leg and knee shattered, popliteal vessels torn, penetrating wounds of left thigh, buttock, and face. Radial pulse 120 but almost imperceptible; face blanched. Anti-shock measures were applied, but one hour later the radial pulse was imperceptible, and the blood pressure below 40 mm. Hg. Death seemed imminent. Blood transfusion (1,100 c.cm.) was followed by immediate improvement. After transfusion the pulse was 130; blood pressure: systolic 120, diastolic 90. Half an hour later amputation was performed above the knee and the other wounds dealt with. Apart from transient sepsis on the face of the stump, due to the amputation having been made at the level of other wounds, progress was uneventful. Evacuated to base eight days later in very good condition.

CASE 11.—G.S.W. Elbow and Forearm: Evacuated to Base.

Sapper W. C. Admitted May 18th, 1917, in severe collapse; wounded seven hours previously. He had bled profusely from shattered left elbow and forearm. Blood transfusion (1,200 c.cm.) performed immediately, was followed by marked improvement. Before transfusion: pulse 154; blood pressure: systolic 62, diastolic 0. After transfusion: pulse 130; blood pressure: systolic 110, diastolic 80. Seven hours later amputation above elbow. Two hours after operation, pulse 114; blood pressure: systolic 120, diastolic 80. Further progress uneventful. Sent to base in six days in good condition.

CASE 12.—Lower Leg Blown away: Slow Recovery.

Pte. J. J. Admitted May 18th, 1917; the lower part of the left leg had been blown away six hours previously. He was collapsed and blanched. Blood transfusion (900 c.cm.) was followed by immediate improvement. Before transfusion: pulse 146; blood pressure: systolic 74, diastolic 20(?). After transfusion: pulse 92. Half an hour later amputation below the knee. Seven hours after operation: pulse 118; blood pressure: systolic 128, diastolic 70. Further progress good. Evacuated to base in six days. Two weeks later a note from England stated: "Flaps fairly clean; slow progress."

CASE 13.—Comminuted Fracture Femur and Thigh: Amputation: Death.

Pte. W. Admitted May 29th, 1917, five hours after having sustained a severe comminuted fracture of the femur extending into the knee-joint. He was collapsed. Blood transfusion (1,000 c.cm.) was followed by immediate improvement in the general condition and appearance. Before transfusion: pulse 120; blood pressure 96. After transfusion: pulse 100; blood pressure 110. Amputation above knee. The patient withstood the operation well, but died three days later of acute capillary bronchitis.

CASE 14.—G.S.W. Leg: Amputation: Evacuated to Base.

Pte. W. C. N. Admitted June 1st, 1917, with shattered right leg; he was blanched and had bled profusely. Blood transfusion (1,060 c.cm.) was followed by immediate improvement. Before transfusion: pulse 112; blood pressure: systolic 90, diastolic 32. After transfusion: pulse 76; blood pressure: systolic 134, diastolic 100. Half an hour later amputation above knee. The following day the patient was in excellent condition and was evacuated to the base.

CASE 15.—G.S.W.: Amputation Thigh and Arm: Evacuated to Base.

Driver L. H. B. Admitted May 29th, 1917 (under the care of Captain S. J. Streight, C.A.M.C.), with severe compound fracture of right tibia and fibula into the knee-joint, shattered right elbow and forearm, and penetrating wounds of the right thigh. Anti-shock measures were instituted. Amputations above the right knee and elbow were performed, and the other wounds dealt with. Post-operative condition became progressively worse. Five hours after operation blood transfusion (900 c.cm.) was done. Before transfusion: pulse 136; blood pressure: systolic 86, diastolic 54. After transfusion: pulse 120; blood pressure: systolic 140, diastolic 74. Progress uneventful; evacuated to base on fourth day in good condition.

CASE 16.—Multiple G.S.W.: Amputation: Recovery.

Second Lieut. M. Admitted in severe shock and collapse; wounded seven hours previously. Left forearm shattered; penetrating wounds of right knee-joint, calf, and foot; right ankle disorganized by large perforating wound; large dirty perforating wound of left loin opening into extraperitoneal space. Condition quite inoperable. Anti-shock measures were of little avail. Immediate improvement followed blood transfusion (1,100 c.cm.). Before transfusion: pulse 132; blood pressure: systolic 90, diastolic 33. After transfusion: pulse 140; blood pressure: systolic 120, diastolic 74. Four hours later, under gas and oxygen, amputation of left arm (gas gangrene); loin wound thoroughly excised, other wounds dressed. On the

following day amputation above the right knee was performed. Further progress was uneventful, and he was sent to the base four days later. A note was received from the base stating that ten days later the flaps were sutured, and three weeks after being wounded he was evacuated to England, "the wounds healing nicely and condition much improved."

CASE 17.—Perforating Wound Stomach: Laparotomy: Haemoglobinuria: Death.

Lieut. H. Admitted in shocked condition; penetrating wound of abdomen; excessive amount of blood vomited. Laparotomy disclosed perforated stomach and active bleeding from severed gastro-epiploic artery; abdominal cavity full of bright blood. After operation pulse almost gone; patient very blanched. Blood transfusion (1,000 c.cm.) done. Before transfusion: pulse 130; blood pressure: systolic 66, diastolic 0. After transfusion: pulse 92; blood pressure: systolic 170, diastolic 72. High systolic pressure due to injection of pituitrin given at the end of operation. During transfusion there was slight respiratory distress after 140 c.cm. of blood had been injected, but it was difficult to judge on account of the effects of the anaesthetic. Two hours later the pulse became weaker, and the patient died in a few hours. At necropsy some haemoglobinuria was evident. There is no doubt that a haemolytic reaction due to the transfused blood hastened the death of this patient.

CASE 18.—G.S.W. involving Tibial Arteries: Gas Gangrene: Transfusion Delayed: Double Amputation: Death.

Lieut. Cpl. A., admitted June 7th, 1917; wounded the previous day. Perforating wounds of both legs, severing both posterior tibial arteries. Practically moribund condition; inoperable. Anti-shock measures were carried out in the resuscitation ward with little effect. Some hours later gas gangrene was evident in both legs, and the patient was unconscious and pulseless. At this time it was thought that blood transfusion followed by operation would give him his only chance. The response to blood transfusion (1,000 c.cm.) was extraordinary. Breathing, which at first was shallow and sighing, became quiet and regular; the pulse grew perceptibly, and though rapid was of good character. Colour returned to his face, and half-way through the procedure he became conscious. At the end of the transfusion he quite conscious and talked rationally. Half an hour later double amputation above the knees was done under gas and oxygen, but the patient died at the end of the operation. Had circumstances allowed of an earlier transfusion I feel sure that a successful result might have been expected.

CASE 19.—G.S.W. Leg: Immediate Amputation: Transfusion: Evacuated to Base.

Capt. A. C. T. Admitted June 13th, 1917; wounded five hours previously. There had been profuse haemorrhage from shattered leg. Pulse only 108, but of low tension. Immediate amputation for persistent bleeding from popliteal space. Post-operative condition progressively worse. Two hours later the patient was very collapsed and could be roused only with difficulty. Blood transfusion (1,100 c.cm.). Before transfusion: pulse 108; blood pressure: systolic 66, diastolic below 20. After transfusion: pulse 84; blood pressure: systolic 120, diastolic 66. Half-way through transfusion the patient was quite conscious; at the end of the procedure he asked for a cigarette and smoked it with enjoyment. Further progress was uneventful. He was sent to the base in five days. Note from base stated "Condition suitable for immediate transference to England."

CASE 20.—Left Thigh Blown Away: Amputation: Death.

Gunner W. Admitted June 18th, 1917, six hours after being wounded. Left thigh almost completely blown away below the middle; severe shock and collapse. Blood transfusion (700 c.cm.) was followed by immediate improvement. Before transfusion: pulse 130; blood pressure: systolic 80, diastolic 50. After transfusion: pulse 92; blood pressure: systolic 124, diastolic 78. Following this amputation was done, but the patient stood the operation badly and died ten hours later from shock.

CASE 21.—G.S.W. Hip, Leg, and Arm: Amputation below Knee: Evacuated to Base in Good Condition.

Capt. G. S. T. Admitted June 17th, 1917 (under the care of Captain S. J. Streight, C.A.M.C.), in collapsed condition. Right leg shattered; compound fracture of right great trochanter; penetrating wound of arm. Blood transfusion (1,200 c.cm.). Before transfusion: pulse 134; blood pressure: systolic 70, diastolic 40. After transfusion: pulse 94; blood pressure: systolic 128, diastolic 80. Four hours later amputation below knee and other wounds dealt with. Sent to base in four days. He was evacuated to England in a satisfactory condition.

CASE 22.—Buried: Abdominal Injuries and Fractured Femur: Laparotomy: Evacuated to Base in Good Condition.

Pte. F. McL. Admitted July 4th, 1917. Had been buried by a shell seven hours previously; was in a condition of shock and collapse from intra-abdominal injury and fracture of femur. Anti-shock measures for some hours produced slight improvement. Laparotomy; abdomen full of bright blood and urine; two-inch tear in bladder; lower part of spleen completely torn away; profuse spouting of blood from the remainder at the first touch. Splenectomy and bladder suture. Thomas splint to thigh. During operation pituitrin (1 c.cm.) was given and saline (30 oz.) introduced into vein. At the end of the operation the patient was very blanched and the pulse poor. Blood

transfusion (1,000 c.cm.). Before transfusion: pulse 180; blood pressure: systolic 80, diastolic 40. After transfusion: pulse 140; blood pressure: systolic 185, diastolic 80. High systolic pressure evidently due to pituitrin, as seven hours later it had dropped to 136, diastolic being maintained at 80. Further progress uneventful. Evacuated to base in two weeks. Four weeks after operation a note was received from the base stating that the patient was in excellent condition and recovery seemed assured.

CASE 23.—G.S.W. both Legs. Amputation: Evacuated to Base in Good Condition.

Pte. G. G. H. Admitted July 11th, 1917, in severe collapse.

Compound fracture

of left leg and rupture of both tibial arteries; large wound of right leg with tear of posterior tibial artery. Had bled profusely.

Anti-shock measures produced little improvement. Blood transfusion (1,000 c.cm.) was followed by immediate improvement. Before transfusion: pulse 144; blood pressure: systolic 62, diastolic 40. After transfusion: pulse 96; blood pressure: systolic 126, diastolic 60. Several hours later amputation of left leg below knee, and other wounds dealt with. Further progress uneventful. Sent to base in four days in good condition. He was evacuated to England in good condition three weeks after being wounded.

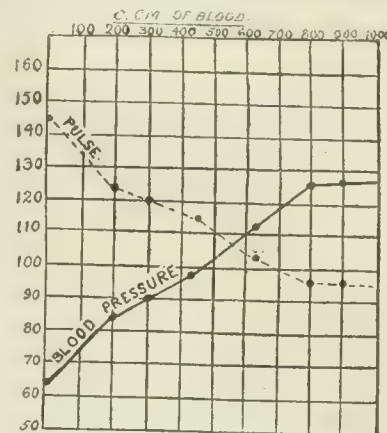


Chart of Case 23, showing fall in pulse rate and rise in blood pressure during the course of the transfusion of 1,000 c.cm. of blood.

CASE 24.—G.S.W. Popliteal Artery and Knee. Amputation: Evacuated to Base in Good Condition.

Pte. F. S. Admitted in collapsed condition on July 12th, 1917, seven hours after being wounded. Shell wounds of left buttock, leg, and foot; right popliteal artery severed and fracture of femur, involving right knee-joint. Anti-shock measures were carried out, with only temporary improvement. Four hours later blood transfusion (1,000 c.cm.). Before transfusion: pulse 156, blood pressure 80. After transfusion: pulse 120, blood pressure 136. Three hours later amputation above right knee, and other wounds dealt with, under gas-oxygen anaesthesia. Five hours after operation: pulse 128, blood pressure 120. Further progress uneventful. Evacuated to base on fifth day in good condition, with clean wounds and stump.

CASE 25.—G.S.W. Chest, Femoral Vein, Knee-joint: Evacuated to Base in Good Condition.

Dr. C. J. B. Admitted in very grave condition under the care of Major G. E. Gask, D.S.O., R.A.M.C.(T.). Penetrating wound of chest; tear of left femoral vein; penetrating wound of right knee-joint. After operation the patient was blanched and collapsed; the pulse was 180 and barely perceptible; blood pressure 60 mm. Hg. Blood transfusion was started, but before 60 c.cm. had been injected death was imminent. The patient's lips were bloodless, pulse imperceptible, breathing slow and jerky; 80 c.cm. of very hot saline and 1 c.cm. pituitrin were now given intravenously and the transfusion continued. When 400 c.cm. of blood had been injected the breathing had improved greatly. At the end of the transfusion (1,200 c.cm.) the face was flushed, pulse strong, and the patient was attempting to clear his throat. After transfusion: pulse 108, blood pressure 144. Further progress uneventful. Evacuated to base seven days later. Two weeks later he had been evacuated to England in good condition.

CASE 26.—G.S.W. Chest: Haemothorax and Laceration of Lung: Death.

Gunner E. G., wounded early that morning, was admitted in very collapsed condition under the care of Major G. E. Gask, D.S.O., R.A.M.C.(T.), on July 17th, 1917. Severe penetrating wound of chest; extensive damage to lung. Blood transfusion (700 c.cm.). There was slight response lasting a very short time. Death occurred some five hours later. Necropsy showed gas bacillus infection in haemothorax, and severe laceration of lung.

CASE 27.—Penetrating Wound of Abdomen: Laparotomy: Death.

Gunner C. H. W. Admitted July 25th, 1917, in collapsed and pulseless condition. Large penetrating wound of lower abdomen. Anti-shock measures were instituted and pulse returned—96. Laparotomy eight hours after wound was received; resection of 18 in. of small gut; suture of bladder and two tears in rectum. The abdomen was filled with blood and clot; after operation the patient was pulseless. Blood transfusion (1,100 c.cm.) was done, but the patient was too far gone to benefit by it, and died in less than three hours.

CASE 28.—Multiple G.S.W. both Lower Limbs: Amputation of Thigh and Wrist: Evacuated to Base.

Lieut.-Col. R.A.M.C., aged 50, was admitted in collapsed condition seven hours after being wounded; pulse almost imperceptible; face greyish-blue, condition inoperable. Severe compound fracture below right knee, penetrating wound right knee-joint, right hand blown off, left brachial artery severed, large perforating wounds of left thigh. Blood transfusion (1,200 c.cm.) was followed by immediate improvement. Four hours later operation was carried out under light chloroform anaesthesia, three teams being concentrated on the case; amputation above right knee, ligation of left brachial artery, excision of wounds of left thigh, amputation through right carpus. Further progress slow but good. Evacuated to base four days later; temperature 98°, pulse 88. Two weeks later wounds reported to be improving.

CASE 29.—G.S.W. Chest: Recovery.

2nd Lieut. A. J. D. Admitted July 29th, 1917, under the care of Major G. E. Gask, D.S.O., R.A.M.C., in a collapsed condition; severe penetrating wound of chest, from which there had been a large amount of bleeding. Condition inoperable. Blood transfusion (740 c.cm.) carried out. After 100 c.cm. had been injected operation was begun. Thoracotomy, removal of shell fragments, irrigation of pleural cavity, closure of chest wall. Further progress good. Evacuated to base nine days later in good condition.

CASE 30.—G.S.W. both Legs: Double Amputation: Evacuated to Base in Good Condition.

Pte. H. G. Admitted on July 29th, 1917, six hours after being wounded, in very collapsed condition. Right leg shattered and vessels torn; extensive wound of left calf, with shell fragment embedded in muscles; pulse rapid and flickering, lips bluish-white. Blood transfusion (1,200 c.cm.). Two hours later amputation above right knee (for gas gangrene), left calf widely opened up. Next morning the patient was very much improved, but by evening gas gangrene of left leg was present, and amputation above the left knee was done under gas-oxygen anaesthesia. The following day there was persistent vomiting (acidosis), which was relieved by an intravenous injection of 20 oz. of 5 per cent. sodium bicarbonate solution. Further progress uneventful. Evacuated to base five days after admission in very good condition; both thigh stumps clean.

CASE 31.—Amputation of Forearm and Thigh: Gas Gangrene: Death.

Gunner W. P. Admitted August 4th, 1917, in collapsed condition. Right forearm shattered; compound fracture of right femur with severing of popliteal vessels. Anti-shock measures carried out, but only slight improvement resulted. Blood transfusion (1,000 c.cm.) was followed by immediate and marked improvement. Amputation through forearm and thigh now done. The patient withstood operation well, but died in thirty-six hours from extensive gas gangrene of right thigh.

CASE 32.—G.S.W. Thigh and Leg: Evacuated in Good Condition.

Pte. D. O'L. Admitted August 5th, 1917, in very collapsed condition; had sustained, forty-eight hours previously, a large wound in left thigh, and while lying out in a shell-hole twenty-four hours later had received a second and extensive wound in the left calf. There had been severe haemorrhage from the latter. Anti-shock measures were instituted, but with only slight improvement. Immediate improvement followed blood transfusion (1,100 c.cm.). Before transfusion: pulse 132, blood pressure 90. After transfusion: pulse 95, blood pressure 142. One hour later operation was done. Further progress good. Evacuated to the base in two days in very good condition. It is interesting to note that at the end of the transfusion there was a marked urticarial eruption (serum rash?) over the trunk and extremities. It had subsided in less than twenty-four hours.

CASE 33.—G.S.W. Knee: Amputation: Evacuated to Base in Good Condition.

Lieut. J. K. P. Admitted August 5th, 1917 (under the care of Captain W. Beggs, C.A.M.C.), in very poor condition, twenty-four hours after sustaining a severe compound fracture of the left leg into knee-joint with damage to vessels. After anti-shock measures, drainage established and bleeding controlled. The next day the pulse was very rapid, face still blanched, leg becoming swollen. Blood transfusion (530 c.cm.). Before transfusion: pulse 178. After transfusion: pulse 132. Amputation above knee. Further progress uneventful. Evacuated to base on August 9th in good condition; pulse 90.

CASE 34.—G.S.W. Thigh: Amputation: Death.

Pte. J. W. Admitted August 10th, 1917. Wounded twelve hours before. Extensive comminution of right femur; anterior muscles blown away, but hamstrings intact; femoral vessels torn. Condition of profound collapse. Anti-shock measures instituted on admission with very little effect. Blood transfusion (1,000 c.cm.) two hours later. Before transfusion: pulse 152, blood pressure 72. After transfusion: pulse 130, blood pressure 146. Patient suffering from toxæmia due to gangrenous condition of muscles. High amputation done one hour after transfusion, but intramuscular planes found to be extensively infected up to groin. Death twenty hours later.

CASE 35.—G.S.W. Knee: Amputation: Evacuated in Good Condition.

Lieut.-Cpl. L. H. Wounded the previous evening; admitted morning of August 11th, 1917. Right leg shattered, involving knee-joint; part of right tarsus blown away. Anti-shock measures for several hours, with no effect. Blood transfusion (700 c.cm.). Before transfusion: pulse 152; blood pressure: systolic 60, diastolic 0. After transfusion: pulse 114; blood pressure: systolic 120, diastolic 60. Amputation above right knee. Further progress uneventful. Evacuated to base in good condition on fourth day.

CASE 36.—G.S.W. Popliteal Artery and Vein: Amputation: Evacuated in Good Condition.

Pte. A. H. C. Admitted August 11th, 1917, collapsed and almost pulseless; had bled profusely from gaping wound in right popliteal space. Anti-shock measures had very little effect. Blood transfusion (1,000 c.cm.) was followed by immediate improvement. Before transfusion: pulse 124; blood pressure: systolic 74, diastolic 15. After transfusion: pulse 110; blood pressure: systolic 142, diastolic 68. Amputation above wound two hours later under gas-oxygen anaesthesia. Examination of amputated leg showed complete division of popliteal vein and large tear in popliteal artery. Further progress uneventful. Evacuated to base in good condition on fourth day.

In reviewing these cases of primary haemorrhage I feel that better results might have been obtained in Cases 1, 7, and 18. In Case 1 the fatal issue was due to the early development of gas gangrene, which might have been eliminated by amputation had the transfusion been done earlier. In Case 9 an earlier transfusion would have permitted earlier amputation, which would have rendered less likely the development of gas gangrene. Though the infection in this case was controlled it was responsible, apparently, for thrombosis in the femoral vein with subsequent death from pulmonary embolism. Case 18 was seen during the rush of the Messines battle. Measures to counteract shock were carried out in the resuscitation ward, but were unsuccessful. Although the blood transfusion produced a startling improvement his toxæmia was too intense to allow him to withstand the anaesthetic and the shock of the operation.

CONCLUSIONS.

1. Many cases admitted in an inoperable condition from severe haemorrhage have been rendered operable by blood transfusion.
2. The largest factor in the causation of the condition of shock as seen in patients admitted to a casualty clearing station appears to be the loss of blood, except in cases of visceral injury.
3. In two cases haemolysis hastened the death of the patient. In one of these the citrate method was used. The possibility of haemolysis certainly is present, but the danger of its occurrence is slight in comparison with the danger of operating on a shocked and exsanguined patient.
4. The results in this series of cases of severe primary haemorrhage may be classified as:

Life saving	...	...	...	...	22
Immediately beneficial, but died from infection or operation	...	...	...	...	9
No benefit	...	...	...	...	3
Harmful	...	...	...	...	2
Total	...	...	...	...	36

5. Although the mortality in this series of cases is comparatively high, it must be remembered that all the patients were in a desperate condition, and with, perhaps, one possible exception, could not have been expected to survive if the procedure had been withheld.

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NOTE BY COLONEL C. GORDON WATSON.

During the past year I have had the opportunity of observing the technique and the results of blood transfusion by Major Bruce Robertson and other workers.

Without doubt transfusion of blood after primary haemorrhage is a life-saving device of the greatest value and enables urgent operations to be successfully performed under conditions otherwise hopeless. In the past blood transfusion has failed to come to the fore owing to technical difficulties. The stimulus of war and the

urgent need for blood transfusion has resulted in greater familiarity with the technique.

For many years past we have, in England at any rate, trusted to saline infusion to restore the balance after haemorrhage. So far as my experience goes, there is no comparison between the results of blood transfusion and saline infusion. The effects of blood transfusion are instantaneous and usually lasting; the effects of saline too often transitory—a flash in the pan—followed by greater collapse than before.

In civil practice, speaking generally, the occasions for transfusion are few; in military practice, in the forward line, the exsanguined wounded man is regularly met with in the reception room.

The problems of shock and collapse are receiving every day greater attention. In every casualty clearing station there is a resuscitation ward with beds heated by hot air or electric light and with arrangements for giving hypertonic intravenous infusions, and so on. Here we endeavour to estimate the shock of battle, the shock that follows trauma or loss of blood, or the shock of toxæmia, to assess the proportionate damages to each, and to apply the appropriate remedy.

The methods of blood transfusion employed in the casualty clearing stations vary with the individual surgeon. Major Robertson has acquired great dexterity with the syringe method, and his results are correspondingly good.

Practice in team work is essential to success, and the two surgeons and the syringe orderly must drill together. Record syringes can be relied on for the purpose; others cannot.

The scope of blood transfusion is not limited to primary haemorrhage. It is of undoubted value for secondary haemorrhage, and we have used it successfully also as a sequel to venesection in two severe cases of carbon monoxide poisoning.

In the selection of a donor for blood transfusion, certain precautions should be taken when the circumstances of the case permit. At the front, particularly during the periods of heavy fighting, time does not permit of tests to eliminate syphilitic taint, nor, indeed, to ascertain if the blood of the donor is incompatible with that of the patient. Such risk as there is must be run if the urgent need of the patient is to be met promptly.

I have more than once seen alarming symptoms arise during transfusion. In one case the pupils dilated, the eyes were turned up, the pulse-rate increased, and the patient became pallid and unconscious, and died the same day. At the necropsy the blood was completely haemolysed. The condition of the wounds, however, showed that the chances of recovery were remote. In other instances I have noted transitory respiratory distress, sweating and precordial pain, followed subsequently by a varying amount of haemoglobinuria. The occurrence of rigors with a transitory rise of temperature are by no means uncommon after transfusion and are not an indication of incompatibility of bloods.

Too rapid transfusion may be followed by acute dilatation of the heart when the myocardium is exhausted and weakened by haemorrhage and shock. As Crile has pointed out, the work of the heart increases in geometric ratio to the volume of blood, and it is easy to realize the risk involved in suddenly producing a rapid increase in the volume of blood when the heart is already tired out. I have seen this exemplified in one case.

I feel confident that blood transfusion has become a permanent method, and that under the stimulus of war and the mass of material that war provides, our methods will steadily improve. The excellent results which Major Robertson has secured will, I hope, stimulate other surgeons to increased activity in the practice of this life-saving device.

WHEN delegates of the profession of the Republic of Uruguay recently visited France they were received at the Paris Faculty of Medicine on October 14th by Professor Gaucher, president of the General Medical Association of France, who recalled the fact that on the initiative of Professor Enrique Pouey of Montevideo the doctors of Uruguay had sent to the French fund for the medical victims of the war a sum of £1,360, contributed by 210 doctors in a country of not more than one million inhabitants. Professor Pouey himself had sent the whole of his salary.

DIRECT TRANSFUSION OF BLOOD.

BY

LIEUT.-COLONEL ALFRED J. HULL, F.R.C.S.,

ROYAL ARMY MEDICAL CORPS.

ALTHOUGH the advantages of direct transfusion are so apparent, this treatment does not appear to be in such frequent use as it merits.

Apart from its obvious indication in cases of severe haemorrhage, it would appear to be a valuable treatment for severe sepsis and shock. The provision of healthy blood to patients suffering from septicaemia must supply



FIG. 1.—The position of the arms. The donor's left hand grasps the patient's left arm well above the elbow, bringing the donor's radial artery almost into apposition with the patient's median basilic vein.

them with the bactericidal agents, bacteriolysins, antibodies, agglutinins, opsonins, leucocytes, and tryptic power which they are deficient in.

How far the alteration of the blood in cases of shock determines the result is at present uncertain, but the effect of healthy blood upon the tissues of such patients appears to be worthy of consideration.

Transfusion would appear to be a more scientific remedy than the empirical injection of antiseptics into the blood stream.

The difficulty of obtaining some one willing to submit to an operation entailing ligation of an artery is in my opinion the only bar to a much greater use of this treatment.

The operation is very simple and can be performed without the use of special apparatus. In fact, I consider the use of any apparatus most undesirable.

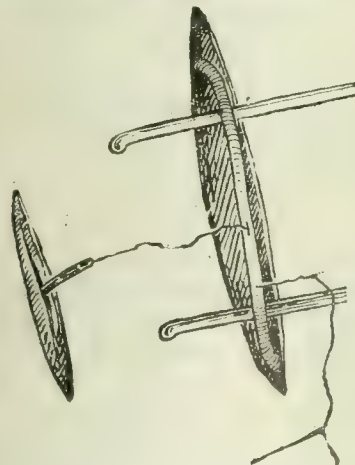


FIG. 2.—The preparation of the vessels. The radial artery has been cleaned for about an inch, divided, and drawn out of the wound. A traction suture has been tied on to the artery. The patient's vein has been exposed and lifted by two probes. By means of its needle the traction suture has been passed through the incision in the vein and out of the vein wall about an inch higher up the vessel.

To be efficient and certain in its results the operation should be performed by the direct transfusion of blood from artery to vein. It is only in this way that clotting, the one danger of transfusion, can be avoided with certainty. The only disadvantage of this method is that the amount of blood transfused cannot be measured, but this is outweighed by the safety and simplicity of the method, and moreover the amount of blood which flows before the donor becomes faint is fairly constant.

Position of the Patient and Donor.

The left hand of donor grasps the arm of the patient just above the elbow, bringing the donor's radial artery in close proximity to the patient's median basilic vein.

THE OPERATION.

An incision about 2 in. in length is made in the patient's arm over the median basilic vein.

The Preparation of the Artery.—A similar incision is made over the radial artery of the donor. The artery is

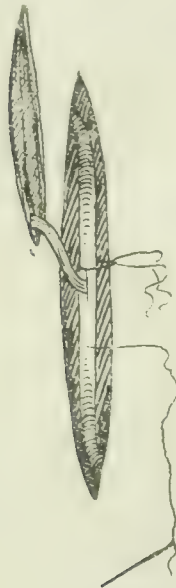


FIG. 3.—The insertion of the artery. The donor's and patient's arms have been rotated a short distance, bringing the wounds almost into apposition. Traction has been made upon the radial artery by means of the traction suture and the artery has been drawn into the vein. A ligature has been placed in the vein wall ready for tightening.

cleaned for about an inch, the lower end of the artery in the wound is clipped, digital pressure is made over the brachial artery, and the radial is cut above the clip. The end of the radial artery is pulled out of the wound, and a traction suture is tied through the wall of the artery.

The Preparation of the Vein.—Two probes about an inch apart are passed under the vein for haemostatic purposes. A small cut is made into the vein (2 mm. in length); through this the needle bearing the traction ligature from the radial artery is passed. The needle emerges from the vein an inch above the incision. A second suture is now passed through the wound in the vein; this suture is used to close the vein when the artery has been inserted. By drawing upon the traction suture the artery is drawn into the vein, the vein suture is tied, and the probes and digital pressure removed.

The blood is allowed to flow until the donor feels faint. The artery is then clipped, pulled out, and ligatured. The whole procedure is carried out under local anaesthesia.

It may be objected that making use of the radial artery as a cannula involves a serious and avoidable mutilation of the donor. This is not the case; ligature of the radial artery must be performed in any case, and the excision of an inch or so of the vessel makes no difference. The elasticity of the artery renders its use as a cannula easy, and a considerable length of vessel becomes available through a comparative small wound.

A SIMPLE AND RAPID METHOD FOR THE SELECTION OF SUITABLE DONORS FOR TRANSFUSION BY THE DETERMINA- TION OF BLOOD GROUPS.

BY

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TRANSFUSION has now become a very valuable and widely accepted form of treatment in a large group of selected cases. With improved methods, and with increased skill and experience in the technique, there will probably be a very great increase in the number of transfusions performed.

There still exists a good deal of confusion as to the selection of the suitable donors. It has been a common experience that transfusion, without preliminary tests, may be performed in a considerable series of cases without detriment to the patient. On the other hand, promiscuous transfusions inevitably lead to disastrous results, which may be fatal.

It has long been known that all individuals are divided into four blood groups. These groups are not established at

birth, but become so in the first year of life. Apparently, the blood group of an individual follows the Mendelian law. Using the arbitrary classification of four groups, it is found that approximately:

8 per cent. of individuals fall in Group I.
Nearly 40 per cent. in Group II.
10 per cent. in Group III.
42 per cent. in Group IV.

This does not mean, however, that it is necessary that the donor and recipient should be in the same group. There is abundant laboratory and clinical evidence to show that the only important consideration is that the serum of the patient or recipient does not agglutinate or haemolyze the red corpuscles of the donor. The reason for this is that in the ordinary transfusion one adds from the donor only about one-fifth to one-twelfth of the total blood volume of the patient. The donor's serum is therefore diluted, and prevented from acting in a detrimental fashion. Furthermore, as has also been shown, the patient's cells are amply protected in that dilution by his own serum. Consequently, any transfusion between groups is permissible and harmless, provided the patient's serum does not agglutinate and haemolyze the donor's red corpuscles, although the donor's serum in the test may agglutinate and haemolyze the patient's red corpuscles. This is illustrated by the table, from which it will be seen that if a patient is in

		Serum of Group			
		I.	II.	III.	IV.
Cells of Group I	...	—	+	+	+
" "	II	0	—	+	+
" "	III	0	+	—	+
" "	IV	0	0	0	—

+ = Agglutination and haemolysis.
0 = No agglutination and haemolysis.

Group I he can receive blood from any donor, because the serum of Group I will neither haemolyze nor agglutinate the red cells of any group. On the other hand, the cells of Group I are agglutinated and haemolyzed by all other serums except that of Group I (its own group). Fortunately this group is small. A Group I person is therefore known as the universal recipient. In contrast to Group I, we have Group IV, the largest group, whose cells are agglutinated and haemolyzed by no group, but whose serum will agglutinate and haemolyze the red corpuscles of all other groups. Group IV is known as the universal donor group, since the blood of Group IV can be transfused with safety into any patient. Furthermore, if the patient belongs to Group IV, he can only receive the blood of the same group.

One other factor which may prevent disaster is the variation in the strength of the agglutinating and haemolytic power of a given serum. It has been found that persons within the same group vary greatly in the potency of the agglutinating and haemolytic power of their serums. Thus a cross-transfusion may result in an immediate fatality in one instance, in complete destruction of the red blood corpuscles, haemoglobinuria, and marked jaundice, but without death, in another, and only mild symptoms in the third patient. I have seen an accidental cross-transfusion in a patient, with only mild symptoms, followed some weeks later by a second transfusion of the same amount from the same donor, with death. The explanation, of course, is the development of the agglutinins and haemolysins under the influence of the injection of the suitable protein.

In cases of dire necessity transfusion without tests is, of course, permissible, but it would seem to be almost unnecessary. The minimum procedure should consist of the establishment of the fact that the patient's serum does not agglutinate the donor's cells. This can readily be performed as follows:

A small amount of blood is collected from a patient (1 c.cm. from the ear or finger is sufficient), and allowed to clot. The serum is then obtained. One drop of this serum is placed upon a slide and mixed with a drop of a suspension of blood of the donor taken into 1.5 per cent. citrate solution. (A few drops of blood are taken into approximately ten times the amount of 1.5 citrate solution and shaken. It is very important that the blood be dropped directly in the citrate, and should not be partially coagulated.) The test will appear in a few moments,

and is best examined under the microscope, where, in the event of a positive test, marked agglutination will be evident. The test will also be evident macroscopically. In the event of a negative test it is a wise precaution to raise the cover-glass, and after making sure that the serum and cells are well mixed, to examine the preparation again. The only possible source of confusion is the appearance of rouleaux of the red corpuscles, indicating a too thick emulsion. If the test is negative, transfusion may be regarded as entirely safe.

Our own experience in civil practice, and particularly in base hospital work, has caused us to adopt another procedure. We have constantly on hand a supply of serums known to be Group II, Group III, and Group IV. As soon as persons who belong to Groups II and III have been ascertained—for example, among the medical officers or laboratory attendants—it is possible to determine the blood group of any given individual very readily, and these known persons, or test persons, can act as a supply of the known serums. From the table it can also be seen that, if it is known that any individual is in either Group II or III, all the other groups can be established. By using the serum of Groups II and III, one has only to collect the blood of the person to be tested in citrate solution, and the test can be performed immediately. If the serum of unknown blood is tested against the known cells, it is necessary to await the development of serum after clotting. In case a blood of a known group is not available, it is only necessary to test out, in the manner described above, a series of bloods against each other. By referring to the table the bloods will be found to resolve themselves into the several groups. The usual groups will be II and IV. As soon as a blood of Group III is secured, then a supply of serums is obtained from Groups II, III, and IV, and rapid tests can be made. If the serums are sterile, they can be kept indefinitely. The serum of Group IV is simply used as a control.

Routine Method.

With the serums of Groups II, III, and IV a number of donors are tested and their names and groups are posted in the operating room. In the event of adequate time the patients' blood is also grouped, in order to use up the donors of groups other than IV. However, in the case of an emergency no further tests are necessary. A donor from Group IV is taken and transfusion immediately performed. This procedure has been of great value in our work at a base hospital, since sudden, severe haemorrhages often happen at night, and without further delay a safe transfusion from a Group IV donor is performed, without testing the patient's blood.

In view of the above fact, and in view of the very simple requirements of the test to establish the safety of transfusion, it seems evident that whenever possible a preliminary blood test should be made before transfusion in order to avoid untoward results. It has been demonstrated again and again that without tests fatalities occur, and that frequently severe reactions occur, which destroy all the benefit of the transfusion. The test which has been recently advocated of giving a few cubic centimetres of blood and awaiting the appearance of the well recognized symptoms of agglutination and haemolysis in the patient, does not seem to be necessary, and furthermore, delays the transfusion and permits the changes in the blood to occur that eventually lead to coagulation, and which so alter the protein molecules of the blood that the blood itself may have very toxic qualities.

In a considerable experience, under the conditions set down above, no disastrous effects have been seen from transfusion, and no evidence has ever been found of haemolysis, as indicated by the appearance of jaundice, or the careful testing of the urine for haemoglobin, even when the permissible cross-transfusions were performed repeatedly on the same patient.

IN co-operation with the General Education Board the Rockefeller Foundation has turned its attention to the development of medical education in several centres in the United States. They have each contributed £200,000 to the University of Chicago for that purpose. The Rockefeller Foundation is also co-operating with Johns Hopkins University in the establishment of a school of hygiene and public health, towards which it has made an appropriation of £53,400. The school opened in October with Dr. William H. Welch as director. It offers instruction and facilities for research in hygiene, sanitation, and preventive medicine to doctors and medical students, biologists, chemists, and engineers.

VINCENT'S ANGINA AMONG THE TROOPS IN FRANCE.

By CAPTAIN R. J. C. BOUTY, R.A.M.C.

DURING the last two years there has been a gradual and marked increase in the number of cases of Vincent's angina among the troops in France, both British and French. In time of peace this disease forms about 2 or 3 per cent. of all cases of throat complaints among the French army (recent statistics). Recent statistics from a British military hospital in France show the proportion to be as high as 23 per cent.

The following notes are based on a number of cases which have come under my observation.

Symptoms.

The disease is characterized by the formation of ulcers on the buccal and pharyngeal mucous membrane, either superficial or deep, covered by a pseudo-membrane; the most common site is the tonsil. The organism is one normally present in the mouth of healthy individuals, but seems to favour irritated conditions of the mucous membrane. Vincent himself considers excessive smoking one of the chief predisposing factors, as also the presence of decaying organic matter, and any irritant fumes, such as those given off from exploding shells. It is a disease prevalent among students working in the dissecting-room, and in hospitals generally, and among nurses.

The onset is sudden, and may be preceded by a few days' malaise. The temperature is raised for the first day or two, and may be high, the membrane often not commencing to form for twenty-four to forty-eight hours after the commencement of the fever. The membrane is rapidly formed, is thick and abundant, and appears, as a rule, on one tonsil at first. After the first two days the temperature may fall to normal, and remain normal, or there may be an irregular slight pyrexia throughout. This more often occurs in the more severe type with complications, such as marked adenitis or albuminuria, etc. The membrane is yellowish-white and abundant, it is adherent, and leaves a raw bleeding surface on removal. Although the tonsil is generally the part affected, the ulcer may be found only on the anterior or posterior pillar of the fauces, or the uvula alone, or the soft palate alone. It may commence on the tonsil, and spread to the uvula, pharyngeal wall, or soft palate, causing considerable destruction of tissue. The breath has an unpleasant odour, worse than in the case of diphtheria.

As a rule, if thoroughly treated, the membrane disappears in a few days. In some cases, however, some days, or as much as a fortnight, after recovery, there is a further rise of temperature, and commencing ulceration of the other tonsil. A chronic or severe form is sometimes seen, persisting for some weeks, and in these cases complications arise, and may be serious. Some cases of death have occurred in French hospitals, in which the primary cause was Vincent's angina.

Etiology.

Microscopically, two varieties of organism are found, the *Bacillus fusiformis* and Vincent's spirochaete.

Two forms of Vincent's angina are met with—(1) the pseudo-membranous, resembling diphtheria in appearance, and (2) the ulcerative form.

In the first we find abundant bacilli mixed with cocci, and in the second, associated with the bacillus, a Gram-negative mobile flagellated spirillum. A coexisting streptococcal infection is not uncommon, and may give rise to serious complications.

The Ziehl-Nielsen method is all that is required, though the silver method demonstrates the spirochaete more clearly. Injected into animals the organisms are non-pathogenic. Injection of impure cultures causes abscesses in which the spirochaete is abundant.

Letulle states that in every case of ulceration in the mouth, whether syphilitic, tuberculous, or cancerous, large numbers of *B. fusiformis* and spigilla are to be found.

Complications.

The complications which may occur are:

Adenitis of the cervical glands in nearly every case, and often very painful.

Pyorrhoea alveolaris is often present.

Stomatitis and gingivitis.

Quinsy is a not uncommon complication.

Gastro-enteritis cases have occurred in which, *post mortem*, abundant bacilli and spirochaetes have been found in the intestines (Vincent).

Nephritis and albuminuria. The urine of these patients often contains a trace of albumin, and in some cases acute nephritis may occur. To quote one example:

A doctor working at a base hospital was three weeks in hospital with Vincent's angina, and on recovery was given three weeks' sick leave. Whilst in England it recurred on the same tonsil, the recurrence only lasting a few days. On return to duty he had a third attack on the opposite side, and was admitted to hospital, his urine containing a trace of albumin. Three days after admission he developed acute nephritis. Twelve days later the albumin and casts had entirely disappeared.

Other complications are ulceration of the pharynx, on some occasions causing perforation of the carotid artery (Vincent), bronchitis, laryngitis, with ulceration of the vocal cords, pleurisy, empyema, otitis media, cachexia, endocarditis.

A case of gangrene of the vulva and perineum caused by *B. fusiformis* and Vincent's spirochaete in large numbers has been recorded by Spillmann.

An association of Vincent's microbes complicating a syphilitic chancre of a phagedaenic tendency has been noted by Laimois, and the same association has been observed in soft chancre. A case of thrombosis of the left saphenous vein with gangrenous ulceration of the leg, complicating Vincent's angina, has been recorded by Guinsberg.

I have seen one case in which the uvula was the only part attacked, leading to complete destruction of the posterior portion and tip, a very small part only remaining. Osteomyelitis has been observed by Gilberti, and pernicious anaemia by Mayer.

Symptoms.

In an uncomplicated case the symptoms are sore throat, headache, and pain behind the eyes; there may be no symptoms after the first day or two except slight malaise. In the more severe cases there may be loss of appetite, wasting, and great prostration.

Treatment.

Drugs which have proved of benefit are calomel in repeated small doses, but Vincent states that mercurial treatment aggravates the condition when the patient is not a syphilitic.

Arsenic and a mixture of sodium salicylate and potassium chlorate have been used, and tonics locally. Mercury perchloride and glycerin (1 in 500), silver nitrate, methylene blue, neo-salvarsan, solution or powder applied daily for three days, and frequent gargles of hot hydrogen peroxide have been recommended.

The treatment which Vincent himself finds most effective is a thorough painting with tincture of iodine 6 per cent., after well scrubbing with a tampon to remove the membrane.

A dose of antidiphtherial serum has in some cases proved beneficial. The importance of treating the unaffected side should be borne in mind to prevent recurrence on that side. Salvarsan intravenously (one dose) has been said to modify the disease and prevent recurrence.

The condition must be diagnosed from diphtheria, follicular and other forms of tonsillitis, syphilitic ulceration, primary and tertiary, and scarlet fever. In every case a culture should be made to establish the absence of Loeffler's bacillus.

The Wassermann reaction in Vincent's angina is negative. Certain skin conditions, such as erythematata and bullous eruptions, have been reported, but are probably due to coincident streptococcal infection.

Deductions.

Vincent's angina is a more serious complaint than is often supposed; its general effect on the system is often severe, probably from abundant absorption of toxins. Recurrence may take place even three weeks after the first attack, in which case complications are more liable to occur.

REPORT ON SIX CASES OF TONSILLECTOMY IN DIPHThERIA CARRIERS.

BY

C. C. BALLANTYNE, M.B.TOR., CAPTAIN C.A.M.C.,

AND

B. S. CORNELL, M.B.TOR., LIEUTENANT C.A.M.C.,

DURING June and July, 1917, about fifty cases of diphtheria and diphtheria carriers were treated at Moore Barracks Canadian Hospital, Shorncliffe. The so-called carriers particularly presented a problem in that persistent treatment failed to eliminate the germ. Accordingly, tonsillectomy was resorted to in some of these carriers, and a report of six cases follows. While no originality is claimed for the treatment, the results may perhaps prove interesting.

The tonsils were completely enucleated by the dissection and snare method, and swabs were at once taken from the oral surfaces of the removed tonsils. Then, after thoroughly cleansing the tonsils externally with alcohol and ether, cross sections of the gland were made at three different levels with sterile knives. Swabs were at once taken from the crypts at each of these different levels, the first being one-eighth of an inch beneath the oral surface, the second at the centre of the tonsil, and the third one-eighth of an inch from the capsule. Hypertrophied adenoids, when present, were also removed, sectioned and swabbed in a similar manner. The swabs were immediately planted on Loeffler's blood serum media, incubated for twelve hours, and the resulting growths examined for the *Bacillus diphtheriae*.

CASE I.

Pte. W., admitted suffering from peritonsillar abscess, which readily subsided after incision. On May 24th, as a result of routine swabbing, he was found to be a diphtheria carrier. Until June 12th swabs were invariably positive, and on that date tonsillectomy was performed. Swabs from the tonsils showed:

Right: Surface, positive; top section, middle, and bottom, negative.

Left: Same as right.

Adenoids: Surface and section, positive.

Subsequent throat swabs: Three successive negatives on June 15th, 18th, and 20th.

CASE II.

Pte. M., admitted as a carrier; for six weeks numerous swabs were repeatedly positive. Tonsillectomy on June 12th.

Right: Surface and top section, positive; middle and bottom section, negative.

Left: Surface, top section, and middle, positive; bottom section, negative.

Subsequent throat swabs: Successive negatives on June 15th, 18th, 20th.

CASE III.

Pte. S., admitted with mild tonsillitis, which readily subsided in forty-eight hours without antitoxin. Routine swab June 3rd positive for diphtheria, and repeated subsequent swabs positive. Tonsillectomy June 12th. Swabs from tonsils showed:

Right: Surface, top section, and bottom section, positive; middle section, negative.

Left: Positive throughout.

Three successive negative swabs were not obtained until June 26th, 27th, and 28th.

CASE IV.

Pte. T., admitted June 17th as a carrier. Swabs persistently positive. No constitutional reaction. Tonsillectomy on June 29th. Swabs from tonsils showed:—Right: Positive throughout. Left: Positive throughout. Three successive negatives obtained July 6th, 7th, 9th.

CASE V.

Pte. O'H., admitted May 25th as a diphtheria carrier. Swabs invariably positive. Tonsillectomy June 21st. Swabs from tonsils showed both tonsils strongly positive throughout. Three successive negatives obtained June 23rd, 24th, and 25th.

CASE VI.

Pte. Z., admitted June 5th with mild diphtheria, which readily responded to 12,000 units of antitoxin. Swabs positive persistently till June 29th. Tonsillectomy June 29th. Swabs from tonsils showed both tonsils strongly positive throughout. Successive negatives obtained July 3rd, 4th, and 5th.

In these six cases the operation obviously accomplished the object for which it was undertaken. Although in some the organisms persisted for a few days after operation they disappeared with the healing of the wound. In all these cases saline irrigations and gargles had been continuously used until the time of operation, and their failure is explained by the pathological findings, since in four of the six cases the bacilli were found in the very

depths of the crypts, and surface applications could not be expected to reach them.

Living cultures of *Staphylococcus pyogenes albus* had also been employed as sprays over the tonsils in the hope of outgrowing the diphtheria bacillus, and it was usually found that swabs taken next day were negative for Klebs-Loeffler organisms, but were loaded with staphylococci. The bacilli, however, reappeared in large numbers within a day or two. The probable explanation is that the large number of staphylococci collected on the first swabs had outgrown the bacilli on the media. If, however, the staphylococci outgrew the bacilli on the tonsils, then fresh organisms were soon resupplied from the tonsillar crypts.

CONCLUSIONS.

1. That in apparently normal individuals the *Bacillus diphtheriae* may be harboured in the depths of the tonsillar crypts.

2. That complete enucleation of the tonsils seems to be a successful means for eliminating diphtheria organisms from carriers, although it appears too drastic a measure for routine adoption.

PNEUMOTHORAX WITH HERNIA INTO LEFT PLEURAL CAVITY.

BY

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THE following case seems sufficiently rare to merit publication:

The patient, aged 26, was admitted to the Princess Christian Hospital, Weymouth, in the late evening of August 21st, complaining of urgent and persistent vomiting. There was a previous history of indigestion for some years; he had never been jaundiced.

The patient was wounded in the chest ten months previously. It was apparently a perforating gunshot wound, followed by the spitting of blood, and fracturing the eighth, ninth, tenth, and eleventh ribs in the left mid-axillary line. The wound was quite healed and sound. The patient had apparently had previous attacks, lasting as much as six hours, but they had become milder during the last three months.

The present attack followed violent exercise on August 17th. Complaint was made of pain in the region of the pylorus; it became very acute forty-eight hours later and had continued ever since. Vomiting occurred thirty-five minutes after the onset of the pain and persisted. The vomit at first was green, but soon became black, with an unpleasant, but not fetid, odour. It recurred during the time he was watched every four minutes in amounts of a few ounces. There had been constipation since the onset of the pain, but he passed flatus on August 20th. He attributed his condition to a diet of fish, but no solid food was taken for forty-eight hours; water swallowed returned almost immediately as black fluid.

On admission he was very collapsed and nearly pulseless, and Dr. Quackenbos, who handled him throughout with the greatest care and skill, administered 10 minims of adrenalin hypodermically. An enema led to the passage of a small quantity of flatus, but no faeces.

The abdomen looked extraordinarily empty, and had an appearance of scaphoid retraction. There was no tenderness, but a little lump to be felt over the pylorus, which was tender and which eventually proved to be an enlarged lobe of the liver. The liver dullness appeared, however, to be normal. Reflexes were present.

There were obvious physical signs of a pneumothorax. The heart's apex beat was visible beneath the right nipple; dullness was present on the left side up to the fourth rib; breath sounds absent; tinkling fluid splash sounds. The patient, whose condition was very bad, was given saline, $\frac{1}{2}$ grain of atropine, and 10 minims of adrenalin.

Operation.

A median incision was made above the umbilicus, and the abdomen explored. The bowel felt, and appeared to be, completely collapsed, and much of the abdominal contents absent. The stomach could not be found, the great omentum and transverse colon had also disappeared. The liver was pushed downwards, and presented in the wound. Further exploration with the hand traced the stomach, omentum, and colon up towards the left half of the diaphragm, and through a hole at the back of the diaphragm into the left pleural cavity. Reduction could not be effected, and the diaphragm was incised from behind forwards, the hole enlarged, and the fingers passed through into the pleural cavity; firm adhesions were discovered between the pleura and its contents, and reduction was obviously impossible. The abdominal wound was quickly closed and the left thorax opened by an osteoplastic resection of the ninth and tenth ribs on the left side in the mid axillary line. Adherent

omentum covered the pleura over the wound and had to be tied off; then through the opening collapsed colon and an enormously dilated stomach presented. A Paul's tube was inserted into the stomach, and 1½ to 2 pints of black fluid drained off. The tube was packed round with gauze, and the skin held in position with a few stitches. The patient was removed to bed, his condition apparently better than when he was brought down. His breathing was much easier, and he seemed very comfortable. He became restless, however, and, despite the exhibition of all usual remedies, he died in the small hours of the morning.

A partial investigation was made the following day by Dr. Quackenbos, who reports as follows:

The heart was situated behind the sternum, the apex being in the parasternal line on the right. An aperture was disclosed in the body of the left diaphragm, which had been enlarged by incision, but which appeared to be of some standing. The liver was displaced downwards, and to the left. The left lung was collapsed, and showed evidence of bronchopneumonia and adhesions at the apex. The stomach was very much enlarged, and, with the transverse colon, the great omentum and four feet of the jejunum, was in the left thorax. The omentum was firmly adherent to the aperture in the diaphragm and elsewhere to the pleura. There were adhesions of the gut to the pleura in places.

The explanation of the condition is difficult.* The old-standing appearance of the hole in the diaphragm might even suggest a congenital weakness, but it seems more likely that the perforating bullet wound which broke the ribs injured the diaphragm, and that the negative pressure in the thorax drew up abdominal contents to take the place of collapsed lung.

Whether, had the patient's condition been better, it might conceivably have been possible to separate the adhesions and reduce the hernia it is difficult to say, but in any case the future function of the organs would not have been satisfactory.

A CASE OF ECTOPIA VISCERUM.

BY

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THIS case is of sufficient rarity to merit a brief description, especially as the question of surgical intervention arose.

A male child, 16 hours old, was brought to the Altrincham Infirmary by Dr. Young of Broadheath. An umbilical sac or cyst, larger than the abdomen itself, was attached at the umbilicus by a broad pedicle. Its covering was translucent and composed of apparently the same gelatinoid material as the umbilical cord, with which it was incorporated. The sac was fairly tense and contained some darkish fluid, but the wall was not sufficiently transparent to allow of the contents being identified. The child was apparently full time, but not quite of normal size. It was markedly cyanosed and sluggish in its movements, but it evinced no signs of bodily discomfort. The head and limbs were well shaped and apparently normal. The thorax was, however, very narrow and poorly developed. There was very little abdominal wall apart from the umbilical protrusion. The testes were undescended, but the penis and scrotum were well formed.

It was doubted very much whether the condition could be remedied by surgical means, but as the child had practically no chance of survival without surgical intervention, and as the possibility of such intervention could not be ascertained without exploring the contents of the sac, it was decided to operate immediately. Dr. Young gave the anaesthetic, and the abdomen was prepared as for laparotomy. The outer wall of the sac (that is, amnion) was pinched up with forceps, snipped, and a quantity of blood-stained watery fluid released; this reduced the size of the sac quite one-half, and a second covering was exposed by extending the opening in the outer layer. Both layers were extremely thin, membranaceous, and non-vascular, except just at the lower part, where the umbilical vessels proceeded to the stump of the umbilical cord.

On incising the inner covering (peritoneum) the large dark solid mass of the liver at once presented; this was situated entirely outside the abdomen proper. The intestines were also exposed, and were for the most part entirely outside the abdomen proper. The opening of the abdominal wall proper—that is, where the gelatinoid material of the sac abruptly joined the normal skin—formed a ring of about 2 in. diameter, and through this an attempt was made to reduce the extruded viscera. With great difficulty the intestine was put back, but it was found quite impossible to replace the liver. There was not only no room for it inside the abdomen, but there was not enough abdominal wall to have covered it even had one been able to reduce it. All that could be done was to reapply Nature's inadequate covering of the viscera, stitch it in position, and dress the parts aseptically. The child lived for twenty-seven hours after the operation. It had two actions of the bowels, but so far as we know did not pass water. A little fluid was given by the mouth, but vomiting occurred shortly before death, which presumably resulted from cardiac failure.

Necropsy.

The thorax and abdomen were examined *post mortem*. The heart was small, and the foramen ovale unclosed. The lungs were apparently normal and air-containing, light pink, and floated easily. The condition of the liver and intestines was as described above. There was, however, commencing adhesive peritonitis. On exploring the abdominal cavity proper, no kidneys could be felt in the usual place in the loins, but two large kidneys with large suprarenal bodies attached were found pushed up right under the diaphragm, occupying in fact the position of the normal liver. The spleen was well developed. No gall bladder could be found. The testes were very small and occupied a position corresponding to the normal ovaries. The bladder was small and very thick-walled; on cutting into it hardly any cavity was visible, and it contained not more than a drop or two of fluid.

The chief, and to my mind the determining, abnormality in this case was the large size and the unusual position of the kidneys and suprarenals. These had apparently pushed the liver forwards, and thrust it through the umbilicus, where it had been free to grow practically devoid of the usual pressure of surrounding viscera and parietes. It was interesting to note that the liver was much more globular than normal, and presented no flattened edges or surfaces. Its lobes were well developed, and its structure apparently normal, except that no trace of a gall bladder could be found. The faeces, however, afforded distinct evidences of bile. The kidneys and suprarenals were large, but showed no signs of disease, and were certainly not cystic; there was a small peritoneal sac below and in front of each, which was shut off from the peritoneal cavity.

According to Professor Graser (in von Bergmann's *System of Practical Surgery*, which contains the best account of this condition in any textbook I know), the internal layer of the investing wall is probably not part of the parietal peritoneum, but part of the so-called "primitive membrane." These membranes are, of course, not viable. As a rule the children die within a few hours of birth, or later from peritonitis, as the overlying membranes perish. In recent years a number of successful operations have been reported where the defect could be covered.

The FitzPatrick Lectures

ON

MEDICINE IN ENGLAND DURING THE REIGN OF GEORGE III.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

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(Continued from p. 641.)

VI. THE ROYAL COLLEGE OF PHYSICIANS.

I now pass to a consideration of the position of this College with regard to medical progress during the reign of George III. This inquiry embraces the history of the great contest between the Fellows and the Licentiates; it also involves an investigation of the powers conferred by charter upon the College, and the spirit in which they were applied.

The great contest in the College between the Fellows and the Licentiates definitely began in 1752, although the first mutterings of the coming storm were heard as far back as 1746. From that date it dragged on its weary length for more than eighty years, sometimes waxing and sometimes waning, but never really ceasing. Small advances occupied decades for their attainment, and it was not until the beginning of the reign of Queen Victoria that the College could see its way to concede the main great principle for which the Licentiates had contended. For a long time the College was apparently content to accept the existing order of things, and appeared little disposed to move in the direction of any change. Some of the Licentiates, however, were active in their efforts for what they held to be a salutary reform. Amongst these reformers may be mentioned the names of Fothergill, Archer, Wells, Ferris, and Stanger, and no small part of the advancement made in medico-political spheres was due to the persistent advocacy of these men. In season and, it must also be admitted, often out of season, these men urged upon the College the

necessity for reform. To the unwearied perseverance of these men we owe it that this College now rests on the sure foundations of justice and liberality towards the three estates over which it exercises jurisdiction.

Contest of Licentiates and Fellows.

What was this contest between the Fellows and Licentiates? It arose in this way. The charter of the incorporation of the College, and the statutes of 14 and 15 Henry VIII, gave the whole control over the practice of physic into the hands of the College, with the exception that Doctors of Medicine of Oxford and Cambridge might practise in the provinces free from that control. In 1555 the College saw fit to limit the number of its Fellows, and at the same time instituted the grade of Licentiates. In addition to these enactments, the practice had grown up in the College of electing to the Fellowship only those who possessed a degree of Doctor of Medicine from the Universities of Oxford and Cambridge. It is not very clear when the by-law embodying this principle was put into operation, but it was certainly not before 1575. By this practice, therefore, which became the established rule of the College, the whole of its government was placed in the hands of those who were Doctors of Medicine of Oxford or Cambridge, and Doctors of Medicine of other universities were relegated to the grade of Licentiates without any prospect of becoming Fellows or of having any voice in the government of the College. The examination for a Licentiate was the same as that for the candidate for the Fellowship. Outside the walls of the College the Licentiate enjoyed the same privileges and distinction as Fellows, but within the College he was beneath them. This was the position which gave rise to the contest between the Fellows and the Licentiates. Holding that they were the equals of the Fellows, in that they had performed the same exercises, they claimed that they should be admitted to the Fellowship with its rights and privileges.

The contest between the Fellows and Licentiates really began with the demand of Isaac Schomberg to be admitted to the examination for the candidate for the Fellowship. Schomberg had, in defiance of the statutes, practised as a physician in London, and was summoned in 1746 by the Censors Board to present himself for the examination for the Licentiate. This he refused to do, but in 1747, having been entered at Trinity College, Cambridge, he asked to be allowed to practise until he should obtain the M.D. degree. This the College refused, and interdicted him from practice until he had given satisfaction to the College. In 1749 Schomberg obtained the M.D. by royal mandate, and now applied to be examined, but the College refused this until such time that the interdiction was removed. He then offered an apology, which was accepted by some, but not by all. In 1750 he demanded to be examined for the candidate for the Fellowship in virtue of his Cambridge degree. He was allowed to sit, and was adjudged competent, but this decision was negated by a majority, and he was refused admission. Schomberg then took his case to the law courts, but met with no success, the court holding that the College had full power to do as they thought fit. However, in 1765 he was admitted a Licentiate and in 1771 a Fellow. He even attained to the honour of being Censor in 1773 and 1778. This case called forth Sir William Browne's *Indication of the College*, which he intended to read as a reply to the contentions of Schomberg, had the "visitors" decided to hear the case. It is fortunate that no such occasion arose for reading this piece, for it is about the most vain and pedantic effusion that ever proceeded from the pen of that singular personality.

After this, three acts performed by the College contributed largely to the accentuation of the differences between the Fellows and Licentiates. They were as follows: (1) Subsequent to the year 1752 the practice of summoning Licentiates to the College meetings was abandoned. (2) The College passed in 1752 the *Statutum Alterum de Candidatis*, in which it was stated in unmistakable language that no person could become a Fellow unless he held the degree of Doctor of Medicine of either Oxford or Cambridge. (3) In 1765 the statutes and by-laws of the College, after having been revised, were printed for the use of the College officers, thus rendering them available for purposes of investigation.

These acts, but particularly the *Statutum Alterum de Candidatis*, were the cause of the recrudescence of the controversy in 1765. Two parties were formed. The Licentiate maintained that there were many belonging to their body who, although they possessed no Doctorate degree from the sister universities, were nevertheless thoroughly fitted by education and medical attainments to adorn the Fellowship of the College. On the other hand, the thick and thin supporters of the existing order were convinced that no man who had not been educated at either Oxford or Cambridge could be worthy of the honour of the Fellowship. The Licentiate held that the action of the College in excluding them was contrary to the spirit of the statutes in virtue of which the College exercised authority and jurisdiction. They also urged that the curriculum at Oxford and Cambridge scarcely existed for medical students, that the study of medicine in the sister universities was a farce which could be performed in four years by anyone holding a M.A. degree, at the expense of attending a few lectures. This, no doubt, was true with regard to the teaching of medicine, but it must not be forgotten that both Oxford and Cambridge offered considerable facilities for the acquirement of a wide culture. All those intending to study medicine were obliged to graduate in arts, and the scope of the course instituted for the degrees of Bachelor of Arts and Master of Arts has already been described.

To all the contentions of the Licentiate the College turned a deaf ear. They asserted that they knew the form of teaching at Oxford and Cambridge, but were ignorant of the kind of study required at other universities both for arts and medicine. They were satisfied that the only way, in fact, to keep up a high standard of culture and medical knowledge at the College, was to admit those only to the Fellowship who possessed the passport of an education at either Oxford or Cambridge.

The pen was largely used by the opposing sides, and "letters," "addresses," and "reflections" for and against were issued. So high ran the feeling that in 1767 the Licentiate attempted by force to attend the College meetings, and on one occasion succeeded in forcing the doors.

Rex v. Askew.

The whole matter was then tested in the courts in the famous actions of *Rex v. Dr. Askew* and *Rex v. The College*. These trials took place in 1768-9 and 1769-71. They were heard at great length, and arose out of an application by Dr. Letch, Dr. Archer, and Dr. Fothergill for a rule calling upon the Censors to show by what authority they exercise their powers and functions. The cases were heard by Lord Mansfield, Justice Aston, and Justice Yates. The main question was whether or not the College had power to make such by-laws and rules as they thought fit, and this was decided in their favour. But the words of the great Lord Mansfield in delivering judgement were remarkable, and left no doubt that he thought the College was insisting too rigidly on their rights. He cautioned the College "against narrowing their grounds of admission so much, that if even a Boerhaave should be resident here, he could not be admitted to their fellowship. I would recommend the College to take the best advice in reviewing their statutes, and to attend to the design and intention of the Crown and Parliament in their institution. I see a source of great dispute and litigation in them, as they now stand. There has not, it would seem, been due consideration had of the charter, or legal advice in framing the by-laws." As the result of Lord Mansfield's warning, the College passed a new statute by which Licentiate could be admitted to the examination for the candidate for the Fellowship. But since the permission to undergo this examination depended on a majority of the Fellows present, and since after undergoing three such examinations the result of each one, and the final admission, depended on the vote of the majority of Fellows present, the new statute was all but inoperative.

The Case of Dr. Stanger.

On May 16th, 1797, the whole subject was again raised in the court by Dr. Christopher Stanger, who applied to the court for a mandamus commanding the College to show cause why he should not be examined for the candidate for the Fellowship. The case was argued before Lord

Kenyon, and the case for the College was in the able hands of Erskine. Erskine at once cut the ground from under the feet of Stanger by citing the by-law passed after Lord Mansfield's admonition. He said, in effect, that Dr. Stanger could go before the College and be examined, and that the College could elect him a Fellow. Lord Kenyon agreed that the by-law limiting the Fellows to the graduates of Oxford and Cambridge was bad, but since the College had passed a by-law by which Licentiate could be examined for the candidate for the Fellowship he thought the by-laws reasonable. He said, "If any one of the Fellows proposes Dr. Stanger, he goes to that tribunal which I hope and believe is the sanctuary of good faith and honour. . . . They are not bound to admit him; all they are bound to do is to examine him."

After this case had been decided Dr. William Wells determined to put the matter to the test in his own person, in order to see if the College would do that which they had expressed themselves as willing to do before the court—namely, examine for the candidate for the Fellowship any licentiate who was proposed by a Fellow. Accordingly, Dr. David Pitcairn proposed, and Dr. Matthew Baillie seconded, that Dr. Wells should be allowed to present himself for examination. The College, however, refused, thereby deciding that the very by-law on which they relied before the court in May, 1797, was inoperative in September of the same year. Again Dr. Wells was proposed, but again various excuses were resorted to in order to prevent him from being examined. Then he desisted, for persistence was obviously useless. Thus, William Charles Wells, Fellow of the Royal Society, physician to St. Thomas's, and author of the *Essay on Dew*, failed to become a Fellow of the College. His *Letter to Lord Kenyon* dealing with this episode, on account of its manliness, its spirit, its cogent reasoning, and its literary charm, should be read almost as a model of what such specimens of composition should be. A few years later the President caused Dr. Wells to be asked if he still had any desire to become a Fellow, but to this he dryly replied that he had none. This treatment, meted out to Wells by the College, had an unfavourable effect upon its reputation in after-years.

Parliamentary Committee.

In 1834 a Select Committee of the House of Commons sat to inquire into the education and practice of the various branches of the medical profession, and the case of Dr. Wells was made of capital importance by the Committee. Almost every witness was asked his opinion of the fitness of Wells to be a Fellow, and, to their credit, all save one admitted his great scientific and medical abilities as well as his unblemished character. Dr. Macmichael, however, sought to depreciate the position of Wells. But the opinion of Dr. Macmichael is of no moment now, for inexorable Time has passed his judgement.

After the Parliamentary Committee had made a report, the rule regarding the admission of Fellows was amended in such a way that a Licentiate could be admitted to the examination for a candidate for the Fellowship without first becoming a Doctor of Medicine of either Oxford or Cambridge. The contest therefore, which had lasted nearly a century, was ended, and the passions it had raised were stilled.

At the present day the phases through which this contest passed have only an academic interest, and scarcely require notice except as forming part of the medical history under review. It may, however, be observed that out of this contest sprang those wise and enlightened principles which govern at the present time the election of Fellows of this ancient and noble College.

VII. THE MEDICAL PRESS.

I have still to speak of the medical press during the age of George III. In those days no journals existed which dealt with the politics, the aims, and aspirations of the medical profession. When a reformer arose his only method of disseminating his views was by means of "letters," "observations," and "considerations." Most of these tracts, a splendid series of which exists in the College library, are anonymous, and sometimes trivial, but to the student of the period they are often invaluable. In the same way, apart from published books on medical subjects, many short monographs gave

as the first introduction to new ideas and discoveries in medicine. During the reign many attempts were made to establish periodical medical publications. Some of them met with fair success, and flourished for a number of years; but many survived only a short time. The first journal to appear in the reign of George III was *Medical Observations and Enquiries*, in 1757. The next was the *Medical Museum*, published in 1763, and devoted to "Select Cases and Experiments, and Discoveries in Medicine and Pharmacy." After this, in 1767, the *Medical Transactions of the College* were begun, at the instigation of the elder Heberden, and six volumes of these were published, the last appearing in 1820. The *London Medical Journal* was founded in 1781 by Dr. Simmons, who was its first editor, and in 1790 it was transformed into *Medical Facts and Observations*. Simmons was also responsible for the birth of *Medical Commentaries*, which began in 1784 as the journal of the Society for Promoting Medical Knowledge, but it ceased after a few years. *Medical and Chirurgical Knowledge* enjoyed a longer career, beginning in 1793, and lasting until 1818. The next journal to appear was the *Annals of Medicine*, which began in 1796 and survived until 1804. The *London Medical Review and Magazine* existed from 1799 to 1802, and at the same time appeared the *Medical and Physical Journal*, which survived until 1806. In 1806 *Medical Observations* came into being, but was discontinued two years later. In 1808 the *London Medical Review* and the *London Medical and Surgical Spectator* first saw light; the former died in 1811 and the latter in 1809. The *London Medical Reports* and the *London Medical, Surgical, and Pharmaceutical Journal* began in 1814, and both lasted for more than ten years. In addition, the *Transactions of the Medical Society*, the *Medico-Chirurgical Society*, and the *Philosophical Transactions* were in being.

It was not until 1823 that the *Lancet* appeared, and quickly enjoyed a wide popularity. The cause of its success was to be found in its advocacy of medical reform, which was sadly needed, and in the ability with which it was conducted. It not only appealed to the strictly medical mind, but adopted a truculent tone towards existing medical authority, which was relished by the more progressive spirits. Its methods were sometimes questionable, but always undeniably clever, and although such matter as the incomparable "Intercepted Letters" by Wardrop excited great interest, the fact cannot be denied that the good taste of such journalism was very doubtful.

(To be continued.)

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CALCULOUS PYONEPHROSIS: NEPHRECTOMY; LATERAL LIGATION OF THE INFERIOR VENA CAVA: RECOVERY.

THE following case is of special interest at the present time as an instance of recovery following diminution of the calibre of the inferior vena cava.

Mrs. J. was admitted under my care into the Margam Hospital in November, 1916. She was suffering from a swelling in the right hypochondrium and lumbar region, and gave a history of pyuria and intermittent severe attacks of lumbar pain extending over twelve years. A diagnosis of pyonephrosis was made. Cystoscopic examination revealed functional activity only of the left kidney.

Operation.—The lumbar route was chosen. The right kidney was freed and delivered except at the lower pole, where it was fairly firmly adherent to the inferior vena cava. From this structure it was with difficulty cut away, leaving, as was thought, a safe margin of renal (or fibrous) tissue attached laterally to the vein. A few minutes after its complete delivery a sudden rush of venous blood indicated that the wall of the inferior vena cava had given way. The venous trunk was temporarily obliterated digitally, while the hilum was rapidly clamped, and the kidney removed with all speed to gain room. The lumbar wound was quickly enlarged downwards and forwards, and the vena cava brought as near to the surface as possible. An attempt to suture the rent in the vein by Lembert sutures resulted in failure, as the structure was too softened to hold the sutures. Lateral forcepressure was

resorted to. Two pairs of artery forceps, with broad noses and close shanks (to avoid future trouble from intertwining of granulations), were applied in juxtaposition, and their shanks tied together with ribbon gauze. By their bite these narrowed the lumen of the vessel to about two-thirds of its circumference. The hilum was now dealt with. The wound was plugged with gauze, and, with the exception of two through-and-through sutures, was allowed to heal by granulation.

The kidney, completely disorganized, measured 8 in. by 4 in., contained eight large stones, and was merely a bag of pus and venous blood, which had, I believe, leaked into its lower pole from the diseased and eroded inferior vena cava.

The gauze was left *in situ* for three days. After treatment consisted of irrigation with eusol and light plugging. The forceps were allowed to remain for fourteen days, being gently tempted from their lairs from the tenth day onward.

With the exception of an ominous rigor on the fifth day (treated with large doses of aspirin and citric acid), the patient made an uninterrupted recovery.

Seen afterwards, she said that for about a month she suffered from "dropsy" of her legs, which gradually subsided, and that she had lost about four times the usual quantity of blood at each menstrual period, but that the last period showed a decrease.

E. W. M. HUBERT PHILLIPS, M.A.,
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Reports of Societies.

VALUE AND LIMITATIONS OF SANATORIUM TREATMENT FOR TUBERCULOSIS.

THE discussion on this subject (see *BRITISH MEDICAL JOURNAL*, November 17th, p. 650) was continued at the meeting of the Medical Society of London on November 19th, when the President, Sir ST. CLAIR THOMSON, was in the chair.

Sir RICHARD DOUGLAS POWELL said that the importance of the direct agency of infection in the production of tuberculosis should not be exaggerated. If there were no dirty surroundings and bad habits of life the infection of tuberculosis would almost cease to be operative. The ultimate object of treatment was to help the patient to secure immunity—a power of resistance amounting to a safeguard against fresh attacks of the disease. Some patients would acquire immunity without treatment, and *post-mortem* observations revealed many such cases. Some attained a practical immunity who could by no means be regarded as cured of pulmonary tuberculosis. He had seen many people with considerable lesion in one lung, for many years with chronic cough and expectoration, more or less bacillus-laden, who seemed immune from fresh attack, and ultimately died of some other disease, amongst which cancer and some gouty affections would, he thought, be found relatively prevalent. The disease in such cases was localized and circumscribed by fibrosis. Many cases did well without sanatorium treatment; the margin of difference in favour of sanatorium over general hygienic management was much less than might be expected. On the whole, his firm opinion was that sanatorium treatment was, without doubt, the best, not only in the interests of the community but, in properly chosen cases, also of the individual patient. It would be well to have more subdivisions in sanatoriums, and he suggested (1) a hospital department for acute cases requiring constant nursing and medical treatment; (2) a department for advanced cases; (3) a sanatorium proper with full equipment for cases selected from the two preceding and for incipient and quiescent cases in which immunity was in sight—athletic and industrial exercises would be provided in this department; (4) associated chalets in groups for convalescent and after-care cases. Referring to after-treatment, he said that the patients' prospects depended largely on their own intelligence and care, but also on the condition of life to which they returned. He thought insurance might help, and that some arrangement might be made whereby employees, when definitely attacked with tuberculosis, should receive a certain portion of their

insurance money, which would enable them to undergo prolonged sanatorium treatment and then seek a more outdoor and healthy occupation.

Dr. ARTHUR LATHAM said that both the public and the profession paid too much attention to infectivity. The von Pirquet test showed that 2 per cent. of children of 2 years had had tuberculosis, 55 per cent. of those of 15 years, and pathologists said that by the age of 30 every man and woman had evidence of tuberculous trouble. If the defence was undermined by strain and stress the disease immediately became active, and the increase of tuberculosis during the war might thus be explained. Sanatorium treatment was the best available; it regulated the daily stress and exercise. Sanatoriums should not be filled with those who had a right to be there, but with those who would do well.

Sir ARTHUR NEWSHOLME said that during 1916 there were 53,000 deaths due to tuberculosis in this country. The sanatorium was but a link in the chain of measures of treatment. The first was notification, which was enforced in 1908. By this means (a) the M.O.H. could get control of the environment of the patient; (b) light was thrown on the influence of alcohol as to whether it (1) increased the opportunities for infection, or (2) lowered resistance; (c) co-operation between the M.O.H. and the private practitioner became possible. The work of the tuberculosis officers was of value in consulting with the general practitioner, and in examination of contacts. By examining the relatives it was often possible to get cases early. Sanatoriums were of great value educationally; diminished tendency to relapse, prolonged working life, and decreased danger to the public. Patients often did extremely well in huts in the back garden; it was better for the patients and safer for the families. Cases should be selected for sanatorium treatment on purely medical grounds. Both infectivity and environment were factors, and both were necessary to the production of disease; the resistance and the dosage varied. He considered massive infection of more importance than the other speakers.

Dr. J. J. PERKINS spoke of the causes of the failure of sanatorium treatment. Cases of tuberculosis were not sent up at a sufficiently early stage. Sometimes diagnosis was delayed, and milder measures were first tried; sometimes from kindness the patient was not told of his illness in plain terms. He had seldom met with a refusal to enter a sanatorium provided it was possible in the early stages confidently to hold out hope of recovery. Diagnosis should be pushed further back. Not those patients only with tubercle bacilli in sputa should be sent to a sanatorium, but especially cases of early haemoptysis, tuberculous pleurisy, and cases of progressive emaciation and debility with some pyrexia but few physical signs. He hoped much from change of occupation to an outdoor life after the sanatorium. The National Association for the Prevention of Consumption was founding a colony with the intention of giving these men a thorough grounding in the various branches of outdoor and farm work, in the hope of enabling them to settle on the land.

Dr. F. R. WALTERS was firmly convinced of the great value of sanatorium treatment, and thought the only question was as to how far it could be replaced by dispensary or home treatment. Restoration to health in a sanatorium was usual if the case was suitable and the treatment early, thorough, and prolonged. Suitable cases were those with limited lesions, only moderate constitutional disturbance, no serious complications, originally of fairly good constitution, and without history of massive or virulent infection. It was not usually possible to keep a non-wealthy patient in a sanatorium until he was cured. Three or four months might be needed before graduated exercise was even begun. Relapses were usually caused by disregard of simple rules of life, by late application for treatment, or by premature return to unfavourable conditions. He called attention to the need for physiological subdivision according to febrility and exercise capacity, under the purely anatomical groups, as done in the Surrey County Council statistics. From these it appeared that, if patients applied for treatment before they had lost their full working capacity, two-thirds would be fit for full work twelve months later, whereas of those who waited until they were feverish five times fewer would have full working capacity a year later. Shorter expectation of life in the tuberculous did not show that sanatorium treatment was useless; it might result from a poor constitution *quid*

tubercle, or from unsatisfactory after-conditions. Dr. Walters urged the importance of prompt and more systematic treatment of the febrile tuberculous, health colonies to bridge the gap between sanatoriums and full work, more universal training in sanatorium ways, and greater continuity of treatment.

Dr. B. S. RICHMOND said that he had urged the Bermondsey Borough Council to take municipal beds for the treatment of tuberculous patients. During 1911-12-13 the number of cases sent to the Maitland Sanatorium was 1,345. In June, 1914, only 7 deaths had been reported. Three cases were in touch with the medical officer four years after discharge from the sanatorium. In each case the occupation had been changed. The great difficulty lay in the inability to get suitable occupation, two or three months being spent in a state of semi-starvation looking for work. The way to keep up the immunity gained in a sanatorium was to improve the social condition of the patient, so that he could take advantage of the education received there. The value and limitations of sanatorium treatment should be settled, and it should be made clear that every one was not suitable for sanatoriums, and that the sanatorium was only one link in the chain.

Mr. H. KINGSLEY WOOD, chairman of the London Insurance Committee, said that this was not a single but a mixed problem, and must be treated together with housing, maternity and child welfare, etc. Short periods at a sanatorium were useless; the patient returned to a worse stress than when he left home.

The Right Hon. C. W. BOWERMAN, M.P., secretary of the Trades Union Congress, said that all were aware of the great value to workmen of sanatorium treatment. If the skilled judges in charge of institutions were enabled to follow men discharged as cured, or nearly cured, into their ordinary domestic surroundings one of two things would happen—their hearts would be broken, or they would help to form a band of men determined to improve the housing accommodation in this country.

The discussion was adjourned till November 26th, when Dr. A. Niven Robertson, Dr. Grace Calvert, Dr. Camac Wilkinson, Dr. Mathu, Dr. Henry Ellis, Dr. Jane Walker, Dr. John Sorley, Sir William Osler, and Dr. H. J. Cardale will take part.

Reviews.

THE TREATMENT OF SYPHILIS.

A book dealing with a special province of medicine which has been in familiar use by students and practitioners for twenty-four years may be regarded as having passed beyond the fear or favour of the reviewer. Sir MALCOLM MORRIS's handbook on *Diseases of the Skin*¹ has established itself as a classic. Its popularity is shown by the fact that the first edition, which appeared in 1893, was reprinted in 1894; other editions and reprints have followed each other at fairly short intervals, and the fifth was published in 1911. The sixth edition, in which, as in the fifth, the author has had the advantage of the collaboration of Dr. S. Ernest Dore, is larger by more than two hundred pages than the first, an expansion which may be taken to represent as on an outline map the growth of dermatology in the last quarter of a century.

Among the new features of the book are an article on lichenification, a subject which in previous editions received only incidental mention. The article on that obscure condition, prurigo, the pathology of which is as vague and elusive as the definition of an archdeacon, and those on atrophodermias, have been rewritten, and some additions have been made to the section on the diagnosis of local eruptions. The progress that has been achieved in the therapeutic use of radium and other physical agents is briefly but sufficiently indicated in connexion with the conditions in which they have been found useful. Several new illustrations of the commoner forms of cutaneous disease have been introduced.

But the most important change is in the section on syphilis, which has been enlarged and to some extent

¹ *Diseases of the Skin. An Outline of the Principles and Practice of Dermatology.* By Sir Malcolm Morris, K.C.V.O. Sixth edition, revised by the author with the assistance of S. Ernest Dore, M.D. (Camb.), M.R.C.P. London: Cassell and Co., Ltd. 1917. (Cr. 8vo, pp. xv + 700; 10 colour and 72 black-and-white plates. 12s. net.)

remodelled, with the object of furnishing guidance to those entrusted with the task of carrying into effect the recommendations of the Royal Commission on Venereal Diseases relating to diagnosis and treatment. As Sir Malcolm Morris was a member of that Commission his views on this subject are of particular importance. His conclusion as to treatment is that although mercury is still indispensable, it must now yield the first place to the arsenobenzol compounds. He has seen cases that had been absolutely refractory to mercury or to that agent combined with potassium iodide give way rapidly to salvarsan. The advantages of a combination of both agents are strikingly proved by figures furnished to the Royal Commission by Lieut.-Colonel Gibbard of the Military Hospital, Rochester Row. In 378 cases in which mercury alone was used the percentage of clinical relapses was 33; in 152 cases in which salvarsan and mercury were combined the percentage was only 3.9. A clear account of the method of administration of salvarsan and neo-salvarsan is given, and the author says that as between the two preparations the results obtained by Dr. MacCormac and himself incline him to give the preference to salvarsan as more stable and also somewhat more rapid in its effects. In all primary cases the disease was immediately arrested, and in none which could be followed up did any secondary symptoms, with the exception of sore throat, occur. In secondary cases the lesions of the skin and mucous membranes quickly disappeared. In tertiary cases, even in some that had resisted the vigorous employment of mercury and potassium iodide, lesions of the skin and tongue rapidly healed, and most satisfactory results were obtained in gummata and bone disease, in visceral syphilis, orchitis, and enlarged glands. Sir Malcolm Morris agrees with other observers in stating that little benefit is to be expected from the administration of salvarsan in syphilis of the nervous system. He sums up his experience in the statement that salvarsan may abort syphilis if given in the primary stage and may bring about a permanent cure in later stages; but absolute cure cannot be reckoned on with confidence, and therefore in every case salvarsan should be reinforced by mercury.

INDIAN HYGIENE.

A NOTABLE addition to the large and growing body of Indian sanitary literature has been contributed by Mr. RAMES CHANDRA RAY, L.M.S., whose *Outlines of Hygiene and Public Health*,² recently published, display the same keen assimilation, effective condensation, and clear methodical exposition which are so conspicuously manifested in his *Outlines of Medical Jurisprudence*, a treatise which has reached its fourth edition, and to which the present work is designed to be a companion and complement, "so as to complete the subject of State medicine." The author states in his preface that he has "written this book with a special eye to tropical, and particularly Indian, conditions, and has meant it to be used by the university candidate during his pupilage, and by him as a practical sanitarian during the practice of his profession." "Sanitation," he adds, "now looms large in the university curriculum as well as in the daily practice of the medical profession."

All conditions bearing upon personal and public health are set forth systematically, and, by the use of various types, figures, and letters, subjects are logically arranged and discussed and rendered easy of reference. Portions of the book "useful to sanitary officers" are specially indicated by a note appended to the table of contents, and parts which the student need not read for examinations are printed in small type. The index might be amplified and improved.

The sanitary faults and shortcomings of Indian people and communities are frankly pointed out and remedies clearly prescribed. Special features of the work are: A detailed description of biological sewage purification and its practical adoption in India; a classified list of mineral springs in India which are little known and might with advantage be further investigated; a complete list of human parasites, including an account of their life-history; full information regarding Indian climates and health resorts; a sanitary gazetteer of districts and hill stations

throughout the Indian empire. This last is somewhat sketchy, and might be amplified and elaborated, but this process would probably be inconsistent with the size and scope of the volume. The chapters on infections and infectious diseases are well done and up to date. The statistical chapter is devoted to general principles and methods. Some information regarding births, deaths, and marriages and the incidence and mortality of special diseases in different parts of India would be interesting, and statistical evidence of the reduction of sickness and mortality among soldiers, prisoners, and the general population by means of sanitary reforms might be added in a future edition. A chapter on sanitary laws and regulations in India, which are very cursorily referred to, might also be embodied in the work. There are several useful illustrations and ingenious tables throughout the book, and arithmetical and mathematical details of a more abstruse character appertaining to various subjects are very properly relegated to an appendix.

Altogether these *Outlines* are well adapted for the purposes for which they have been compiled. The printing and get up of the volume are creditable to the Nababibhakar Press.

NOTES ON BOOKS.

AMONG the duties undertaken by the Universities Bureau of the British Empire, which was founded in 1912, has been the publication of a *Yearbook of the Universities of the Empire*.³ For reasons of economy it was decided not to issue the *Yearbook* last year, but publication has now been resumed as it was held that suspension for more than two years would defeat the purpose of such a chronicle. The present edition thus appears as the *Yearbook* for 1916 and 1917. The editor is Dr. Alex Hill, honorary secretary of the Bureau. The general information published in the last edition with regard to conditions of admission, faculties, degrees, scholarships, and so on, has not been repeated, since few changes have been made in the regulations of the universities during the war; but the outstanding academic events of the past two years are briefly recorded, and the lists of office-bearers in the various universities and their constituent colleges have been carefully revised. There is also a full index to the names of professors, lecturers, and demonstrators mentioned throughout the volume. This *Yearbook* will be found a very useful directory to the fifty-six universities of the British Empire.

School managers, school teachers, and all interested in the education of the poor should read *The School Camp*,⁴ a book in which much light is thrown on the uses and abuses of school clinics and open-air schools. Here will be found, set out in most attractive style, an account of what has been done at Bradford and other cities during the last decade to remove the disabilities that come to the children of poverty, and make even the best teaching difficult or impossible. It contains chapters on these disabilities, and on the way in which they may be relieved or neutralized by improved school environment and camps—baby camps, girls' camps, and boys' camps—and on the many things that yet remain to be done to improve the education of the children of the poor. Miss McMillan has intuition, and writes with feeling and the most profound sympathy for children.

In *The Framework of a Lasting Peace*⁵ Mr. LEONARD S. WOOLF surveys the subject of international organization for preventing war. He compares certain published programmes, laying emphasis upon the matters in which there is agreement rather than upon the differences between the various schemes. He begins with the obvious fact that mankind has only two methods for regulating the relations of groups as well as of individuals: one is force, and the other (which he defines as government and organization) is the laying down of general rules. Before the war, regulation of international relations by general rules had reached a considerable degree of development, whether under the name of international law, or under some less imposing title. Mr. Woolf maintains that whatever name may be given to these rules the fact of their existence and influence cannot be altered, for they are applied daily,

³ *The Yearbook of the Universities of the Empire, 1916 and 1917.* London: H. Jenkins, Ltd. 1917. (Demy 8vo, pp. 412. 7s. 6d.)

⁴ *The Camp School.* By Margaret McMillan, C.B.E. London: George Allen and Unwin, Ltd. 1917. (Cr. 8vo, pp. 178. 3s. 6d. net.)

⁵ *The Framework of a Lasting Peace.* Edited by L. S. Woolf. London: George Allen and Unwin, Ltd. 1917. (Demy 8vo, pp. 154. 4s. 6d.)

² *Outlines of Hygiene and Public Health.* For Students, Sanitary Officers, and Practitioners. By Rames Chandra Ray, L.M.S. Calcutta: Hare Pharmacy. (Cr. 8vo, pp. ii + 512.)

consciously or unconsciously, in nine-tenths of all international commerce and intercourse. As recognition of this must underlie any scheme of international government to prevent war, the problem is to establish rules which will be generally accepted and applicable to all the relations between the groups concerned. The task is thus twofold: there is the laying down of general rules, and there is the application of them to particular cases. A point brought out in this analysis of schemes is that none of them goes beyond the co-ordination of already existing methods of settling international disputes and regulating international relations. Mr. Woolf suggests that a small permanent body will be needed with the sole duty of watching over and promoting the fulfilment of the pacific obligations undertaken by the signatory Powers.

WAR EMERGENCY FORMULARY.

ADDENDUM TO THE BRITISH PHARMACEUTICAL CODEX.

In our issue of August 11th, when commenting upon the withdrawal of certain galenic preparations containing sugar and glycerin from the *British Pharmacopoeia*, we mentioned the fact that a supplement to the *British Pharmaceutical Codex* would shortly be issued containing alternative formulae for many of the preparations most commonly used. After somewhat more delay than was expected, this supplement has now been published. It contains alternative formulae for forty-three of the deleted B.P. galenicals, and also eighty-eight others which are intended as substitutes for commonly used preparations of the *Codex* which contain glycerin or sugar. The formulae have been approved by representatives of the British Medical Association, and by agreement with the Pharmaceutical Society the Central List of Stock Mixtures has been revised and the new alternative formulae have been substituted for those preparations containing glycerin or sugar which have not been deleted altogether. It has also been mutually agreed to recommend that as from December next the new preparations should be used in all new prescriptions, and that all local formularies should be revised on the appointed date, the preparations of the *Addendum* being substituted for those deleted from the *British Pharmacopoeia*.

The new preparations are to be distinguished by the addition of the initials W.E.F. (War Emergency Formula) to the name of the original preparation, the titles of the ex-pharmacopoeial and *Codex* preparations having been retained in all cases; it will only be necessary that prescribers and dispensers be instructed by Local Panel and Pharmaceutical Committees respectively that the new alternative formulae must always be used in the place of the original ones.

So far, therefore, as National Health Insurance is concerned the position is perfectly clear, and if the above recommendations are acted upon by the local committees the formulae in the *Addendum* will necessarily be used in dispensing all prescriptions containing the preparations in question. The position with respect to prescriptions for private patients is, however, somewhat different, and in these cases it unfortunately appears very doubtful whether the letters W.E.F. are sufficiently distinctive to entail any obligation on the part of the dispenser to dispense *Addendum* preparations exclusively, especially as the same letters were suggested some time ago for use in designating similar private formulae. As the greatest possible degree of uniformity is obviously desirable, we suggest that, in order to prevent any misunderstanding, the abbreviation Cod. should be used in addition to W.E.F. in all private prescriptions which are likely to be dispensed by pharmacists not known to the prescriber.

The formulae themselves do not appear to require much comment. The substitutes for ex-pharmacopoeial preparations are distinguished by an asterisk after the title, but in the case of two preparations (*extractum gossypii radice corticis liquidum* and *syrupus rosae*) the asterisks have been omitted in the copy examined, no doubt by a printer's error. The sugar or syrup in the original formulae is sometimes merely omitted and in other cases is replaced by glucose or by a preparation to which the title "syrup substitute" is given and which consists of a tragacanth mucilage containing 0.5 per cent. of chloroform. Glycerin is either simply deleted or its place is taken by alcohol, glucose, or syrup substitute, according to whether

it is desired to imitate the preservative action of glycerin or its physical characters. In a series of memoranda for prescribers and dispensers it is noted that the physical properties of many of the preparations are necessarily somewhat altered, although their efficiency is not impaired, and also that some preparations may not keep quite so well as heretofore; in doubtful cases it may therefore be advisable to dispense them in a comparatively fresh state. Doses remain approximately the same in all cases, but the strengths of the ingredients in certain of the *Glycerina* have been reduced, as the removal of the glycerin results in the same therapeutic effect being obtained with a smaller proportion of the principal medicament. The only error of any importance which has been committed consists in the direction to use maize or rice starch in compound liquorice powder, an act which is illegal as it is now forbidden to use these starches in any but articles of food. In practice this error will, no doubt, be rectified by the substitution of potato starch.

"STATISTICAL WIRE-PULLING."

We have received the following letter:

SIR,

I do not propose to discuss the polite references in your leader of November 10th to my alleged "statistical incompetence and controversial blindness," etc. But I would remind you that in the three points you urge against me you have not succeeded in getting rid of my arguments.

In regard to anthrax, it remains unchallenged that Selavo's serum (used in practically every case) has not succeeded in reducing the number of deaths. I do not dispute that the numbers to the living population are infinitesimally small; hence it is that the rates per million cannot be given. The fact that there have been recent cases of anthrax due to infected hair does not affect my position or my argument. You wish to know, in order to "check my figure," the number of years I have averaged the anthrax mortality prior to the introduction of Selavo's serum. I took the quinquennium 1891-95, immediately preceding that of 1896-1900, in the middle of which (between 1898-99) Selavo's serum was introduced into this country. It averages 8 per annum. If we take the whole fifteen years which my figures cover—1901-15—the average mortality is, in round figures, 16 per annum, and if a corresponding fifteen years are taken immediately prior to the introduction of the serum—namely, from 1885 to 1897—the average works out at 9. The statistics in quinquennia as furnished by the Registrar-General are as follows:

Prior to Introduction of Serum.			Subsequent to Introduction of Serum.			
1881-5.	1886-90.	1891-5.	1895-1900.	1901-5.	1905-10.	1911-15.
12	9	8	15	17	17	14

These figures, I think, sufficiently justify my conclusions.

You complain that I omit measles from my tables, and you select certain years (from 1901 to 1915) in order to show how this disease has increased. Had I adopted this course I should probably have been charged with further delinquencies similar to those you have already laid at my door. While quoting the year 1915 as evidence of the increase of measles, you omit to say that the year previous (1914) showed, with two exceptions, the lowest annual death-rate on record.

I do not profess to understand all the mysteries of epidemiology, with its exacerbations and remissions, but I do believe, and statistical history provides a basis for my belief, that in proportion as sanitary laws are efficiently administered, so the severity of epidemic diseases as a whole decreases. This is illustrated even in the case of measles, which, for the decennium 1901-10, showed a lower average death-rate than for half a century previously. The sudden rise from 247 per million in 1914 to 462 in 1915 may or may not arrest the down-grade of the next average decennial figure, but even the last quinquennial average of 343 is well under the totals of the decennia 1881-1900.

Now I am quite alive to the fact that the measles death-rate has not declined proportionately to that of other epidemic diseases, and the reason for this delay constitutes a subject of considerable interest and speculation. Measles

is one of the mild "zymotics" (so-called) which lingers among children now that the coarser "zymotics" bred of the grosser insanitary conditions of earlier years have passed away. It cannot therefore be expected to decline with such rapidity as its fellows. In the decades 1861-70 and 1871-80 the death-rates per million were 393 and 334 respectively. In 1875 the Public Health Act was passed, and with it came an enormous decline in small-pox and scarlet fever. In the decennium following the passing of that beneficent Act small-pox mortality dropped from 230 per million to 44 per million, and has been declining ever since. Scarlet fever also dropped from 649 to 312, and is still declining. But measles, instead of declining, showed a tendency to increase, for the death-rate per million rose from 334 to 406 in 1881-90, and to 414 in 1891-1900. Then came a drop (1901-1910) to 309, and I believe we shall find in the next decennium that a still further decline will be manifested.

But, it will naturally be asked, Why did measles mortality rise during the years 1880-1900, at a time when small-pox and scarlet fever so manifestly declined? My own opinion is (and I give it for what it is worth) that two chief factors were concerned in the increase: (1) The shifting on to measles of some part of the enormous decline of small-pox and scarlet fever. (2) The overcrowding of the elementary schools in the early years of the passing of the Education Act.

I would respectfully suggest that the selection of certain years is not in accordance with statistical accuracy, but an average taken over a number of years, allowing for exacerbations and remissions, can alone furnish an average upon which a sound judgement can be based.

The wire-pulling of commercial interests behind the preparation of salvarsan is notorious everywhere outside the editorial office of the BRITISH MEDICAL JOURNAL. The same may be said of all the vaccines and serums so persistently advertised. Nor is it the first time that this has been stated, for even in the presidential address of the Section of State Medicine, at the Annual Meeting of the British Medical Association itself, these words have been heard: "The whole of bacteriological theory and practice is steeped with commercial interests." Dr. George Wilson, afterwards a member of the Royal Commission on Vivisection, said this in 1889. If it was true then, how much more powerful must the commercial element be now! The morbid sensationalism among society ladies and panic-stricken gentlemen on public platforms in connexion with syphilis (which, fortunately, has now fizzled out) is shown to have been ridiculous by the statistics I have published. We all know "the statistics are incomplete": all the more reason, then, for the sensation-mongers to have taken a little less for granted, inasmuch as the only statistics available do not bear out their assumptions any more than they justify the equally sensational claim in certain quarters as to the life-saving properties of salvarsan.

I remember an editorial remark published in your columns some years ago, which said: "Fashions in medicine have their little day and cease to be. Our back numbers are the graveyards of discarded theories." It may not be long before Scavo's serum, salvarsan, and a few other fashionable drugs of an equally questionable and dangerous type, which I have dealt with in my statistical pamphlet, may find a similar resting place.

I am, Sir, yours faithfully.

WALTER R. HADWEN, M.D.

Gloucester, November 13th, 1917.

We will make one more attempt to explain the nature of the errors in Dr. Hadwen's statistical methods, though without much expectation of convincing him that he is blundering. In the first place, we pointed out that the fluctuations of the annual numbers of deaths from anthrax were of the order attributable to the operations of chance, and that no statistically valid argument as to a real increase or decrease of deaths could be based upon such figures. This elementary proposition is still, it seems, unintelligible to Dr. Hadwen. He now contrasts an annual average of nine deaths taken over fifteen years with one of sixteen. If Dr. Hadwen consults a textbook of statistical method he will find that when the number of "successes" is very small in proportion to the number of "trials" (in the present case deaths from anthrax are "successes" and the population at risk represents the number of trials), the approximate measure of chance fluctuations in the number of successes is the square root of that number. Hence the difference between the two averages—seven—is subject to an error of sampling of the order of ± 5 , and is therefore entirely without significance.

An application of the same method to Dr. Hadwen's full series leads to the same conclusion. Dr. Hadwen, indeed, seems to have a faint suspicion that his suggestion of a significant increase in the number of deaths was rash, and naively remarks that "it remains unchallenged that Scavo's serum (used in practically every case) has not succeeded in reducing the number of deaths." This remark reveals a lower depth of statistical incompetence than even we (and we were not optimistic) had suspected to exist within the precincts of the British Union for the Abolition of Vivisection. It would almost seem that Dr. Hadwen supposes a valid inference can be drawn as to the effects of a method of treatment, *without knowledge of the numbers of cases which were and were not so treated, together with the respective deaths.*

Dr. Hadwen next passes to a more congenial task. We are said to have selected certain years for the purpose of showing that measles has increased. What we really said was that the death-rate from measles has not declined, and we merely quoted the rates for the first year of Dr. Hadwen's series and thereafter at intervals of five years; we could not quote the 1916 figure, which should have concluded the series, because the report containing it is not yet published, and had therefore to insert 1915. If Dr. Hadwen prefers the quinquennial averages for his series, we are pleased to give them; they are, 1901-5, 327; 1906-10, 291; 1911-15, 343. The gravamen of our criticism on this head was that, while dilating upon the decline of scarlet fever, Dr. Hadwen omitted all reference to the course of an equally important zymotic of obscure origin.

Finally, as to syphilis. Dr. Hadwen wrote, "the death-rate, which had been gradually going down, suddenly increased and grew higher and higher until 1915, when large numbers of men went to the war, and would be included in the military statistics." He wrote this although he knew, and now admits that he knew, that the official records of deaths from venereal diseases were altogether incomplete. Dr. Stevenson (Appendix I, Final Report of the Royal Commission on Venereal Diseases) said: "The worthlessness of the returns as an absolute statement of the number of deaths from venereal disease scarcely requires demonstration." Dr. Stevenson thought that the recorded figures might be some index of a decline, but that the considerations in support of even this were indecisive.

Knowing these limitations and objections, Dr. Hadwen published the unqualified statement we have quoted, and in his letter to us has the hardihood to assert that the views of those who believe syphilis to be an evil of national importance are instances of morbid sensationalism proved to be ridiculous by the statistics he has published.

In sole support of the charge that his professional colleagues are the accomplices or the tools of commercial adventurers, Dr. Hadwen cites an *obiter dictum* uttered twenty-eight years ago, which has been part of the stock-in-trade of the opponents of modern scientific medicine ever since.

Although we grudge space devoted to the exposure of mere blunders in statistical reasoning, we might, in the interests of science, think it our duty to continue such exposures. But the reiteration of charges offensive to the honour of professional men puts a controversialist beyond the pale of discussion. Dr. Hadwen will doubtless continue his career of misrepresentation, but it cannot be in our columns.

THE report of a commission appointed by the French Parliament in April, 1916, to consider the appointments open to men discharged from the army on account of wounds or disease contracted in the war has recently been published. It gives an unexpectedly favourable view of the situation. It was feared that the majority of such men would be anxious to get into Government employment, and preparations had been made to provide a number of openings for them. There have been a great many more applications than vacancies for the position of letter carrier and receiver of direct taxes, and there has also been a great run on the post of lock-keeper, but for all other berths comparatively few applications have been made. Thus, for 70 clerkships in the State railways there were only 9 applicants, and only 24 for 293 places in the Paris *octroi*. The conclusion of the committee is that the majority of discharged men wish to make their own way in industry, agriculture, or trade.

British Medical Journal.

SATURDAY, NOVEMBER 24TH, 1917.

THE TRANSFUSION OF WHOLE BLOOD.

THE value of the transfusion of blood in cases of severe haemorrhage has not hitherto received, perhaps, all the attention it deserves. There can be no doubt as to the fact that loss of blood is one of the chief factors in bringing about a fatal issue in the wounded in war. This has been shown both in wounds of the trunk and in those of the extremities. It is notoriously true, for example, in abdominal cases, as proved by the statistical records recently published concerning such injuries. The haemorrhage leading to a fatal issue may be primary or secondary. Methods of meeting the emergency have largely been restricted to efforts to control the bleeding points and the injection of normal salt solution into the depleted circulation, together with such subsidiary measures as maintaining the body heat, and complete rest in a quiet darkened room. The ideal therapeutic measure would obviously be the replacement of the lost blood.

Prior to the war this subject received much more extensive consideration in the United States and Canada than in this country. While it is true that the transference of blood from one individual to another has been attempted from time to time for centuries, the earlier methods were beset by so many technical difficulties that they were abandoned. In modern times these technical difficulties have been largely overcome by the work of Carrel and Crile, while the more general application of transfusion has been rendered possible by the introduction of the use of syringes with cannulae and by the citrate method. Of these may be mentioned Kimpton's citrate method, in which a glass cylinder is used to mix the blood and citrate, and Lindeman's syringe and cannula apparatus. Various modifications of these methods have been introduced by other surgeons. The instrument introduced by Unger, consisting of a two-way stopcock apparatus, is ingenious and answers the purpose well.

The earlier cases of transfusion of blood during the present war were reported by Canadians. Thus Bruce Robertson reported a series of four cases in France in the *BRITISH MEDICAL JOURNAL* of July 8th, 1916. Primrose and Ryerson reported two cases from No. 4 Canadian General Hospital at Salonica in the *BRITISH MEDICAL JOURNAL* of September 16th, 1916. Subsequently, we are told, six other cases were transfused in this unit at Salonica. An instructive series of sixteen cases was reported from the British front, by Fullerton, Dreyer, and Bazett.¹ In the present number of the *JOURNAL* will be found a second series of thirty-six cases reported from France by Bruce Robertson. A careful study of these cases will convince the reader of the enormous value of the transfusion of blood in cases of severe haemorrhage, and the subject is clearly worth the very serious consideration of those at work in casualty clearing stations and advanced operating centres. We cannot discuss all the various phases of the question, but sufficient evidence is forthcoming from the papers

already published to show that transfused blood will replace and assume the part of the blood lost by one who has suffered severe haemorrhage. The coagulability of the blood is increased, and the patient acquires increased resistance to infection; shock is diminished, and the case becomes a greatly improved surgical risk.

The method suggested by Fullerton, Dreyer, and Bazett, and that described in this issue by Hull, are ingenious devices for direct transfusion, but all such direct methods are open to the objection that the amount of blood transfused cannot be measured. It is difficult to estimate the amount from the symptoms shown by the donor; for example, he may faint because of the psychological effect of his surroundings, and not because of loss of blood. Another objection to the direct method is the constrained position in which the recipient and donor must lie during the operation. They cannot alter their relative position to one another; this restriction of movement is not necessary with either the syringe or citrate method. In a case of very severe haemorrhage this may be a matter of no little importance for the patient, for whom rest is so essential. The donor does not appear to suffer any permanent ill effect. The usual amount of blood transferred has been from 700 to 1,000 c.cm. Robertson mentions five cases of the injection of 1,200 c.cm., but does not say whether in each case all the blood came from the one donor. It may be worth while, therefore, to say that we know of an instance in which 1,140 c.cm. were withdrawn from one donor without causing him any serious inconvenience.

Particular attention may be called to the conclusion at which Colonel Gordon Watson has arrived after seeing Major Robertson's results. He says: "Transfusion of blood after primary haemorrhage is a life-saving device of the greatest value and enables urgent operations to be successfully performed under conditions otherwise hopeless."

The dangers of transfusion are twofold—first, the transmission of some infectious disease, and secondly, the transfusion of blood having unsuitable biological characters. The first danger may be avoided by a careful clinical examination of the donor of the blood, syphilis being excluded by a Wassermann test; the second by determining the iso-agglutinin characteristics of both donor and recipient, and selecting a donor having a blood with iso-agglutination reactions like or suitable to the recipient, preferably the former. Although the most severe reactions, occasionally fatal, following transfusion occur when the serum of the recipient agglutinates the corpuscles of the donor (Ottenberg), minor reactions of agglutination and haemolysis may be observed when other unsuitable donors are taken; they markedly lessen the therapeutic value of the transferred blood. It is therefore important to obtain a suitable donor previous to any attempt at transfusion. Human bloods possess two iso-agglutinins and two iso-haemolysins, and may be divided into definite groups according to their iso-agglutination and iso-haemolytic reactions.

The ideal condition for transfusion is that the bloods of the donor and the recipient should belong to the same group. The simplest complete method for testing the blood previous to transfusion is perhaps that recently described by Moss.² Two standard human serums, each containing a different iso-agglutinin, are kept in stock in the laboratory. At the time of the transfusion a drop of blood is obtained in a test tube containing 8 to 10 c.cm. of normal saline, from the recipient and each of the possible donors. Having shaken the tubes containing

¹ *Lancet*, May 12th, 1917.

² *Journal of the American Medical Association*, June 23rd, 1917.

the different blood suspensions, to ensure thorough mixing, a drop of each blood suspension is mixed with a drop of each of the two standard serums on a hanging drop slide and incubated for one hour at 37° C. The preparations at the end of an hour are examined under the microscope and the presence or absence of agglutination noted. A suitable donor is indicated by the blood showing a similar reaction to that of the recipient.

In the present issue of the JOURNAL Major Lee discusses the selection of suitable donors for transfusion and describes two very simple methods of testing for them. The first test simply determines whether or not the donor's blood is agglutinated by the recipient's serum. By this method the severest reaction following the transfusion of blood from unsuitable donors is prevented. The second method is based on the same principle as that suggested by Moss. As pointed out in Lee's paper, the blood groups of both donor and recipient may be determined by this method, and the selection of an ideal donor—that is, one belonging to the same blood group as the patient—may be made.

At the front, where transfusion of blood is of the greatest value, where laboratory facilities are often not available, and the demand is as immediate as it is imperative, it is fully justifiable to take the risk and proceed with the transfusion without investigating the characteristic features of the blood.

LEGISLATIVE CROSS CURRENTS.

THE similarity between the present position of the proposal for a Ministry of Health and that of the Education Bill is rather striking. The principles of both command general acceptance, both have strong supporters within the Government and in Parliament, yet both hang fire. The reason in each case seems to be twofold: first, the dislike of local authorities, and the constituencies by which they are elected, for anything that savours of the increase of centralization and the diminution of local self-government; and, secondly, the contrary opinion of many who believe in the advantages of the increase of centralization and of ministerial powers of direction and control. This last opinion, not unnaturally perhaps, commends itself to permanent officials, and the politician has also to take account of the distaste with which every ministry views any proposal for handing over any of its departments or powers to any other.

The strength of these contrary currents is for the moment so nearly equal that a sort of eddy of opinions is produced from which the distracted minister seeks to escape by way of concessions designed to conciliate the one side or the other. Mr. H. A. L. Fisher, it is said, has succeeded in coming to an understanding with bodies representing the local education authorities, which leads him to hope that they will not oppose the second reading of the Education Bill, and that an agreement will be reached as to amendments in committee.

The controversy with regard to both schemes may seem for the moment to be about matters of detail, but the difference between the two ways of thinking is deep. Both have existed from a very early state of European civilization. There have always been those who, having conceived an ideal state, are so impressed by the truth and beauty of their concept that they wish to apply it at once to every relation of life. Often they show themselves intolerant; in a ruder age they sent their opponents to the scaffold or the stake; in a gentler age they in Germany sent them to prison, in France they dubbed them reactionaries,

and in this country, dropping as they believed into French, they said their opponents followed a policy of *laissez faire*. There have always also been people of the other way of thinking, who have looked at social problems from what may be called the biological point of view. They have had regard to the history of the growth of institutions and the characters and special capabilities of different races, seeking to encourage and if possible to hasten the natural development, but not to cut across the stem in order to graft on to it a new top.

Among philosophers very respectable opinions could be quoted on either side, but it may be doubted whether abstract speculation can help us in the matter, so that we have to rely upon practical experience of the two plans at work. The influence of the German *Kultur* in this country has been wider and deeper than most of us are perhaps now willing to admit. Quite unconscious of the source of their inspiration large numbers of energetic people, animated by altruistic sentiments, have become strongly imbued with the idea of the merits of the centralized state. They desire the beneficent despotism, not indeed of a Caesar or Kaiser, but of an all-embracing committee called the Government or the State. They shut the eyes of the mind to the indisputable fact that that is not the road along which the other culture, that of which this country is the mother, has walked in the Overseas Dominions or in the United States of America—the culture for which these nations, with allies who have gone the same road, are now fighting.

Those who take what we have ventured for convenience to call the biological view will be attracted by the arguments which Dr. W. A. Brend stated at large in a book recently reviewed in our columns, and some who have not read the book will be grateful to have their attention directed to a briefer statement he has published in the current *Edinburgh Review*. The main suggestion which seems to arise out of the consideration he has given to the history of the present position of public health administration and inquiry is that the natural line of growth is towards the strengthening and consolidation of local administration rather than towards increased centralization. The Prime Minister told a deputation from Scotland the other day that all-round devolution was necessary. He was speaking of the necessity of delegating from the Imperial Parliament to local bodies questions which are purely local, but the principle applies, whether the central authority be Parliament or a ministry. Dr. Brend urges the strengthening of local administration on two grounds; the first is that most of the larger local authorities are now fully alive to their responsibilities, and many county boroughs are displaying zeal and energy in attacking the causes of disease and improving the conditions of health. He cannot defend some of the smaller urban and rural authorities, and their supineness in public health matters is undoubtedly largely responsible for the willingness of so many persons to accept the idea of increased centralization. But his second ground for strengthening the local authorities is that experience shows that a central authority may display neglect and incompetence as great as that of a rural district council, and that a central authority has, in fact, often hindered rather than assisted the progress of schemes for improvements formulated by the large county boroughs. The record of the Local Government Board in this connexion is far from satisfactory: its presidency has been the mounting block for politicians who have ridden away at the first chance; its complex affairs, in which the prevention of disease has always formed a subordinate part, has been administered by a

secretariat consisting of able officials, skilled in precedents and the interpretation of laws and rules, but wholly untrained in knowledge of the sciences from which these laws and rules take origin. They are under no obligation to consult medical or sanitary experts, or to accept their recommendations, for by a vice of constitution inherent from its earliest days—a vice due to a political piece of jugglery—its medical department is in a place of inferiority, starved of staff and of funds.

Dr. Brend makes a courageous attempt to distinguish between those duties which can most usefully be assigned to a central authority and those which properly belong to the local authority. Consideration of the duties which should fall upon a central authority at once raises the question whether a really efficient Ministry of Health could be obtained by taking over the public health and medical branches of existing Government departments. It is quite easy to make a good story by the enumeration of the many central departments which have to do with matters affecting the health of the people, but we must remember that they came into existence because the various ministries found a need of skilled advice on public health and medical questions. If they were all taken over to-morrow by a new ministry, the other ministries which must remain concerned with public health and medical questions would be compelled either to appoint new medical advisers for themselves or be continually referring a large proportion of important questions coming before them to the Ministry of Health. Apparently in any case the India Office, the Colonial Office, the Foreign Office, and the Navy and the Army must be left outside the scope of the Ministry of Health and must each have its own medical and sanitary departments. Dr. Brend's contention, as we understand it, is that the main duty of a central ministry of health should be research into general questions, and the unbiassed criticism of results. There are two lines of research: the one clinical and laboratory—such work as the Medical Research Committee has been doing for the Army—and the other statistical. Probably everybody will agree with Dr. Brend that the most complete and reliable statistical work in public health at present conducted in this country is that carried out by the Registrar-General for England and Wales, and he is thus led to propose that the office of the Registrar-General should be enlarged so as to form the one central statistical office for all matters relating to public health, which might then be called the Ministry of Health. The office he proposes would continually investigate the causes and distribution of disease, and would subject to expert criticism all public health measures before they were introduced into Parliament. It would need a staff of experts in every branch of medical science and hygiene. Other matters which would be administered centrally are the Acts for the prevention of food adulteration, for the notification of infectious diseases, and the regulation of sanitary conditions in factories; the control of these matters might remain where it is. With regard to local administration, he suggests the formation of a local health council nominated by elected local bodies, one-half by the local authority, which would mean the transference of its sanitary committee to the new authority, one-quarter by boards of guardians, and the remainder by managers of local hospitals and by the Ministry of Health.

There is, it will be seen, considerable resemblance between these proposals for local administration and those put forward by the British Medical Association,

but there is this great difference—that Dr. Brend does not provide for the representation of the local medical profession on the local health council.

THE LIFE OF LISTER.

THE biography of Lord Lister,¹ which Sir Rickman Godlee undertook to write soon after his uncle's death in February, 1912, was published this week. It is a handsome volume, in large octavo, illustrated by several portraits of Lord Lister himself, and of his grandfather, his father, his mother, his wife, and his father-in-law, James Syme. Sir Rickman Godlee had many qualifications for this task. In his student days he was able to compare the old system of surgery, then in full swing at University College Hospital, with Lister's practice in Edinburgh; he had access to his uncle's notebooks, many pages of which he wrote to his dictation, while for a time he was almost a daily witness of what was taking place in Lister's laboratory. Sir Rickman Godlee modestly suggests that the fact that he was so nearly associated with Lord Lister, who watched over his early career with paternal care, was a drawback to him in his task, because it may have obscured the true sense of proportion. In so far as a first glance at the volume goes, this pitfall of the biographer has been avoided, and it was perhaps not so dangerous as it might have been in many cases, for Lister's life was largely lived in the laboratory, the operating room, and the wards of hospitals. Perhaps the most dramatic scene in Lister's career was at the public celebration of Pasteur's seventieth birthday at the Sorbonne in 1892. Lister then gave an address as the representative of the Royal Societies of London and of Edinburgh, and, when he had ended, Pasteur's impulsive embrace of Lister touched the hearts of those who were present, as its relation appealed to the imagination of the world when it read of it next day. Many years afterwards Lister, writing on the occasion of the visit of English doctors to Paris in 1905, noted that not only medical men but others "attributed some importance to the incidents of the Pasteur Jubilee; as if they might have acted in some degree as precursors of the *Entente Cordiale*."

WEEKLY HOURS OF WORK.

THE Health of Munition Workers Committee has issued a new memorandum² on weekly hours of employment, supplementing the memorandum on hours of work issued in January, 1916, and modifying some of its recommendations in the light of the exact data yielded by special investigations made for it. As compared with the French, we started with the advantage that the opinion as to the need of a weekly period of rest was practically unanimous, but beyond that there was at the beginning of the war very little agreement. At one extreme were those who defended fifteen hours' work a day, a period worked in peace time to meet temporary trade pressure; at the other were those who advocated only forty-eight hours a week, held that all overtime beyond that was bad, and doubted whether, even when worked to meet urgent demands, the output of a factory was thereby increased. In the absence of scientific data and in view of this conflict of opinion the Committee was cautious. It recommended that the average weekly hours of employment for men should not exceed sixty-five to sixty-seven hours exclusive of meal times; this involved a working day of from thirteen to fourteen hours. For women and girls it recommended a maximum of sixty hours a week, which meant a working day of twelve hours. It advised the same period for boys, and that night work should be limited as far as possible in the case of boys under 16 and of girls under 18. Dr. Vernon's

¹ *Lord Lister*. By Sir Rickman John Godlee, Bt., K.C.V.O., M.S., F.R.C.S. London: Macmillan and Co., Ltd. 1917. (Med. Rev. no. 676 + xix. 18s. net.)

² (d. 8804. 1d.)

inquiry brought out some very interesting and somewhat unexpected results. In the case of men engaged in heavy work the reduction in the number of hours actually worked weekly from fifty-eight to fifty-one increased the relative real output from 100 to 139, and the relative total output from 100 to 122. The results with women were similar but less striking. Speaking generally, the investigation showed that a reduction in the weekly hours of actual work, varying from seventy to twenty a week, in no case resulted eventually in more than an insignificant diminution of total output, and on the average produced a substantial increase. The fact that this change did not come about at once but was gradual, extending frequently over four months, is held to nullify the suggestion that the effect upon output was a mere consequence of the desire to earn the same weekly wages as before the hours were shortened. The true explanation, it is suggested, is that the worker finds, unconsciously and gradually by experience, that he can work more strenuously and quickly for a short-hour week than for a long-hour week. Another factor in the result is that the amount of time lost in commencing and stopping work was diminished. The memorandum recalls Professor Loveday's conclusion that the proportion of lost time due to sickness and other unavoidable causes is, as a rule, greatly under-estimated in factory records, and the proportion due to slackness consequently over-estimated. It was also his conclusion that long hours, much overtime, and especially Sunday labour, exert a pernicious effect upon health, especially in the heavy trades. Another point he brought out, which was known to some employers a good many years ago, is that to work before breakfast is a mistake; from the factory point of view the necessary reduction of hours may be compensated for, or even outweighed, by reduced absences, reduced waste of time, and greater vigour after taking food; the effect of hunger work upon health is bad. The Committee in its new memorandum expresses the opinion that, speaking generally, the hours of work should be fewer than those it originally thought justifiable. It does not lay down any general rule, but suggests that a scheme for each factory should be determined after consideration of a number of different factors, such as the exertion, physical and mental, involved in the work, and the individual capacity; and the factory conditions as to temperature, ventilation, and organization. Under the last named are included the efficiency of welfare supervision, the sufficiency and suitability of the food, canteen accommodation, and so on. Mention is also made of the influence of the arrangement of the hours of work, and of breaks and pauses, and of the housing accommodation and available means of transit to and from work. It is pointed out also that allowance should be made for the fact that the best hours of employment will not be the same for all processes in the same factory, and for the extent to which the pace of the work is governed by the machine.

THE EIGHT HOUR DAY OF THE INDIAN HUSBANDMAN.

THE affection of the late Sir George Birdwood for India and its inhabitants was so great that he was perhaps a little disposed to idealize the life of the Indian husbandman, but it is not without interest to note that he asserted that in the division of the twenty-four hours the Deccan *rayat* has for the past three thousand years realized the ideal of the English artisan, and at a twelfth of the cost: "Eight hours' work, eight hours' play, eight hours' sleep, and eight pennies (not shillings) a day." His justification is given in his essay on the Mahratta plough, published a quarter of a century ago, and republished a couple of years ago in a collection of his essays entitled, *SVA*. The Deccan husbandman, "the house father," is the first to rise. Just before dawn he arouses the bullocks and oxen, stalled either in a yard behind the house or in the porch in front.

Having got the cattle out into the road, and lit his cigarette of tobacco rolled in a leaf of the *apta* (*Bauhinia tomentosa*), and taken up his breakfast of *javari* or *bajri* cakes, cooked by his wife the day before, and tied up by her overnight in a cloth with an onion, or some pickle, he strolls off at daybreak, keeping his oxen before him, to his fields. There yoking the oxen, and stripping to his work, whether it be to plough and to sow, or to reap, he works on for a steady hour until eight o'clock; and again, after ten or twenty minutes spent in eating his breakfast, for four hard fagging hours more until midday. The wife, after grinding the corn and attending to the house, cooks the dinner, consisting of fresh-baked cakes of *bajri* or *javari* meal, and either a mess of pulse porridge or a pot of highly spiced pulse soup, and takes it to her husband by twelve o'clock. The cultivators within hail of each other generally take this meal together, spending from half an hour to an hour. Then up to two or half-past two the men lie down to sleep. When the men awake they re-yoke the oxen and resume their work for three hours more, or until the sun sets, at which signal they return in long winding lanes towards their respective villages, walking along leisurely, chatting and laughing, and always keeping their oxen before them. On reaching their homes they at once tie up the cattle, and then, after bathing and again worshipping the household gods, the husband at eight o'clock partakes of his supper of pulse porridge. He spends the rest of the evening in visiting the village shrines, gossiping with his neighbours, and in consulting the village astrologer as to the right day and hour for sowing different kinds of crops. By ten o'clock everybody is in bed. If we leave out the time taken in getting out and taking home his cattle and going to and from the field, this programme gives about eight hours' work. Sir George Birdwood claims that the Deccan *rayat* has realized, in its fullest security, the ideal co-operative life of the day-dreams of the socialists of the West, and that this co-operative agricultural life of the people of India is high farming in its noblest sense.

THE WASSERMANN REACTION.

THE public health department of the London County Council has issued to metropolitan medical practitioners a memorandum on the interpretation of the Wassermann reaction. It was originally drafted by the pathologist of one of the London hospitals, for use in the venereal department of that institution. It has since been submitted to the pathologists of the other London hospitals in which examinations are carried out under the scheme now in force, and the present leaflet embodies certain additions suggested by them. The opening paragraph admits that universal agreement has not been reached with regard to certain points, but claims that the enormous number of tests made during the past ten years leave no doubt as to the meaning to be attached to definitely positive or negative results in the great majority of cases. Since the Wassermann reaction is quantitative, there will always be border-line reactions, which, when they occur, must be carefully considered in relation to all the known facts of the case in question. The definite statement is made that a well-marked positive reaction, obtained with the full technique, or with a modification involving only unessential details, justifies a definite diagnosis of syphilitic infection, provided that leprosy, yaws, and perhaps sleeping sickness, can be excluded—conditions which can seldom enter into consideration in this country. A positive Wassermann reaction is sometimes obtained in malarial cases, where there is a complete absence of symptoms of syphilis and no suggestion, in history or otherwise, of a previous taint; and this point must be taken into consideration in certain cases. The memorandum goes on to consider the subject under the headings of "the reaction in diagnosis"; "the effect of treatment on

the reaction"; "the reaction on the control of treatment"; and on "the reaction as a criterion of infectivity." Under the last head it is stated that if a positive reaction is well marked it is, with the reservations outlined above, undoubted evidence of syphilitic infection, but that if weak it has little diagnostic value and must always be considered in relation to all the known facts of the case. With regard to a single negative result it is said that it has no diagnostic value during the first few weeks of the disease, nor in a patient undergoing treatment. A negative result in an untreated case exhibiting suspected secondary lesions almost excludes syphilis, but never absolutely. In the later stages, with certain exceptions, a rather higher proportion of undoubted syphilitic cases give negative results, so that such a result, while contraindicating a diagnosis of the disease, especially if previous antisyphilitic treatment can be excluded, must be regarded in relation to all other available evidence. In using the reaction to control treatment, the ideal aimed at should be a persistently negative reaction following a prolonged and thorough course of treatment. This result, combined with the absence of all clinical signs, is the best evidence of non-infectivity.

THE TREATMENT OF MALARIA.

PROVISIONAL instructions for the treatment of cases of malaria in the United Kingdom, printed in the *Journal of the Royal Army Medical Corps*, September, 1917, are based upon work done in special malaria wards in England during the preceding five months by a number of specially qualified medical officers. No line of treatment yet tried (and more than twenty different lines have been tried) has sufficed to eradicate the infection entirely in more than a small percentage of cases, and no clear indication has yet been obtained that any one line of treatment is much better in this respect than any other. A series of new instructions is given as regards dosage and other points. It has been decided that every case of malaria should be given sixty grains of quinine every week until he has been free from malarial fever for at least sixty days. The dose may be administered intramuscularly or by the mouth in the form of sulphate, hydrochloride, or bi-hydrochloride, and it may be given at the rate of ten grains daily on six days in the week, or of fifteen grains daily on four days in the week, or of twenty grains on three days in the week, or of thirty grains on two days of the week, on consecutive days or not. The individual dose may be five grains, ten grains, or more, in solution, powder, or tablet, as convenient. It will thus be seen that it is not easy to stamp out the infection of malaria. This is pretty much what the old clinicians found and taught. The only way to ensure success is to continue the drug over long periods, and the plan of giving sixty grains a week is useful, but it must be kept up for two months or for three if possible. The difficulty in dealing with large bodies of men is to be certain that they will go on taking the drug regularly; it is in private practice that the best results of quinine treatment are obtained. A word of warning may be given as regards pills and tablets; they may, especially if sugar-coated or old, pass quite unchanged, and in such a case the patient is not being treated at all. Fresh tabloids not sugar-coated seem to dissolve very well, however, but if symptoms of fever continue the possibility that they are not being dissolved should be borne in mind.

THE INTERESTS OF ABSENT COLLEAGUES.

DR. J. C. VERCO, in his presidential address delivered at the annual meeting of the South Australian Branch of the British Medical Association, made many interesting references to the part played by the medical men of South Australia in the war. The medical profession of the State is so completely organized, and individual practitioners have come forward in such numbers, that the principal medical officer has so far been able to meet the demands of the Director-General, Medical Services, as they have

arisen. Should it be decided to conscribe the whole medical profession of Australia for service at home or abroad the position in South Australia would be scarcely changed, since almost every medical man has already offered himself for military service. In this connexion Dr. Verco paid an eloquent tribute to those of his colleagues who are now serving with the Australian Forces or in the Royal Army Medical Corps, and especially to those who have given their lives for their country and those who have returned broken in the war. He made an appeal for the highest standard of loyalty towards the professional interests of practitioners absent on active service. Those remaining at home should put themselves as completely in the place of their absent colleagues as they can, in the delicate circumstances of private practice, in contract work, in salaried posts, and in all positions of prestige and public importance connected with charitable institutions. In the absence on military service of those who by right of seniority would naturally obtain hospital posts as they fell vacant, there came a chance for the man on the spot to "jump the claim." None but the most selfish and unpatriotic would, however, seize such an opportunity, and Dr. Verco suggested that the proper course for the institutional authorities would be to fill vacancies on their staff temporarily by the appointment of acting physicians and surgeons, deferring all permanent appointments until the war is over. "It will hearten the men at the front," he said, "to know that their interests are being conserved by their medical brethren and close competitors, as well as by the boards of management of the institutions. We are glad to see that the Adelaide Hospital management are acting upon this honourable and patriotic principle. In an equal degree does this apply to the lecturers, demonstrators, tutors, etc., in connexion with our university. . . . All absent men should be made to feel and led to know the security of the university posts they so reluctantly left, and which they so highly prize." In the interests of the younger men who have gone away almost immediately after qualification without even the advantage of holding a resident appointment, Dr. Verco proposed that some scheme should be devised whereby advanced teaching, especially of a practical character, should be given them on their return. He suggested further that a fund should be established within the Branch for the purpose of helping in every reasonable way members who have been to the war and require assistance on their return. Out of this fund grants might be made for the support of those who went away immediately after graduation and who wished to fit themselves further for their life's work; financial aid could be given to those who have lost their health or who come back to ruined practices, and others in temporary need could be helped to make a start in life.

OTHAEMATOMA AS A DISEASE OF PRISONERS.

FROM the bad hygienic and dietetic conditions in the German prison camps many infective and dietetic diseases, such as typhus, scurvy, general oedema, eruptions, sub-acute nephritis, and day blindness, occur. P.-L. Marie,¹ who for nearly ten months looked after fellow prisoners of various nationalities at Zossen, noticed that day blindness was confined to Russians, who were in a much worse condition of health than the French. In April, May, and June, 1915, he saw ten cases of othaematoma among French and Belgium prisoners who were perfectly sane, had not received any local injury, or recently had any serious disease. It appeared at a time when general nutrition was very low and cases of scurvy were occurring. As the cases ceased to appear when green vegetables became obtainable it is probable that this condition was at least favoured by scurvy due to improper food. Othaematoma, or haematoma auris, occurs so frequently in the insane that it has been called "insane ear." It follows

¹ P.-L. Marie, *Arch. de méd. et de pharm. mil.*, 1917, lxxvii, 501-505.

some slight injury, and, according to Ford Robertson, the primary lesion is degeneration of the cartilage of the ear, followed by the formation of cysts, which degenerate and become filled with blood. By the continuance of the haemorrhage the perichondrium is stripped off and the swelling increases in size. The pathology of othaematoma in prisoners is probably somewhat different, but trauma may play some part in it, for a similar condition is sometimes seen in footballers.

NOTIFICATION OF INFECTIOUS DISEASES.

WE hear that medical officers of health in various parts of the country are complaining of the failure on the part of many medical practitioners to notify cases of infectious disease. It is unnecessary to point out the importance of prompt notification, which is a key to the control of the spread of infectious disease. We are well aware of the strenuous conditions under which most civilian practitioners are now working, but this duty must be fulfilled at all costs. It is against all public interest that any avoidable risk should be run of undermining our defences against epidemics. The lowering of the notification fee from 2s. 6d. to a shilling was a paltry piece of economy, which the Local Government Board probably regrets by now. The medical profession quite properly protested against it, but no excuse must be given to the enemies of medicine for the suggestion that carelessness in the public duty of notification is due to resentment at the size of the fee.

Medical Notes in Parliament.

Midwives (Ireland) Bill.—The Chief Secretary for Ireland, Mr. Duke, introduced the Midwives (Ireland) Bill in the House of Commons on November 12th. The bill is substantially on the lines of the English and Scottish Midwives Acts, but owing to the difference in the conditions of medical practice in Ireland there will be some fundamental variations in its administration. Clause 1 (2) provides that from and after January 1st, 1924, no uncertified woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a registered medical practitioner unless she be certified under the Act. To this clause, which is identical with the corresponding section of the English and Scottish Acts, Irish dispensary doctors took exception some time ago when the Irish Bill was being drafted. In Ireland there is no difficulty in summoning the dispensary doctor on a visiting ticket under the Medical Charities Acts. Fully 50 per cent. of the parturient women in Ireland can command the services of the Poor Law medical officers, who receive no extra fees for their attendance in midwifery cases. The dispensary doctors fear that, should the Midwives (Ireland) Bill become operative with the clause, uncertified midwives, in order to protect themselves from the penalties provided under paragraph (2) of Clause I, will in all cases secure their services under the Medical Charities Acts. At the present time dispensary doctors are only summoned to attend abnormal cases. It appears that the warning issued by the General Medical Council in connexion with medical practitioners attending midwifery cases with uncertified nurses under the English and Scottish Acts, would also apply to dispensary doctors under an Irish Midwives Act. The Irish Poor Law Committee made strong representation to the Local Government Board on this point, but it would seem now without effect. By Clause 16 the council of a county or county borough will be the local supervising authority, but may delegate its powers to a committee, consisting wholly, or to the extent of two thirds or more, of members of the authority; women are eligible to serve on such committees. In every county borough the medical superintendent officer of health shall be the medical officer for the purposes of the Act, with such additional remuneration as the council may, with the approval of the Local Government Board, determine. The council of any county may appoint a registered medical practitioner having such qualifications as may be approved by the Local Government Board. Clause 22 (1) provides that in case of an emergency a midwife shall call into her

assistance a registered medical practitioner, and the local supervising authority shall (unless the patient is entitled to relief under Section 9 of the Poor Relief (Ireland) Act, 1851) pay to such medical practitioner a fee according to a scale to be fixed by the Local Government Board.

Fees for Post-mortem Examinations.—Mr. Ingleby asked the Home Secretary if he was aware that in cases where a patient was brought into hospital in a moribund condition and a *post-mortem* examination had to be made and an inquest held, the medical officer who undertook the necropsy and subsequently attended the inquest to give evidence was precluded by Section II, Clause 22, of Part II of the Coroners Act, 1887, from receiving any fee, whereas if the patient was dead before being received into hospital the medical officer was, under Section I, entitled to receive £2 2s. for his services. Mr. Ingleby further asked if the Home Secretary was aware that coroners had from time to time expressed their opinion in court as to the injustice suffered by the medical profession in this matter, and whether he would introduce a short bill repealing Section II of the Act referred to. Sir George Cave replied that he believed that the facts were as stated in the question, but he did not see his way to propose legislation on the subject at present. Mr. Ingleby asked whether the matter had not been dealt with in the report of a Departmental Committee of the Home Office seven or eight years ago. Sir G. Cave: I cannot say without reference; but I think it is a matter which has been discussed on both sides for some years. Sir William Collins asked whether it was not the case that the disability referred to in the question dated from the time of the Burke and Hare murders, and whether the condition of things then obtaining was not rendered obsolete by the Anatomy Act, 1832. Sir G. Cave: That may be so.

Public Health Legislation.—On November 19th, in reply to Mr. Anderson, the President of the Local Government Board said that he had already forwarded a request that he might be allowed to introduce a bill to give the local authorities in England and Wales the same powers that the Scottish local authorities had in matters relating to maternity and infant welfare. In reply to a further inquiry on November 20th, Mr. Bonar Law said that the introduction of legislation was under consideration, but he could not at present see an opportunity for a discussion of the subject in the House as Mr. Anderson desired.

Insurance Amendment Bill.—It is understood that if the Government is successful in securing the second reading of the National Health Insurance amending bill, it will be referred to Grand Committee.

Medical Certificates for Wheaten Flour.—In reply to Sir William Collins, the Parliamentary Secretary to the Ministry of Food said that every application for permission to use wheaten flour was considered and dealt with on its merits. In view, however, of the fact that these applications showed a considerable increase in number and frequently appeared to be based on insufficient grounds, it was determined, after consultation with the War Bread Medical Subcommittee of the Royal Society, to issue the memorandum published on October 20th in the BRITISH MEDICAL JOURNAL and the *Lancet*. Applications were considered in the first instance by the scientific adviser to the Food Controller; doubtful cases were referred to Sir Thomas Barlow and Dr. Robert Hutchison, who had agreed to act as honorary medical referees.

Care of the Blind.—In reply to Mr. Acland Allen, Mr. Hayes Fisher said that in order to carry into effect the main recommendations of the Departmental Committee on the Blind the Cabinet had decided to authorize the setting up of special departments in the Local Government Board and in the Local Government Board for Scotland respectively and the establishment of an Advisory Committee for England and Wales and of a separate Advisory Committee for Scotland, and had sanctioned the necessary expenditure for the immediate administrative expenses consequent on their decision.

British and Turkish Prisoners of War.—Mr. J. Fitzalan Hope, in reply to Mr. George Lambert, stated on November 19th that the British Government had heard after much delay that the Turkish Government were willing to send delegates to Switzerland to discuss the whole question of prisoners of war with British representatives. There was a great preponderance of Turkish prisoners in British hands, their numbers being at present probably 45,000 as against about 8,000 British and Indian in Turkish hands, who were believed to have survived the rigours of their captivity.

THE WAR.

MACEDONIA.

THE dispatch from Lieut.-General G. F. Milne, C.B., Commanding-in-Chief British Salonica Force, dealing with the period from October 9th, 1916, to October 1st, 1917, was published in the *Supplement* to the *London Gazette* of November 13th. From November 29th, 1916, the British Force has occupied the front covering Salonica from the east and north, and extending from the mouth of the river Struma to the river Vardar, a distance of approximately 90 miles. The holding of this long line placed a considerable strain on the endurance of the troops, especially during the winter months, when, owing to unprecedented rainfall, the mountain roads became almost impassable, so that the difficulty of maintaining supplies was overcome only by the energy and determination of all concerned. In spite of the fact that the whole of the force was in the line without relief for over a year, with only occasional limited opportunities for training, and without the encouraging effect upon them of offensive action, a very high standard of efficiency and moral was maintained.

A limited advance was made on May 8th, but on May 24th instructions were received from General Sarraill that offensive operations were to cease all along the front. As summer was commencing, the best means of maintaining the health of the army during a period when malaria and dysentery are more or less prevalent in the low-lying areas had to be considered. In view of the experience gained in the previous year, and in spite of the fact that a considerable amount of antimalarial work had been carried out in the valleys during the winter, General Milne decided to abandon the forward positions on the right and centre of the line, and to retire to the foothills on the right bank of the Struma river, and to the south of the Butkova valley. This withdrawal was carried out by June 14th without interference by the enemy. In 1915, apart from two partially-metalled roads, one to Monastir and the other to Seres, both in bad condition, no roadway possible for mechanical transport existed. These two roads have been improved, widened, and drained; cross roads have been cut through the hills, new roads in base and forward areas constructed, and old ones repaired. Another main route has been constructed from Salonica to Kukus, and thence to the front on either side of Lake Doiran. New railways have been constructed, the dock system supplemented, and hospitals expanded. With regard to the health of the troops, General Milne writes as follows:

The health of the troops has been on the whole satisfactory. With the advent of the cold weather malaria abated rapidly, and the sick rate remained low during the winter. Preparations for the next summer in the form of antimalarial work were, however, steadily pursued, drainage of swamps and canalization of streams were extended, and the personnel for technical work strengthened; but what proved of almost greater importance was the instruction of all ranks in the value of field sanitation and the prevention of disease in the field. The results have been most satisfactory, and, while giving full credit to the various ranks of the medical services and to the devoted band of nursing sisters, I consider that the great diminution in disease in this army as compared with last summer is due chiefly to the fact that the value of preventive measures is fully realized by all ranks, and that the whole army has profited by the experience of last year.

The arrangements for retaining all sick and wounded in this theatre have worked most satisfactorily, and the decision has, in my opinion, much to recommend it. The arrival of sufficient transport and the opening up of new roads has permitted the establishment in the hills of hospitals and convalescent camps, where, under trained instructors, convalescents are put through a graduated course of physical drill before returning to the depôts.

As regards the general work of the Royal Army Medical Corps and the assistance afforded by the British Red Cross Society and the Order of St. John, I can only reiterate the remarks contained in my last dispatch.

General Milne concludes his dispatch by stating that in due course he proposes to submit a list of officers, non-commissioned officers, and men whose distinguished and gallant services specially deserve mention and reward.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN J. FOX-RUSSELL, M.C., R.A.M.C.(T.F.).

Captain J. Fox-Russell, R.A.M.C.(T.F.), was killed in action on November 6th. He was the eldest son of Dr. Fox-Russell of Holyhead, and was educated at the Middlesex Hospital, taking the diplomas of M.R.C.S. and L.M.S.S.A. in 1916. For some time before the war he had held a commission in the 6th (Carnarvonshire and Anglesey Territorial) battalion of the Royal Welsh Fusiliers, in which he attained the rank of captain on January 27th, 1915. On qualifying he transferred to the R.A.M.C., and after serving for some time as medical officer to a brigade of field artillery, was transferred in the same capacity to his old regiment. He had recently received the Military Cross for gallantry in the field.

CAPTAIN R. A. IRELAND, C.A.M.C.

Captain R. A. Ireland, Canadian Army Medical Corps, was reported as killed in action, in the casualty list published on November 14th.

CAPTAIN E. PHILLIPS, R.A.M.C.

Captain Edwin Phillips, R.A.M.C., was killed in action on November 6th. He was educated at the Newcastle-on-Tyne school of medicine and at the London Hospital, and graduated M.B. and B.S.Durh. in 1913, also taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in the same year. After acting as emergency officer at the London Hospital, and as house-physician of the Poplar Hospital, he entered the army as lieutenant on July 31st, 1914, and was promoted to captain on March 30th, 1915.

Died of Wounds.

CAPTAIN G. E. CHISSELL, R.A.M.C.

Captain George Edwin Chissell, R.A.M.C., was reported as having died of wounds, in the casualty list published on November 14th. He was educated at the Middlesex Hospital, took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1916, and subsequently took a temporary commission as lieutenant in the R.A.M.C., being promoted to captain after a year's service.

Died on Service.

LIEUTENANT E. S. BAILLIE, I.S.M.D.

Lieutenant Edwin Stirling Baillie, I.S.M.D., died suddenly of heart disease at Lahore on September 10th. He entered the I.S.M.D. as a hospital apprentice in 1880, passed through the Calcutta Medical College in 1881-85, and attained the grade of senior assistant surgeon and the rank of lieutenant on November 2nd, 1908. He served for four years, 1885-89, in the Burma war, but had put in most of his service in civil employ in the Punjab. He retired on May 1st, 1911, but rejoined for service during the war in 1915, and was posted as assistant to the civil surgeon of Lahore.

LIEUTENANT H. F. RANSOME, R.A.M.C.

Lieutenant Herbert Fullarton Ransome, R.A.M.C., died on November 14th, at Queen Mary's Hospital, Whalley Lancashire, in which he was serving as surgeon. He was educated at Owens College, Manchester, and at St. George's Hospital, and took the diplomas of M.R.C.S., L.R.C.P.Lond. and L.S.A. in 1892. After filling the post of honorary assistant medical officer to the Manchester Hospital for Consumption and Diseases of the Throat, he went into practice at Bowdon, Altrincham, where he was surgeon to the Altrincham Hospital and Dispensary. He had only recently taken a temporary commission as lieutenant in the R.A.M.C.

LIEUTENANT G. TAYLOR, R.A.M.C.

Lieutenant G. Taylor, R.A.M.C., was reported as having died on service, in the casualty list published on November 17th.

Wounded.

Major W. Bapty, Canadian A.M.C.

Major A. V. Meehan, Australian A.M.C.

Captain J. Dunbar, R.A.M.C. (temporary).

Captain H. F. Dunstan, Australian A.M.C.

Captain G. D. Eccles, R.A.M.C. (temporary).

Captain O. J. Ellis, Australian A.M.C.

Captain T. G. Featherstonhaugh, R.A.M.C. (temporary).
 Captain J. H. Fletcher, D.S.O., M.C., R.A.M.C. (temporary).
 Captain J. M. Forsyth, M.C., R.A.M.C. (temporary).
 Captain H. W. Gush, R.A.M.C. (temporary).
 Captain W. Harmens, R.A.M.C. (temporary).
 Captain A. J. Howard, Australian A.M.C.
 Captain F. R. Joscelyne, M.C., R.A.M.C. (temporary).
 Captain D. G. Kennard, R.A.M.C. (temporary).
 Captain J. Morgan, Australian A.M.C.
 Captain J. P. Peake, Canadian A.M.C.
 Captain M. P. Power, R.A.M.C. (temporary).
 Captain H. G. Rice, R.A.M.C. (temporary).
 Captain G. S. Sutherland, R.A.M.C. (temporary).
 Captain R. M. Thomson, Australian A.M.C.
 Captain J. Young, R.A.M.C. (temporary).
 Lieutenant J. Avery, R.A.M.C. (temporary).
 Sister M. Stewart, Q.A.I.M.N.S.R.

DEATHS AMONG SONS OF MEDICAL MEN.

Almon, John Egan, Lieutenant Canadian Infantry, younger son of the late Dr. T. R. Almon of Halifax, Canada, killed November 1st.

Bennett, Vivian Wilfrid, Lieutenant Royal Engineers, eldest son of Lieut.-Colonel V. B. Bennett, I.M.S., killed October 21st, aged 21. He was educated at Westward Ho! and at Malvern, entered Woolwich in 1916, got his commission six months later, was wounded at Armentières in September, 1916, and returned to the front in September last.

Cox, Claude E. Lane, Private Canadian Infantry, eldest son of A. E. Cox, M.B., of Grange-over-Sands, late of Southport, killed November 1st, aged 24. He had been slightly wounded two days before but remained on duty.

Devlin, Francis Cecil Cochrane, Lieutenant West Africa Frontier Force, youngest son of Captain T. P. Devlin, R.A.M.C., of Balfour, British Columbia, killed in East Africa, October 16th, aged 19.

Finlay, George Malcolm, Captain Hampshire Regiment, late Leinster Regiment, youngest son of Colonel Finlay, R.A.M.C. (retired), killed November 5th.

Harris, King Davie, Corporal Hussars, attached Royal Warwickshire Regiment, younger son of the late Colonel F. W. H. Davie Harris, R.A.M.C., killed October 26th, aged 29.

McRae, Alec Mackenzie, youngest son of Dr. Donald McRae of London, killed October 28th.

Spence, Geoffrey Shalders, Second Lieutenant South Wales Borderers, son of the late Dr. W. J. Spence, of Bedford, died of malaria contracted on the Salonica Front on April 15th, 1917, at Millbank Hospital.

Streatfeild, Thomas Basil Maryon, Second Lieutenant Royal West Kent Regiment, only son of Dr. Thomas Streatfeild of Folkestone, killed November 7th, aged 19. He was educated at Sherborne, got his commission on September 18th, 1917, and went to the front on October 15th.

Waller, Thomas Henry Whalley, Lieutenant Gloucestershire Regiment, only son of Dr. A. W. Waller of Stroud, Gloucestershire, killed October 22nd, aged 21. He was educated at Malvern, and had registered as a medical student, intending to proceed to Cambridge, but got his commission direct from the Malvern O.T.C. He had served in France for eighteen months, including the battle of the Somme.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SPECIAL Supplement to the *London Gazette*, issued on November 19th, contains a further list of awards for gallantry and distinguished service in the field. The acts of gallantry for which the decorations are bestowed will be announced at a later date. The following medical officers are awarded the decorations indicated:

Distinguished Service Order.

Majors: Sydney Vere Appleyard, A.A.M.C., and William Wallace Stewart Johnston, M.C., A.A.M.C.

Temporary Captain Gordon Watson Armstrong, R.A.M.C.

Bar to the Military Cross.

Captain William McMeekin Chesney, M.C., M.B., R.A.M.C. Spec. Res. (M.C. gazetted June 23rd, 1917).

Temporary Captains: Robert Welton Hogg, M.C., M.B., R.A.M.C. (M.C. gazetted December 11th, 1916); Maurice Bertram Lawrie, M.C., S.A.M.C. (M.C. gazetted July 26th, 1917); Hubert Francis Wilson, M.C., M.B., R.A.M.C. (M.C. gazetted September 26th, 1917).

Military Cross.

Captains: Bernard Gordon Beveridge, R.A.M.C., Vernon Carlisle Brown, A.A.M.C., George Eustace, M.D., R.A.M.C., Frederick George Harper, M.D., R.A.M.C., Charles Hallily Kellaway, A.A.M.C., Harold Howard Leeson, R.A.M.C., James Stewart McConnachie, R.A.M.C., Patrick Joseph Francis O'Shea, A.A.M.C.

Temporary Captains: Dimock Stanley Cassidy, M.D., R.A.M.C. (late C.A.M.C.), James Jack, M.B., R.A.M.C., Charles Fellowes MacLachlan, R.A.M.C., Peter Malcolm MacLachlan, M.D., R.A.M.C., Alexander Waugh Young, M.D., R.A.M.C.

The King has conferred the Albert Medal upon Surgeon Probationer Robert Sydney Steele Smith, R.N.V.R.

Surgeon Probationer Smith was medical officer of one of his Majesty's ships which was torpedoed by an enemy submarine. When the enemy torpedo struck the ship Surgeon Probationer Smith was in the ward-room aft with the first lieutenant. The explosion wrecked the ward-room and rendered the first lieutenant unconscious. All other exits being blocked, Surgeon Probationer Smith piled the wrecked furniture under the skylight, and got the first lieutenant through this on deck. He then attended to a petty officer who was lying on deck with a broken arm and leg, adjusted and blew up his life-belt, and after doing the same for the first lieutenant got him overboard, as the ship was then foundering. The first lieutenant was by then partially conscious, but was again stunned owing to an explosion when the vessel foundered, and when he was picked up by the boat he was apparently dead. Surgeon Probationer Smith applied artificial respiration until the first lieutenant showed signs of life; he afterwards attended to the injured in the boat so far as the circumstances allowed, until they were picked up forty-three hours later.

The Distinguished Conduct Medal has been awarded to two non-commissioned officers and four privates of the R.A.M.C., four non-commissioned officers of the A.A.M.C., and two of the C.A.M.C.

The Military Medal has been granted to twelve non-commissioned officers and twenty-nine privates of the R.A.M.C., two non-commissioned officers and two privates of the A.A.M.C., and three non-commissioned officers and three privates of the C.A.M.C.

FOREIGN DECORATIONS.

Mr. James Berry, F.R.C.S., has received the King's permission to wear the Insignia of the Fourth Class of the Order of the Star of Rumania (with swords), and the Insignia of the Third Class of the Order of St. Sava, conferred upon him by the Kings of Rumania and Serbia respectively in recognition of services rendered to the sick and wounded during the present war.

The King of Italy has conferred the silver medal for military valour upon Deputy Surgeon-General Octavius W. Andrews, M.B., R.N., and Fleet Surgeon George E. Duncan, R.N., for distinguished services during the war.

TUBERCULOUS SOLDIERS.

An Army Council Instruction states that in all cases in which officers or soldiers have developed pulmonary tuberculosis during overseas service, it will be regarded as caused or aggravated by military service. The same assumption will apply to all other cases unless the military board is satisfied that pulmonary tuberculosis was present previous to the man's enlistment, or to the granting of the officer's commission, or that it was not aggravated by his service.

England and Wales.

OPHTHALMIA NEONATORUM: VENEREAL DISEASE IN MENTAL DEFICIENTS.

THE Public Health Committee of the London County Council has reported an interview it had held with a deputation from the British Medical Association (Metropolitan Counties Branch) urging the necessity for arrangements being made for the treatment of ophthalmia neonatorum in London. The committee decided to consider the matter in connexion with the arrangements for 1918 for the treatment of venereal diseases under the Council's scheme. The question of the treatment of venereal diseases in mentally deficient persons was also to be considered in connexion with the arrangements for 1918. The committee reported that expenditure not exceeding £5,000 had been authorized in respect of the supply of salvarsan substitutes during the year 1917-18.

PROPOSALS FOR A MINISTRY OF HEALTH.

The President of the Local Government Board received two deputations on November 17th with reference to the proposals for the establishment of a Ministry of Health.

The first was representative of various women's organizations. Miss Llewellyn Davies, who introduced the deputation, said that its object was to appeal to the Local Government Board to take action towards establishing a Ministry of Health, and to ask that extended powers should be given to local health authorities. The basis of the new ministry should be the public health side of the Local Government Board; it should take into partnership the National Insurance Commissioners, and dissociate itself from the Poor Law system.

Mr. Hayes Fisher, in reply, after observing that in relation to the health of the people housing was at the root of almost everything, said that the Local Government Board, if it were reorganized, might perfectly well be the central

authority to direct and carry out the new health policy. The Board was not wedded to Poor Law administration. The Poor Law was in the melting pot; it was being considered by a Subcommittee of the Reconstruction Committee. The local authorities had a rival in the Insurance Committees, and the Government would have to decide between them. He considered that fuller powers should be given to urban local authorities and that the same powers that had been given to Scottish and Irish local authorities should be given to those in England and Wales. The difference between the departments concerned should be settled by an independent body before which the Local Government Board would urge that it should be the chief advising authority of all the local authorities in administering health policy. The Board hoped to bring forward schemes for the extension of infant welfare and maternity, and these could be carried out within six months of the cessation of war. The question of some form of union between the Board and the National Insurance Commissioners was now before the Cabinet.

The second deputation was from the Society of Medical Officers of Health and the Association of County Medical Officers of Health. It was introduced by Dr. Charles Sanders of West Ham, President of the Society, and the speakers included Dr. John Robertson (Birmingham), Professor Bostock Hill (Warwickshire), Dr. Allan (Westminster), and Colonel J. R. Kaye, Medical Officer, West Riding.

Mr. Hayes Fisher, in his reply, while admitting that the scheme for co-ordination at the centre was good, said that a perfect scheme for a new Ministry of Health on such lines would mean the taking of certain powers from one department and adding them to another. If he asked for transfer to the Local Government Board he would be accused of poaching, and if he suggested that the health powers of the Local Government Board should be vested in a new body and the Board left with the administration of the Poor Law he would be performing *hara-kiri*. The Local Government Board desired to obtain a bill that would enable local authorities in England and Wales to do all that was being asked by the proposed Ministry of Health. The bill had not made progress because the National Insurance Commissioners were asking for similar powers in respect of infant welfare and maternity. Whatever happened, the responsibility for the carrying out of the new powers would rest with the medical officers of health; as their responsibilities increased their tenure of office should be made certain against any reaction on the part of the authorities, and they should have the right of appeal to some responsible body, remuneration for extra duties, and proper and adequate salaries.

THE LIVERPOOL MEDICAL INSTITUTION.

At the ordinary meeting on November 15th, Mr. Charles J. Macalister in the chair, Captain Keith W. Monsarrat read a note on infected gunshot wounds of the knee-joint, based on experience of cases among Serbian and Bulgars which came under his observation at Salonica. Dr. Glynn gave a paper, entitled "The teaching and practice of medicine of my student days and of the present time contrasted." Many of his old students of the Faculty were present and appreciated his vivid contrasts between student life of over fifty years ago and present-day students. Dr. Glynn, who entered St. Bartholomew's Hospital in 1860, passed in rapid survey the doctrines in medicine then taught by Watson and other physicians, their rehabilitation or disestablishment in the light of recent research. He illustrated this statement by quoting from Watson's *Principles and Practice of Physic* the author's views on tubercle and scrofula, and said that he had witnessed also the introduction of the clinical thermometer and of the microscope. Dr. Glynn's observations on these aids to clinical medicine and the rancorous discussion they sometimes provoked between those who approved of and those who frowned upon the innovations caused much amusement. The paper was a critical survey interspersed with anecdotes of medicine over fifty years ago, and was much enjoyed by those present. Drs. Caton, Stookes, and Humphreys also contributed experiences of their student days.

CENTRAL MIDWIVES BOARD.

At a meeting of the Central Midwives Board on November 15th, Sir Francis Champneys in the chair, it was decided that at the next revision of the rules

consideration should be given to the opinion of a London coroner that the prescribed form of sending for medical help ought not to specify any doctor by name. With reference to a communication from the General Secretary of the Medical Defence Union, it was agreed to reply that "where a complaint for which an appropriate remedy is provided by due course of law is made against a midwife, it is contrary to the practice of the Board to deal with the midwife until the complainant has exhausted his remedy at law." At special meetings of the Board, on November 14th and 15th, fourteen midwives were cited to appear, and ten of these were struck off the roll; the charges included nine of neglect in cases of ophthalmia neonatorum. Most of the women were bona fide midwives, their ages ranging from 60 to 78.

Ireland.

IRISH NURSING BOARD.

DR. T. P. C. KIRKPATRICK, Fellow and Registrar of the Royal College of Physicians of Ireland, in a very comprehensive lecture recently delivered in the Dublin Metropolitan Technical School for Nurses, said that in Ireland a great effort had been made this year to improve the teaching of nurses, although the idea, started by the Hon. Arthur Stanley, Chairman of the Joint Committee of the Red Cross and the St. John Ambulance Societies, of a voluntary college and register for nurses, seemed to be excellent in many ways; the methods by which it was proposed to give effect to it were not so satisfactory. In the first place, the control of the college and of the nurses was to be largely in the hands of persons who were not themselves nurses, and who did not appear to be directly conversant with the needs of the nursing profession. The nurses were to be regulated, not to regulate themselves. These defects were so serious that many nurses felt that they could not join the college; the result has been the formation of the Irish Nursing Board under the approval of the Royal College of Surgeons in Ireland. This board consists of four medical men, elected by the College of Surgeons, and of twenty-two nurses elected by nurses. Thus the conduct of its business will be almost entirely in the hands of nurses. The board has two chief objects in view: first, the formation of a voluntary register of all trained nurses; and, secondly, the improvement of the training of those who seek to become nurses. Registration by the Irish Board will, it is hoped, confer two great benefits on the individual nurse: first, the certificate of registration will be a valuable diploma. It will be a guarantee to the public that the holder has satisfied the board as to her qualifications and training as a nurse. The second will be the fixing of a proper standard of training for nurses, ensuring that those whose training does not come up to this standard shall not be permitted to enter for the examination which admits to the register.

The honorary secretary of the Irish Nursing Board (Miss Carson Rae), in replying to the question of the secretary of the College of Nursing, Limited, why the Irish nurses should not throw in their lot with the latter body, states (1) that the council of the Irish Nursing Board has been elected not nominated; (2) that Irish nurses object to the College of Nursing on the grounds that it is a limited liability company, with memorandum and articles of association subscribed by seven laymen, who nominated the first council which framed the rules for the nursing profession; (3) that the College of Nursing proposes to issue two kinds of certificates (a) certificates of proficiency; (b) certificates of training and proficiency, thus mixing up trained nurses with other women workers in hospitals, to whom also they propose to grant certificates.

THE work of the Subsidiary National Health Board, supported by the New York Rockefeller Foundation for the eradication of hookworm, has, in co-operation with the Government, been extended to eight Southern States and fifteen foreign countries. The new fields of operation were Salvador, Brazil, Ceylon and Siam, and early in 1917 work was begun in the Fiji islands, Papua, and Queensland (Australia).

Correspondence.

HOW IS THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS TO BE MADE?

SIR,—A communication from the Halifax Insurance Committee has been received this week by the local panel practitioners, referring to the diagnosis of pulmonary tuberculosis; in it we are informed that they are of the opinion "if only cases of tuberculosis were notified in their early stage and application made to the Insurance Committee for Sanatorium Benefit, better results could be obtained," and then, "since the inception of the National Health Insurance a large number of insured persons in an advanced stage have applied for sanatorium benefit . . . and they feel that the time has come when it is essential, *if any good is to be obtained*, that they must have cases in their earlier stages." (The italics are mine.) As a supposed assistance to us, there is enclosed a memorandum by Dr. Sutherland, tuberculosis officer to the Manchester Insurance Committee.

One may not appreciate the evident desire of an Insurance Committee to act as literary advisers to the faculty, or the, possibly unintentional, insult to our medical training; but, those on one side, the communication and memorandum certainly call for comment.

In regard to the memorandum, I do not know how far it satisfies the wish of those Manchester practitioners mentioned in the memorandum who have expressed a desire that they should be helped to recognize cases of tuberculosis at an earlier stage than at present. It certainly does not satisfy mine. If we exclude the modern methods of diagnosis, which we are assured are of little value, the memorandum consists mainly of a description of the physical signs which can be obtained in any textbook of the past century, and there are the same generalities when describing those earlier complaints which may be all-important in the answer to the question, How can we recognize at an earlier stage than at present cases which are developing pulmonary tuberculosis?

There is now among panel practitioners a well-established feeling that the sanatorium benefit under the Insurance Acts is a failure. The routine treatment appears to be: The patient applies for sanatorium benefit. (In early or advanced cases the result is the same.) After a period ranging from one to two months (it may be different in other districts, I am writing of what I know) the patient is granted eight weeks' sanatorium benefit, usually extended to twelve. He is then discharged, looking better, and the physical signs usually pointing to some slight improvement. He is then placed on domiciliary treatment, and does his best to try and live on 10s. a week. Very soon, however, he returns to his former employment, and *ipso facto* ceases to visit at the surgery. After a short period he again calls, and in a worse condition than the first time that he came under treatment, and he will not have anything more to do with sanatorium benefit.

The failure is now to be attributed to our lack of diagnostic power. That may be, but it is not due to carelessness or the lack of appreciation of the physical signs, as suggested by Dr. Sutherland. I can supply cases from my own practice where the patient was informed of his illness the first time he called at the surgery, with no history of previous visits, and cases extending over several years where the condition was suspected and the patient repeatedly examined (stripped to the waist, as Dr. Sutherland suggests), and no physical sign was revealed, and then the end coming like a thunderclap. But what perhaps is even more deplorable, I am at present attending a boy of 17 suffering from tuberculous ulcers of the leg, whom I advised after his discharge from the local infirmary four months ago to apply for sanatorium benefit, but he was refused admission because they "do not treat surgical cases at the sanatorium." So his mother informed me, and, in view of the lapse of time, I expect the statement was correct. He was granted domiciliary treatment—eggs and milk, and a fortnightly visit by a nurse. His leg is improving, but (and most of us would watch for this) the first faint signs of pulmonary involvement are appearing. If past experience is any guide, his chances of recovery now are as good at home. And the Insurance Committee writes us to ask for earlier notification, and encloses a memorandum.

Dr. Sutherland states in his memorandum that in some cases the patient seeks medical advice for anaemia, gastric trouble, morning cough, persistent tiredness and languor, repeated colds, loss of weight, and suggests that if these are carefully examined pulmonary lesions may be found. That is true; but what he may not know is that the most careful examination may fail to find the lesion, and it is only after the patient has come many times for these apparent trivial complaints that the lesion presents itself in an early stage. What is the significance of those earlier complaints?

The whole subject is full of difficulties which only a general practitioner can appreciate. For example, I saw at least a thousand insurance patients last year in whom the complaint was of those indefinite symptoms mentioned; a few of these had tuberculosis, and a certain number of them may have had that irregular temperature mentioned as a valuable diagnostic sign—but how was I to gain that information? Anyone can make such statements in books. If someone would tell us from his own practical experience in general practice how it can be accomplished, it would be of some service.

Insurance practice has many discouragements, but it appears to have opened up a new field of medical research, and many of the problems which now confront us in the need for earlier diagnosis of most diseases may yet be solved. But in that field of research the general practitioner will be little benefited by the irresponsible comments of a lay committee or the condescending advice of the so-called specialists, who seem to be as ignorant of the subjects as we are ourselves.—I am, etc.,

Halifax, Nov. 16th.

A. GARVIE.

PRIMARY EXCISION OF GUNSHOT WOUNDS OF THE ELBOW-JOINT.

SIR,—I have read Lieut.-Colonel Mansell Moullin's article on primary excision of gunshot wounds of the elbow (BRITISH MEDICAL JOURNAL, November 3rd, p. 583) with great interest, particularly as he entirely supports the view I put forward in a paper advocating primary excision of the elbow-joint for severely infected gunshot injuries, read before the Surgical Section of the Royal Society of Medicine on March 14th, 1917. In this paper (published in full in the *Transactions* of the society, and in the *Lancet* of April 7th, 1917) were given notes of eight cases in which I had performed primary excision of the elbow-joint for extensive gunshot injuries complicated by fracture of the articular ends of the bones and by sepsis, and since that date I have operated upon five more. Of these thirteen cases the result in ten was most satisfactory, a free range of movement with good muscular power being obtained; in two the range of movement was limited to about 45 degrees from the formation of callus around the sawn surface of the bones, whilst the remaining case required subsequent amputation through the arm for the spread of sepsis in a highly infected wound.

Colonel Mansell Moullin apparently bases his opinion on the results of five cases of excision performed for injury in civil practice, conditions which are not strictly comparable with those of gunshot injury in the present war. In the latter there is much more comminution of bone, small fragments being forcibly driven into the surrounding tissues by the impact of the missile, whilst the infection with anaerobic and aerobic organisms rapidly spreads in the lacerated muscle planes. However, as he points out, the operation of excision permits of free drainage, and the adoption of frequent irrigation by which sepsis is controlled, whilst the operation materially shortens the period of convalescence, and gives the patient a chance of a freely movable joint with good muscular power in place of a joint ankylosed in such a position that its utility is much impaired, and in which healing is only obtained after a long interval, and frequently then only after several operations for sepsis, or for the removal of necrosed fragments of bone.

Colonel Mansell Moullin emphasizes the point that sufficient bone should be removed. I prefer to resect the humerus just above the epicondylar line, and the ulna and radius at the level of the neck of the latter, leaving an interval of two inches between the sawn surfaces when the limb is fully extended. The actual line of resection must, however, depend to a certain extent upon the conditions present, particularly the lines of fracture in the

lower end of the humerus, from which too much must not be removed for fear of a flail-joint remaining; in one case I divided the humerus three-quarters of an inch above the upper limit of the olecranon fossa, but only removed the olecranon through its base, leaving the coronoid process of the ulna and the whole of the head of the radius intact, with an excellent result. As much as possible of the comminuted fragments of bone driven into the tissues should be removed, as these may cause trouble from subsequent necrosis or from foci from which ossification may occur and limit the free movement of the joint. In my earlier cases I used at the most two sutures to approximate the ends of the incision, leaving the remainder open for free drainage and irrigation, but in the more recent cases, after checking the oozing with hot saline and treating the area with spirit, I have smeared the surfaces with bipp and closed the wound with a few deep sutures.

Colonel Mansell Moullin suggests that these primary excisions should be performed at the casualty clearing stations. Whereas theoretically this might be an advantage, in that the operation would be performed before the infection became marked, the extent of the damage to the bones and to the joint must be first ascertained by thorough radiographic examination, etc., which could hardly be done when a rush occurred. Further, I feel that the after-treatment of the case is of equal importance as the operation, and that both should be under the eye of the operator if possible. Care must be taken by appropriate splinting to prevent any inward displacement of the bones of the forearm upon the lower end of the humerus, and passive movements should be commenced as soon as the wound permits of it.

I cannot too strongly urge, with Colonel Mansell Moullin, that if primary excision of the elbow-joint was performed for severe gunshot injuries involving the articular ends of the bones, we should put the wounded man in a better position for earning his future livelihood, would materially decrease his pain and shorten his convalescence, as well as save the State much of the expenses of prolonged hospital treatment.—I am, etc.,

R. H. JOCELYN SWAN, M.S.Lond., F.R.C.S.,

Major R.A.M.C.

Senior Surgeon, Royal Herbert Hospital, and Consulting Surgeon, Woolwich District.

SIR,—I can heartily endorse Colonel Mansell Moullin's advocacy of excision of the elbow in gunshot wounds involving the joint, when, as he says, "the wound becomes septic, and the bones are badly comminuted." Three cases of excision have been under my care in Exeter during the last two and a half years. Two were excised by Mr. Marmaduke Sheild, and the results were excellent. The wounds healed readily, and the joints were freely movable and strong. The third case was lately excised in France, and is promising equally well.

During the same period I have had charge of three excisions of the shoulder. Two were done by Mr. Marmaduke Sheild and one at the front. The results were less impressive, as in two cases the deltoid was paralysed by the original injury. As an operation, however, it appears to me of nearly equal value with excision of the elbow. Well-controlled movement is obtained in certain directions, and healing is comparatively uncomplicated. The arm is much more useful than if allowed to ankylose at the shoulder, recovery is easier, and the patient takes a more hopeful interest in its progress.—I am, etc.,

Clyst St. George, Devon, Nov. 19th.

D. W. SAMWAYS.

A MINISTRY OF HEALTH.

SIR,—In your leading article of October 27th on the bill for the constitution of a Ministry of Health recently drafted by organizations interested in health insurance you state that "the position of the approved societies is fully and amply safeguarded." This is true, and I think it requires to be more strongly emphasized that the bill under consideration is an effort to retain and amplify power already in the hands of lay officials associated with insurance. You rightly indicate that the interests of the medical profession are not sufficiently safeguarded.

The approved societies, in a sense, represent the health interests of the working class, but not necessarily its corporate opinion on social and economic problems, and it

would probably be safe to say that the promoters of this bill were expressing the views, not of labour, but of those with interests vested in insurance. Labour is organized in different ways for different purposes. For an expression of the most advanced thought on industrial problems of the present day the medical profession would be well advised to watch the modern trade union movement, for it may have lessons for us. It aims at self-government of industries by the workers. The trade unions in congress have adopted this policy, which is seen in its most highly developed form in the propaganda of "national guilds" toward the conduct of industry and public service generally on democratic lines, for the benefit of the State, by those who do the work.

If we apply the idea to medicine, we can conceive a medical service organized for the benefit of the State, but administered and conducted by the medical profession, and something of the kind is the only form of State service that the profession should countenance.

Admittedly this ideal is a long way from attainment, but the imminent reorganization of sections of the health services may bring it nearer if the profession applies the weight of its influence in the right direction at the proper time. The essential thing is that we should know what we want, and that we should not want something which the electorate, and particularly the wage-earning majority, will not let us have. It is clear that the laity is out for a State service sooner or later and that if the profession is intransigent the trend of legislation will be toward wider development of the present whole-time services and consequent narrowing of the field of general practice. It means ultimately a State service coming after the gradual growth of a department or departments has created and entrenched powerful vested interests which are not those of the profession generally. Are we not told by Lord Rhondda that the requisite condition for a Ministry of Health is "that the Local Government Board and the National Health Insurance Commissioners should come to an agreement"? (BRITISH MEDICAL JOURNAL, November 3rd, 1917, p. 588.) Is either of these bodies greatly concerned about the status of the medical profession?

The Association appears to be alive to some of the dangers, but for a remedy to pin its faith on the creation of an Advisory Board to guide the footsteps of the new Minister. It is certain that such a board would carry little weight. I believe that the profession would strengthen its position if it went "all out" for radical reorganization of all the relations of medicine with the State and with local representative bodies. For health purposes power might be vested in local boards of health of the personnel of which the profession would form one-half. The medical representatives would be appointed by their local brethren and would constitute the only medical advisers to the boards, forming executive committees to carry out their policy.

The carrying out of national policy and the control of local boards might be the functions of a Central Board of Health, the medical members of which, forming half its personnel, would be appointed from local medical representatives by the medical profession, either meeting in congress or in some other way. The Minister of Health would be the chairman and the link between Parliament and the board.

Some such scheme, I believe, would not be opposed by the bulk of the profession if they once realized that the alternative is gradually increasing lay control of the kind they have experienced in panel practice. I do not think that labour would resist very strongly, if its adequate representation on the local and central boards was ensured and the profession showed itself sufficiently enlightened to recognize similar organization of the wage-earning employees who would form so large a part of the staffs of expanded health departments—for example, nurses and clerks. In future, the opposition or support of labour is an important matter for us.

It may be said, as it was said at a recent meeting of the Medical Guild in Edinburgh, that we ought to commit ourselves to no scheme till the men on service return. It does not appear that Government departments or insurance societies and committees will be actuated by any quixotic regard for the interests or opinions of the profession in the army. Moreover, it may be answered that reorganization is a solution of the very problem of medical

demobilization to which you devote your leading columns of November 3rd.

Would it not meet the need for an expression of corporate opinion if the Association circularized all medical men, on service or otherwise, asking for specific answers to three questions, which might be put thus—

1. Will you oppose a State Service on any terms?
2. Do you favour a service resembling in organization the Civil Service or the Indian Medical Service?
3. Would you approve of a service in which the local and national interests of the profession were safeguarded by adequate representation on local and central governing bodies, the medical representatives being appointed by the profession?

The opinions thus obtained would enable the Association to face the insidious introduction of bureaucracy in medicine with a policy which would be based on the views of the profession as a whole. If we do not control the present movement we shall drift into a State service in which the control will come from above, where the profession's own representatives will not be found. Speaking in Parliament on November 1st, Sir Eric Geddes said, "The theory underlying my reorganization of the Board of Admiralty has been to decentralize but at the same time to strengthen the control of the Board over the business of the Admiralty as a whole." The position of the Board of Admiralty—an executive board largely expert—and the policy of its new head might be taken for an example by us.—I am, etc.,

November 5th.

CONTROL.

LAY RADIOGRAPHERS AND ELECTRO-THERAPEUTISTS.

SIR,—The Medico-Political Committee of the Association is to be congratulated on having taken up the subject of lay radiographers and having recommended that the practice of radiography by unqualified persons "ought not to be encouraged." I would go much further and would suggest that the practice of radiography by laymen be made a penal offence, and that laws be passed which will render it impossible for the practice of radiography to be carried out by other than skilled and trained medical experts. The war has called into existence hundreds of assistants, both male and female, in the x-ray departments of the numerous war hospitals, both at home and abroad. Many of these were, prior to the war, absolutely ignorant of the elementary details of x-ray technique, and as a rule they were chosen to fill the posts because they had had some experience in photographic developing and printing. After the war many of these assistants will no doubt try to practise radiography on their own account. The same remarks apply to those who are now applying electricity for medical purposes, and unless steps be taken to prevent such practice we shall, after the war, have thousands of men and women setting up as experts, with the result that these valuable diagnostic and therapeutic agencies will fall into the hands of unqualified persons, to the detriment of the public at large.

As assistants to radiographers and electro-therapeutists these persons will serve a useful purpose, but, beyond the small number which will be required, it should be plainly made known to them that they will stand no more chance of earning a livelihood from the knowledge they have gained during the war than a private in the Royal Engineers will have of setting up as a consulting engineer. In the x-rays we have a power which, if unskillfully used or used with malice, may be productive of the greatest possible harm, and on occasions may even cause death. The fact alone that sterility can be brought about by their agency is sufficient in itself to warrant the passage of laws to prevent their being used at random. I am sorry to have to admit that the necessity of restrictive laws has been largely brought about by the actions of unthinking members of our profession. Prior to the war there were many x-ray departments, especially in small and country hospitals, where x-ray treatment was administered by lay assistants under no medical supervision, and I am still more sorry to have to admit that in a few of our war hospitals the x-ray departments are entirely run by laymen whose diagnostic reports are accepted by the medical and surgical staff. I do not think that this is done with the full cognizance of the War Office, but the fact that such a state of affairs exists is sufficient in itself to prove that the physicians and surgeons concerned do not or will not recognize that the practice of radiography and electro-

therapeutics are legitimate branches of professional work. Now is the time to take decisive steps, and I trust that those interested will not leave a stone unturned to rid us of the dangers which threaten us.—I am, etc.,

November 19th.

J. H. E.

VENEREAL DISEASE AND BLINDNESS.

SIR,—In the concluding paragraph of a note on the welfare of the blind, on page 592 of your issue of November 3rd, it is assumed to be erroneous to say that 50 per cent. of all blindness is due to venereal disease, and the writer suggests that such a statement may be made use of "by persons who do not trouble to verify their references, to make a mischievous and unwarranted reflection on the blind."

It would be interesting to know upon what evidence this view is based. The relation of venereal disease to blindness is as difficult to ascertain from statistics as its relation to the death-rate (see Osler, Lettsomian Lecture, 1917). Statistics as a general rule do not state the actual cause with sufficient exactness. The almost negligible amount of blindness from trachoma and small-pox in this country renders most Continental statistics to a great extent valueless for purposes of comparison. It should also be remembered that venereal diseases shorten the lives of their victims, so that the accumulation of the venereally blind is retarded, and a certain number of these cases never come to be included in any returns.

Owing to this tendency of venereal subjects to die, to the occurrence of other forms of blindness, and to the varying incidence of ocular manifestations of venereal disease in the successive decades, the proportion of venereal blindness to other blindness varies considerably. In early infancy it must be very high, and in spite of the action of the factors mentioned the appalling proportion of 58.35 per cent. is still present (Harman) in blind schools. After this age accidents as a cause of blindness become more important, and in successive decades the amount of non-venereal blindness increases. But syphilitic eye conditions only reach their maximum in the third and fourth decades, and are responsible for many cases of optic atrophy and other conditions which check the decline in the venereal proportion. Venereal subjects now tend to die out, and amongst the very old blind there must be few whose blindness is of venereal origin. Could corrected statistics be obtained, altered so as to give subjects of venereal blindness the average lives of other blind persons, some light might be thrown on the true relationship of venereal disease to blindness, and a 50 per cent. estimate might turn out to be not unduly high.

With regard to the final sentence of the article in question, may one express the hope that, in this more enlightened and, we trust, more charitable age, we shall all be able to divest ourselves of the old attitude towards venereal diseases, the attitude which associates a stigma and a reflection on the unfortunate sufferers, and has all along been the real obstacle to remedial measures either preventive or curative? The success of the present antiveneral campaign depends very largely upon the extent to which this attitude can be got rid of. To designate as venereal disease, whether mistakenly or correctly, the cause of blindness in any case should be no more considered to imply a reflection than if any other diagnosis had been made. Hitherto patients have been too often "accused of" or "taxed with" venereal disease which they in turn "denied" or "admitted." Such expressions are not used in connexion with other diseases. Prudery, reticence, and affectation have signally failed; our faith must now be pinned to sympathy, candour, and thoroughness.—I am, etc.,

Edinburgh, Nov. 13th.

H. M. TRAQUAIR.

* * The paragraph to which Dr. Traquair refers criticized a misquotation. The *Report* of the Departmental Committee on the Welfare of the Blind stated, on the alleged authority of the *Report* of the Royal Commission on Venereal Diseases, that over 50 per cent. of all blindness was due to venereal disease. Reference to the cited paragraph of the latter report showed that the figures concerned children alone. Neither the *Report* of the Departmental Committee nor that of the Royal Commission gave any data as to the part played by venereal diseases in the production of blindness at all ages. Against

the arguments and conclusions set out by Dr. Traquair may be set the following: Of the cases of blind children in Mr. Harman's list 31.3 per cent. were certainly, and, in addition, 2.8 per cent. probably, due to syphilis; 24.35 per cent. were due to ophthalmia neonatorum. In adults there are no gonorrhoeal forms of blindness comparable in frequency with ophthalmia neonatorum. Of syphilitic blindness uveal effects and optic atrophy may or may not be comparable in children and adults, there is no sufficient evidence either way; but interstitial keratitis, so prolific a cause of blindness in the inherited syphilis of children, is a rare cause in the acquired syphilis of adults. On the other hand, cases of accidental blindness are few in children and many in adults. Similarly, blindness from glaucoma and cataract heavily weight the scale for adults. Finally, it is unsafe to argue from data gathered from children under 16 years of age to all ages, for blind children of this age group form but a small part of the total of the blind (about one-twentieth). An attitude of frankness in dealing with the causes, prevention, and treatment of venereal diseases does not affect the objection to an erroneous quotation which we have reason to believe will give pain to the blind.

TREATMENT OF WAR NEUROSES.

SIR,—At a large conference of neurologists which recently met at the War Office a scheme in which I am interested was rejected.

My scheme, now known as the "Country Host Institution," was originally intended for the benefit of pensioners, and the Ministry of Pensions and the London War Pensions Committee have sanctioned it experimentally to the extent of thirty cases. Half that number of pensioners have already been sent off, and the early reports are very satisfactory.

I sincerely hope that the conference may yet consider my scheme, for I have every reason to believe that the patriotic hosts on whom its success must depend could be found in very large numbers.

Medical experience and common sense agree that (1) country life and conditions tend more towards the cure of neuroses than the noise and rush of towns, and that (2) nervousness is extremely communicable. If these premisses are admitted, a very little thought should be sufficient to convince every unbiassed person, whether neurologist or layman, that it is wrong to congregate nerve-shattered men in hospitals, unless the severity of their symptoms renders in unavoidable, and that it is unpardonable to keep even those serious cases in a town, especially in London, where air raids are frequent.

It seems obvious that, however convenient for the authorities, it is exceedingly harmful to the men that they should be congregated, the mild along with the severe, and perhaps within an air-raid area. The following extract from a letter sent me by Archdeacon Dray will give an experienced eye-witness's impression of the effect of air raids on nerve-shattered men:

Last night we had a repetition of former experiences in these schools, where 200 men in varying stages of helplessness act and react upon each other day by day, and during the raids are nearly frantic with terror, numbers of them writhing under their beds or falling back into their former palsied condition, their eyes transfixed and their twitching faces wearing a look of abject horror. It is pitiful to hear their repeated appeals: "Why can't I go into the country, somewhere where it is quiet and restful? Is a man who has gone through what we had at the front to be kept in this hell until he loses his reason," etc. The nurses are simply splendid in their calm bravery, but I seriously wonder how long some of them can stand the spectacles presented.

The ideal treatment, for all the milder cases at any rate, is to send them singly to the country, where they may recuperate in peace and quietness, performing suitable tasks in the open air and with healthy mental influences round them. The Country Host Institution could send over 200 men to excellent country houses within a week or two.

It will very greatly further the views expressed above if any medical men who are in sympathy with them will communicate with me.—I am, etc.,

THOMAS LUMSDEN, M.D.

13, South Eaton Place, Belgrave Square,
S.W.1., Nov. 19th.

THE REMUNERATION OF RURAL PRACTITIONERS.

SIR,—I was pleased to see in the *BRITISH MEDICAL JOURNAL* of November 10th the letter from "A Country Doctor," also your article on the subject.

My experience is much the same; before the war my practice was doing some £1,100 per annum *gross*, now the receipts are below £600 and the expenses as large as formerly. Decreased panel list, owing to enlistments and removals to munition areas and retrenchment by the better-class patients, help to account for this. I find it means greatly lessened receipts, very little proportionate decrease of expenses (actually they are not decreased at all, owing to rise of prices).

"A Country Doctor" is most conservative in his estimate of the expense of attending the discharged soldier. I do some 12,000 miles per annum by car; before the war the cost of running a car was at least 5d. per mile, now it is considerably more, even for the smallest light car. Standing charges, such as depreciation and licences, should be reckoned when counting cost per mile, to get a fair estimate.

Perhaps now that the rural practitioner is waking up a little we may gradually get some attention drawn to the conditions in the country. The town doctor may take some scattered country houses round into his net, but he does not show much eagerness to take a panel patient three miles from anywhere, the last mile or so perhaps across fields; the country doctor must accept all in the district.

Rural practitioners are usually much in the minority at all British Medical Association meetings, and also on local committees; as, under present conditions, payment for mileage would mean less for the town members, how can we hope to carry the point?—I am, etc.,

November 19th.

ANOTHER RURAL G.P.

THE CURE OF INGUINAL HERNIA.

SIR,—Nearly two years ago I had the privilege of seeing Lieut.-Colonel Hull operate on several cases of hernia, and I was much impressed by the simplicity of the operation and the excellence of the immediate results. To me the technique was quite new.

From the experience gained by operating on some hundreds of patients by this method I can fully corroborate what Lieut.-Colonel Hull says about the advantages of his operation in the vast majority of cases. Very seldom indeed was there any delay in finding the sac, and once found there was no difficulty at all in ligaturing it high up.—I am, etc.,

Newbury, Nov. 12th.

W. B. HEYWOOD.

SIR,—I do not wish to appear unappreciative of Colonel Hull's technique, but when he says "the essential principle is that the sac is not dissected out, it is merely incised, and the peritoneum is grasped from within the sac at the level of the internal abdominal ring," I cannot agree with him as to his interpretation of his own operation. The level of the internal ring cannot be reached without pulling down the sac after he has cut it across. Colonel Hull really does this by blunt gauze dissection outside the sac.

I would suggest that Colonel Hull is mistaken in his idea that he originally grasps the sac at the level of the internal abdominal ring; for the latter is covered over by the fibres of the internal oblique.

I should be sorry to accept Colonel Hull's condemnation that other operations (and operators) end at the point where he begins, for my sole contention was that the whole sac should be removed. This can only be done with certainty by pulling down the sac until a collar of extraperitoneal fat appears around it. This shows that the parietal peritoneum has been reached. Ligation below this point would assuredly leave a small portion of sac, and the operation would be useless.

The essential principle is that the whole sac should be removed.—I am, etc.,

London, W., Nov. 18th.

JOSEPH CUNNING.

RECURRENCE OF ADENOIDS AND TONSILS.

SIR,—It is pleasant to learn that Dr. A. M. Barford takes such a rosy view of the results of operative treatment of nasal obstruction in young children.

¹BRITISH MEDICAL JOURNAL, November 17th, p. 672.

Daily work in a tuberculosis dispensary exhibits children of all ages whose chests do not bear witness to successful results of surgery of the septum and turbinates. But operations on young people over 16 years of age, and on cases of military age referred for examination, have shown encouraging results in the shape of reduced number of attacks of nocturnal dyspnoea and generally improved respiratory function.

Apparently heredity plays such a prominent part that several generations must pass after the operation before the final disappearance of this deformity, which produces such unfortunate results, and does the mischief, as the sower of tares, while folk sleep.—I am, etc.,

Newport, Nov. 18th.

J. LEWIS THOMAS.

Obituary.

EDWARD BURD, M.D., M.C.CANTAB., J.P.,
SHREWSBURY.

On November 15th, at Newport House, Shrewsbury, died Dr. Burd, in the 91st year of his age. He was born in 1826; was educated at Shrewsbury School under Butler; at Caius College, where he was Tancred student and Caius scholar; and at St. Bartholomew's Hospital. He was a son of Henry Edward Burd, F.R.C.S., of Shrewsbury. He took his M.B. in 1851, his M.D. in 1859, and his M.C. in 1863. He was the first man in England to be examined for, and to receive, the degree of Master in Surgery; and was afterwards an examiner for that degree in Cambridge. He was on the staff of the Salop County Hospital for more than half a century—many years on the visiting staff, afterwards on the consulting staff. By right of age his name was first on the roll of burgesses, and first on the lists of Shrewsbury School; and he was one of those remaining officers of the Volunteer Corps, commissioned in 1859–60, who were presented to King Edward VII in 1910. He was twice married; his wife, and his family by his first marriage, have outlived him. He was buried at Shrewsbury on November 19th. All Shrewsbury had been proud of him, and was in mourning for him.

He was, indeed, a great physician; he had not only profound experience, but insight, judgement, and wisdom: he had to perfection that incommunicable power of "looking at a case all round," which seems, in men like him, so natural that foolish people call it intuitive or instinctive. In the exercise of his incessant practice he was honourable and he was generous. But a man may have all these gifts, yet fail to make every stroke of his work tell; he may lose some of his effectiveness by unmethodical habits, or by undue self-effacement, or by a mere trick of levity or solemnity. Dr. Burd was of stronger temperament. His influence and his authority were in everything that he did or said; he was not afraid of anybody; he won the confidence of his patients by masterful sincerity and plain speaking.

He would have made his mark in London; it is probable that he would have been one of the foremost of London consultants; and for some years of his life he used to wish that he had chosen this path to success. Perhaps, in the long run, he would not have been happier. For his name became a household word, far and wide, not only in Shrewsbury but throughout the county, and beyond. He was the recognized head of his profession in that part of England, and he lived to be, as it were, the Father of the Town, its oldest and most honoured representative. He had been president of the Shropshire and Mid-Wales Branch of the British Medical Association. He worked hard, both at the Salop Infirmary and in civic affairs, to promote many good plans for the public welfare; and he was, especially, a zealous guardian of that very beautiful church, St. Mary's, Shrewsbury. For ninety years Shrewsbury had been his one and only home; and by the time that he was an old man he had drawn to himself, in a very remarkable way, the love and the admiration of men. In the earlier years he had built up and maintained, by incessant toil and indomitable will, his great practice, beginning with what was left of his father's practice. He had been associated in work with Mr. Henry Fenton, and later with Mr. H. J. Rope: but he had of himself borne such a burden of work as some of us could hardly tolerate. Now and again, in those impetuous

years, twenty years without one real good holiday, he showed a touch of hardness in his temperament, a touch of intolerance. In the later years, in the years which bring the philosophic mind, and bring to some of us something which may be even better than philosophy, he steadily gained and held the gifts of patience, faith, and gentleness. He had his full share of troubles: none the less, or all the more, he attained that height at which a man is able to face and to solve the problem of old age, the problem which is left to the very end of life because it is the most difficult of all. In his last illness he had much to bear, but he bore it with courage and humility. "Nothing but well and fair, and what may quiet us in a death so noble."

THE death, as the result of a motor accident, of Professor DASTRE, has deprived France of one of its most eminent physiologists. He was born in 1845, and it was not until after he had had a thorough grounding in embryology and comparative anatomy that he entered the laboratory of Claude Bernard in 1872. Being convinced that a physiologist ought to have a knowledge of medicine he carried on medical studies at the same time as laboratory researches. His earliest researches concerned the action of the sympathetic in producing vaso-dilatation; later he gave special attention to nutrition in connexion especially with the function of the liver and the absorption of fats. He made important researches on immunity and anaphylaxis also. In 1876 he took the place temporarily of Paul Bert as professor of general physiology at the Sorbonne, and in 1887 succeeded to the chair. He became a member of the Academy of Sciences in 1904, and of the Academy of Medicine in 1908; for the seven years preceding his death he was president of the Society of Biology. Dastre was not only a diligent and successful experimenter, but a great teacher, and many of his pupils now hold important positions. He was master of a fine literary style, and did much to make known the advances of physiology to the intellectual classes by his articles in the *Revue des Deux Mondes* and the *Revue philosophique*.

THE death of Mr. GEORGE BROWN, M.R.C.S., removes one who was for many years a keen participant in medical politics, and an industrious worker on behalf of various professional reforms. He was born in 1844 at Callington in Cornwall, and late in life he returned to the place of his birth. As a student of Charing Cross Hospital he obtained the Golding and Llewellyn scholarships, and a gold medal in 1873, the year in which he qualified. He then served in succession as house-surgeon to Charing Cross Hospital, demonstrator of anatomy at the Westminster Hospital Medical School, prosector of anatomy at the Royal College of Surgeons of England, and resident medical officer at the North-Eastern Hospital for Children. Mr. George Brown had a ready pen. In the Seventies he published several small works for students, and these were followed at intervals by a number of papers contributed to medical journals. From 1897–1907 he served as direct representative for England on the General Medical Council, and interested himself in various matters affecting the position of general practitioners. For many years he was a member of the British Medical Association, and was a familiar figure at the annual meetings, taking an active and prominent part in the political discussions. He found further outlets for his large store of energy in the editorship of the *Medical Times*, and in the affairs of the Imperial Medical Reform Union, of which he was general secretary and part founder. His death will be regretted by a wide circle of colleagues and friends.

DR. THOMAS AHERN SHEAHAN, of Attercliffe, Sheffield, died on November 2nd, in his 53rd year, after an operation for acute appendicitis. Dr. Sheahan was the third son of the late Timothy Sheahan of Drinagh, Buttevant, co. Cork. He was educated at St. Colman's College, Fermoy, and studied medicine at the old Queen's College, Cork. Thence he proceeded to Dublin and obtained the diplomas of L.R.C.P. and L.R.C.S.I. in 1888. Shortly afterwards he settled in Sheffield, where he practised for twenty-eight years. Dr. Sheahan was a man of fine physique (his height was 6 ft. 3 in., and he was one of a family of ten, who averaged over 6 ft.), and a fluent speaker; at the time

of his death he was president of the Attercliffe Medical Guild. He took an active interest in local affairs, built model workers' dwellings, and was zealous in alleviating the hardships of Belgian refugees. To the last he was a strenuous worker against what he deemed the enslavement of his profession by the National Insurance legislation. His keen interest in the affairs of his native country never flagged, and he was connected with many Irish societies in the city of Sheffield. More than thirty of his medical colleagues paid a last tribute to his memory by their presence at the graveside, including his life-long friends, Dr. P. Bennett and Lieut.-Colonel Sinclair White. There were also delegates from friendly societies, and a great gathering of relations and friends. He leaves a widow and four daughters.

We regret to announce the death, at the age of 43, of Dr. J. RAMBOUSEK, Professor of Factory Hygiene, and Chief State Health Officer, Prague. He was recognized as one of the leading writers and workers on factory hygiene on the Continent, and it was noteworthy how ably he seemed to combine the duties of professor, inspector, and laboratory worker. His industry in collecting material for anything about which he wrote was remarkable. He was best known by his book *Gewerbliche Vergiftungen*, which was translated into English, and published by Edward Arnold in 1913 under the title of *Industrial Poisoning from Fumes, Gases, and Poisons of Manufacturing Processes*. In 1911 he made a short visit to England, which he much enjoyed, leaving behind him the impression of a delightful personality.

Universities and Colleges.

UNIVERSITY OF LONDON.

The following candidates have been successful at the examinations indicated:

THIRD M.B., B.S.—Bertha Hinde, *A. E. P. Parker (University Medal), A. L. Abel, F. M. Alchin, Hannah K. Alton, Elizabeth L. Ashby, R. T. Bailey, Majorie A. Blandy, Marian N. Bostock, Margaret S. G. Bott, F. Caldecott, Hari Das, T. A. Davies, Phyllis D. Dixon, W. H. Dupré, K. R. Hill, H. M. Holt, H. C. Jennings, W. A. E. Karunaratne, W. H. Lloyd, B. Maclean, Sinnethamby Muttiah, M. H. Oldershaw, N. Olivier, Mariamne O. Ramsay, C. S. L. Roberts, K. M. Ross, H. Rowan, M. Schwartz, S. C. Shaw, Ellen Sylk, C. H. Warner, R. E. S. Webb.

B.S.—H. H. Greenwood.

* Distinguished in Surgery. † Distinguished in Medicine.

The following have passed in one of the two groups of subjects:

THIRD M.B., B.S.—Group I: Ruth Balfour, G. W. J. Bonsfield, P. S. Clarke, H. L. G. Foxell, Blanche A. Henderson, C. H. Marshall, Marie A. Moralt, A. Selby-Green, A. L. Telling, J. de S. Wijeyeratne. Group II: F. P. Bennett, L. B. Goldschmidt, D. J. A. Lewis, W. L. Thomas, Naomi Tribe.

UNIVERSITY OF EDINBURGH.

At a meeting of the University Court, on November 12th, Dr. W. G. Aitchison Robertson was appointed additional examiner in forensic medicine, and the professor of pathology was added to the Faculty of Science.

UNIVERSITY OF ABERDEEN.

The University Court, at its meeting on November 13th, agreed to adopt the federated superannuation system for such members of the university staff as were qualified to take advantage of it.

The Court has received intimation of a bequest by the late Dr. Archibald Carmichael, formerly of Barrow-in-Furness, and lately residing at Perth, of the residue of his estate, subject to certain life interests, "for the advancement of the work of the medical side of the University in such manner and subject to such regulations as the Senatus Academicus of the same University may from time to time determine and think fit." The value of the residue is understood to amount to £12,000. The wide discretionary powers given to the university in the application of the benefaction will make it the more useful.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The annual meeting of the Fellows and Members of the Royal College of Surgeons of England was called for November 15th, but on the Vice-President, Mr. Charters Symonds, C.B., taking the chair, a quorum was not present. After waiting the required fifteen minutes, and the numbers present still wanting half of the necessary thirty, Mr. Symonds declared that no meeting could be held. He added that as this was the second consecutive occasion on which an annual meeting had been called and a quorum had been unobtainable, it would be a matter for the Council to consider whether it would be worth while to

summon a meeting for next year in the event of the war continuing.

This was the first occasion for more than thirty years that the Society of Members, or the pre-existing body known as the Association of Members, had no resolution on the agenda.

The following have been successful at the examination indicated:

FIRST PROFESSIONAL EXAMINATION FOR THE FELLOWSHIP.—M. W. B. Bulman, Rustam Nusserwanji Cooper, Hilda T. Haggett, Edith M. Hall, H. L. Heilmann, O. S. Hillman, C. M. Ockwell, Dorothy Pantin, R. L. Rea, Esther Richards, W. G. D. Upjohn, J. Whittingdale.

Medical News.

THE late Dr. John Roberts Thomson of Bournemouth left £59,074 gross.

DR. WALTER HENRY POLLARD, J.P., Edgbaston, has been elected Mayor of the borough of Smethwick.

THE King has given £5,000 to King George's Fund for Sailors, and the chairman, the Duke of Connaught, £500. The fund now amounts to £210,000; the cost of collection has been only $\frac{1}{2}$ per cent.

FIFTY silver, eleven silver-gilt, and seventy-five bronze medals have been awarded to workers in the American hospital at Neuilly. Among the recipients there are thirty-seven men and ninety-nine women, mostly American.

THE usual Christmas bazaar arranged by Gamage (Holborn) will this year include woollen goods—socks, scarves, cardigan jackets, and gloves—for men in the navy and army, and also games and gramophones for men in hospital.

AT the meeting of the Royal Society on November 8th Professor A. D. Waller made a communication showing by demonstration that emotional response of the human subject is characterized (and can be measured) by alterations of the electrical resistance of the skin, independent of the well-known muscular and vasomotor and secretory manifestations of emotion.

A BRONZE mural tablet in memory of the late Dr. W. A. Haslam was recently unveiled at the Corporation Sanatorium, Cottingham, by the Lord Mayor of Hull. Dr. Haslam died on September 1st, 1916, from malignant scarlet fever contracted in the performance of his duties as medical officer of the Hull Corporation isolation hospital and sanatorium. An obituary notice appeared in the JOURNAL of September 16th, 1916.

THE report of the Yellow Fever Commission of the Rockefeller Foundation which sailed from New York on June 14th, 1916, and finished its work in South America in December of the same year, has recently been issued. The only endemic centre of the disease which the Commission could find at present was in Guyaquil, Ecuador. Certain South American countries are said to require close observation, and General Gorgas was appointed to direct this work, which, however, has been postponed in the meantime owing to the war.

AT a meeting of the West London Medico-Chirurgical Society on Friday, December 7th, papers on the methods of detecting simulated deafness and blindness will be read respectively by Mr. Richard Lake and Mr. Percy Dunn. Those who are expected to take part in the discussion of these papers are Mr. H. Tilley, Mr. Roxburgh, Mr. Mark Hovell, Mr. O'Malley, Major Goldsmith, C.A.M.C., Captain McCulloch (Toronto), Dr. Potter, and Captain Heron.

A CHAPTER of a strange story was opened at Bow Street Police Court on November 19th, when "Edward Yeates, describing himself as a medical practitioner and a captain in the New Zealand Medical Corps, surrendered to his bail to answer the charge of wearing military uniform without lawful authority." He is a medical practitioner whose name was entered on the *Medical Register* in 1886, and became a Fellow of the Royal College of Surgeons in Ireland in 1893. The magistrate ordered a remand until November 26th, and accepted bail. The facts will then, no doubt, be placed fully before the court. We may note that the accused denied the charge that he wore military uniform without lawful authority. He also stated that the notification in the *New Zealand Gazette* of July 22nd, 1915, which he produced, to the effect that "the notice dated January 28, 1915, relative to the appointment of Edward Yeates, F.R.C.S.I., is cancelled at his own request" was untrue. We believe that it will be shown that the appointment was not cancelled by his request, but that, on the contrary, he demanded an inquiry, which, we are told, was ordered but not held. We refrain from further comment for the present.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are:

1. EDITOR of the *BRITISH MEDICAL JOURNAL*, *Aitiology*, Westrand, London; telephone, 2531, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2530, Gerrard.

3. MEDICAL SECRETARY, *Mediscra*, Westrand, London; telephone, 2534, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

MR. NORMAN PATTERSON, whose paper on operations on the nasal sinuses appeared in the *JOURNAL* of October 20th, writes to say that in Fig. 1, printed on p. 514, the upper part of the diagram represents the anterior region of the nose and the lower part the posterior region. The figure ought, perhaps, to have been turned the other way up, as it is more usual for the anterior portion of the nose to occupy the lower part of such diagrams.

MR. GRIFFIN WILKES, M.R.C.S., medical examiner, White City, writes with reference to the scheme of examination to be followed by National Service Medical Boards, noted in the *JOURNAL* of November 3rd, p. 594, to suggest that it would be better to examine the heart and lungs first, as he considers the grading depends practically on this examination and the decision of the chairman.

Paton's List of Schools (2s.) for the current year contains a great deal of information with regard to public and private schools for boys and girls and other matters of interest to parents and guardians, including particulars as to fees.

A NEW ELECTRICAL STARTER FOR MOTOR-CAR ENGINES.

IN the *JOURNAL* of October 20th, p. 529, an account was given of a demonstration of an electrical starter for motor-car engines designed by the firm of C. A. Vandervell. It seems to have been generally assumed that the firm was in a position to meet orders for the starter, but we now learn with some surprise that it is unable to do so, the whole output of the apparatus being required in connexion with munitions contracts. Apparently it may be long before supplies outside these contracts will be available, possibly not until after the war is over.

NOTIFICATION OF BIRTHS ACT.

DR. JOHN ALCINDOR (Paddington), writes: A medical practitioner is compelled by law to notify to the M.O.H. of the county or county borough, without a fee, the birth of every child at which he is the accoucheur; should he fail to do so, after two previous warnings he is summarily convicted, and fined to a maximum of 20s. for each offence. If notification of birth is important and necessary—every thoughtful person fully appreciates its importance—surely it is worth paying for, even at the rate we are now paid for the notification of German measles. By such a show of justice and fair play the sense of oppression would be removed, and delinquents would pay their fines with equanimity. It is earnestly to be hoped that our representatives will direct their attention to this matter.

LANCISI ON SWAMP FEVERS AND THE MOSQUITO.

DR. LEONARD J. KIDD (London, N.W.3) writes: It seems to be little known, even by writers on malaria, that so long ago as 1717 Lancisi connected swamp fevers with mosquitos. Thus, I find, on turning to Gibson's *Textbook of Medicine*, 1901, vol. i, p. 290, that Sir Patrick Manson mentions, among the important steps in the history of malaria, Lancisi's investigations in its etiology, but refers to mosquitos only when writing of the work of Ross in 1898. Dr. John Foote, in an abstract on Lancisi in the *Johns Hopkins Hospital Bulletin* for October, 1917, states that Lancisi considered the possibility of infection by the bite of an infected insect causing "worms in the head," but admitted he could not prove this hypothesis. From the nature of these swamp fevers he was convinced of their connexion with mosquitos, and asserted that if swamp emanations are responsible they are and must be organized and living emanations. Lancisi's cure for swamp fevers was a system of drainage for the swampy lands, and also the planting of trees. It is probable that Dr. Foote is here referring to a long treatise of 350 pages entitled "*De Noxiis Paludum Effluviis eorumque Remediis in Genere*." It will be found in Giovanni Lancisi's *Opera Omnia*, Geneva, 1718. In Book I, chapter 16, on p. 46, culices (mosquitos) are

mentioned: he states that they deposit their eggs on stagnant waters. Chapters 17, 18, and 19 also contain much interesting matter. Certainly few persons will now deny that this famous old Italian man of genius is worthy to be held in everlasting remembrance.

ISOLATION OF CHOLERA VIBRIO AND OTHER ORGANISMS.

CAPTAIN HENRY WHITEHEAD, R.A.M.C. (E.E.F.), writes to place on record the fact that he had been for some time working on the same method as that described by Dr. Castellani in his paper published in the *JOURNAL* of October 13th, 1917, p. 476. The idea, Captain Whitehead states, occurred to him in February, 1917, but he had no opportunity of making experiments before the end of August. He hopes to be able to publish an account of his experiments and suggestions shortly.

ANAESTHETICS IN MILITARY HOSPITALS.

WITH reference to the remarks of Lieut.-Colonel J. F. W. Silk, in concluding the discussion on anaesthetics in military hospitals, reported in the *JOURNAL* of November 10th, p. 619, to the effect that the meeting was in accord with his condemnation of undiluted chloroform for routine use in military hospitals, Dr. John Brown (Blackpool) writes: About twenty-five years ago I published in the *BRITISH MEDICAL JOURNAL* a letter pointing out the comparative safety of giving chloroform by the slow and open method. I have practised this method for about forty years and I am satisfied that for the general practitioner (especially doctors in rural districts, who are often unable to have another doctor to assist), with chloroform given on a piece of lint in small doses for the first ten minutes, by which time the patient is calm and able to tolerate the chloroform vapour without any sense of suffocation, the dose may be gradually increased. The patient in a few minutes goes off quietly, without any violent struggling, and is perfectly anaesthetized. Usually it takes twenty minutes. The few minutes extra means comparative safety, no struggling; very rarely is there any vomiting. Deep narcosis is not necessary. When there is stertorous breathing the patient is in the danger zone and the chloroform should be stopped until this passes away. In my experience the slow and open method is comparatively safe. The quick method is not so safe and should be avoided. I believe some of the fatal cases are due to pushing the chloroform before the system has been gradually brought to tolerate it. The chloroform vapour is pleasant, non-inflammable, and does not increase the secretion of the salivary and mucous glands. In patients who have emphysema and are liable to chest affections ether is not desirable.

"COLLOSOL COCAINE."

MR. STROUD, writing on behalf of Crookes Collosols, Ltd., sends the following note: On May 5th last you published reports of Professor W. J. Simpson, Professor R. Tanner Hewlett, and Dr. John Eyre upon three series of tests made at King's College and Guy's Hospital with collosol cocaine, and these showed low toxicity coupled with satisfactory anaesthesia. This we attributed to the colloidal condition of the solution, but further investigation compels us to modify that conclusion.

Recently we have had the advantage of having collosol cocaine tested by Dr. Dale, of the Medical Research Committee, and he found that a considerable percentage of the cocaine used is no longer recoverable from the preparation, and doubt arises whether the alkaloid, as distinct from the protective, is present in the colloidal form. More probably the alkaloid is reduced to benzoyl-ecgonine and ecgonine, and collosol cocaine would now seem to exhibit a mixture of ecgonine, benzoyl-ecgonine, and methyl-benzoyl-ecgonine.

Our aim in preparing collosol cocaine was to produce a solution of cocaine which would give prolonged anaesthesia and at the same time would prevent too rapid diffusion, but we were entirely surprised at the remarkable absence of toxicity exhibited. This now appears to a large extent explained, since whilst the colloidal protective apparently adsorbs a portion of the cocaine, the remainder is found not to exhibit the attributes of a colloid, and, unlike the metallic collosols and those of iodine and sulphur, may be partially dialysed through a parchment membrane.

As we may in this respect have induced some error due to the complexity of the molecule, we trust you will see fit to publish this explanation and our appreciation of Dr. Dale's welcome investigation.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *postae* remittances addressed either in initials or numbers.

Lectures ON THE ANATOMICAL AND PHYSIOLOGICAL PRINCIPLES UNDERLYING THE TREATMENT OF INJURIES TO MUSCLES, BONES, AND JOINTS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.
NOVEMBER-DECEMBER, 1917.

BY
PROFESSOR ARTHUR KEITH, M.D., F.R.S.,
CONSERVATOR OF THE MUSEUM.

I. THE ORTHOPAEDIC PRINCIPLES OF JOHN HUNTER.

Abstract.

IN my lectures for the present year I propose to review our stock of that kind of knowledge which is needed by the surgeon in the treatment of disabled men. There never was a time when we stood more in need of a ready knowledge of the right kind of anatomy and physiology than now. There are in our hospitals—our repairing sheds—thousands of human machines which have been damaged or maimed in the service of their country—awaiting or undergoing repair. We cannot restore action to any machine, much less that most complex of all machines, the human body, unless we know the arrangement and working of its parts. Whatever means or practices we adopt and apply for the treatment of these disabled men, there is one condition which must be fulfilled—they must be based on a knowledge of the structure and function of the body.

In this and in some of my subsequent lectures I propose to make excursions into the past, and cull from the lives of men who devoted themselves to the study of the human body such facts and experiences as may be of use to us at the present time. There are many reasons why I should begin with John Hunter: his life's work is the common inheritance of the Anglo-Saxon peoples; he was still in the full flight of his career when the United States and Britain parted ways; his career, as you know, reached an abrupt end as the winter session of 1793 began. It is not the stretch of intervening years, but the crowded series of revolutionary movements which have swept across the fields of surgery and medicine which make him seem distant to us. In his closing years came a knowledge of oxygen, of combustion, of respiration, of oxidation of the tissues, of heat and temperature—knowledge which threw much of Hunter's best work into the realm of pure history. Then later, in 1839, began the revolution of the microscope, which gave anatomists and physiologists their atomic theory. The result of that revolution was to make us think in terms of living cells; Hunter thought in terms of living structures, tissues, and organs. Then, finally, came the great Pasteur-Lister revolution: problems which Hunter had struggled to solve—problems of inflammation, infection, and repair—were finally fixed on a new basis of knowledge, and thus another section of Hunter's life's work lost its currency. The great evolutionary movement left Hunter's work unchanged; he was an evolutionist, but, fortunately for us, he studied the evolution of function rather than form. For medical men it is function rather than structure which matters. Hence it is that when we have deducted those parts of Hunter's labours which have been replaced by the progress of knowledge, there still remains a vast fund of permanent value not only for us now but for generations to come. I propose to pass in review only those parts of his writings which bear on the restoration of action to limbs and joints.

Were I asked to cite the most important contribution Hunter ever made to surgery, I would reply that it was his clear recognition of the fact that restoration is effected by powers inherent in the living tissues of the patient; the surgeon can only help recovery by tending these powers. This attitude towards disease keeps on recurring throughout his works. I shall quote only one instance. It is from a passage where Hunter speaks of the practice, followed by certain surgeons, of preventing wounds from scabbing. "This practice," he writes, "arises from the

conceit of surgeons who think themselves possessed of powers superior to Nature, and therefore have introduced the habit of making sores of all wounds." You will see that Hunter regarded the surgeon as standing in the same relationship to disease and injury as a gardener does to his plants. He may trim and prune, weed and delve, manure and support, and thus help them to thrive, but the power of growth does not lie in his hands; he can only assist that power. That lesson, I dare think, is needed at all times, and in none more than in the present. A soldier waiting wearily for movement to return to his stiffened joint or limp limb is apt to think that the means of recovery lie in the surgeon's hands, and expects a cure to be worked on him by active means. It is small wonder if in these circumstances the surgeon may be tempted to become more than Nature's mere assistant. In many modern operations the surgeon's share in effecting a cure is pre-eminent. A stone is removed from the bladder, an enlarged prostate from the pelvis, a calculus from the kidney, gall stones from the cystic duct, or a fulminating appendix from the abdomen, and thus the conditions necessary for a recovery are at once established. The surgeon's large share in such cures is beyond dispute. Nature cannot repossess the fractured ends of a broken bone, nor can she set the parts displaced in a fracture dislocation of the ankle or the dislocation of a joint. There, again, the surgeon's aid is an essential factor for a good recovery. But in the treatment of chronic ailments and disabilities which follow gunshot wounds it becomes a much more difficult matter to assess Nature's and the surgeon's share in the recovery. It is in these cases that we have to make certain that the means of treatment which we apply are founded on a rational and well-established basis.

To understand how Hunter's attitude towards the cure of disease became his second nature you must make his acquaintance during those twelve years he worked in his brother's dissecting room in Covent Garden—from 1748 until 1761, when he set out at the age of 33 to serve as a staff surgeon in the expedition to Belleisle, off the mouth of the Loire. It was his fortune during those twelve years in London to be associated with men who studied the human body to learn its living mechanism. He was still more fortunate in studying with men who preferred to dissect their knowledge directly from the actual part than to obtain it at second hand from the printed page. He learnt then to work, to love work, to become work's most willing slave. During those twelve years there were intervals of clinical work at Chelsea and St. Bartholomew's; he had been surgeon, pupil and house-surgeon at St. George's Hospital. But the knowledge which was to give him a foremost place amongst surgeons was gathered within the walls of the dissecting room. Just glance at the researches he carried out then: He worked at the descent of the testicle, and recognized that certain mysterious forces were involved in that operation of Nature. He saw that the condition of the testicle somehow controlled the act; he saw with curious eye what was merely an everyday observation to others—that the roots of shedding teeth were absorbed; that the extraction of a tooth was followed by the removal of its alveolus, and that such changes could not be effected unless the animal body was provided with a mechanism—a marvellous mechanism—for the removal of useless as well as dead parts. If only he could discover how Nature effected such changes, and could copy her methods, then why should he not use such methods to clear away those innocent and malignant growths which so often threatened life itself? The thread of that inquiry runs all through his laborious career: the removal of sequestra, the burrowing of abscesses towards the surface of the body, and the removal of sloughs. He never did discover that opsonic power—that "consciousness of imperfection" which makes useless parts fall a prey to surrounding healthy parts. It was during those twelve years he unravelled the structure of the placenta. He discovered then that nerves must be of different kinds and serve different functions, otherwise there could be no explanation of branches of the first and fifth cranial nerves terminating on the same area of nasal mucous membrane. He examined the earliest stages in the incubation of the chick, noting the origin of the red blood islands, their fusion and invasion of the embryo. It was then he commenced to probe the secrets of life itself, testing the peculiar properties of living matter by the manner it

reacted to cold of varying degrees. He proved that an egg was really a living thing; living matter did not putrefy; life keeps tissues sweet. He had inserted dead matter into abscess cavities to test the alleged digestive action of pus. Above all he had made an acquaintance with the hydra, and realized that even in its simplest form living matter had the power to move, digest, and feel and effect repair.

With a knowledge of those years you will be in a position to understand his attitude towards a party of wounded soldiers he met with on his arrival at Belleisle. Four wounded soldiers came in after being in hiding for a space of four days; one had received two bullets through his thigh, one was shot in the chest, a third was shot through the knee-joint by a bullet which pierced the lower end of the femur, while another was shot through the shoulder, involving the joint. "When they were brought to the hospital their wounds were dressed superficially and they all got well." That is Hunter's account of their surgical treatment. There was also another case, that of a grenadier of the 30th regiment who had been shot in the arm; the bullet passing between the biceps and the humerus. He had been taken prisoner by the French. The arm was fomented and a superficial dressing applied by the French surgeon. About a fortnight afterwards the grenadier escaped and came in with the wounds healed. "There only remained a stiffness in the joint of the elbow, which went off by moving it." Hunter cites those cases to support his contention that in many instances nothing is to be gained by opening and enlarging gunshot wounds. I do not cite Hunter's cases to suggest that the treatment which answered at Belleisle in 1762 is applicable to Flanders in 1917. I cite them because they illustrate Hunter's conviction that Nature is the master surgeon. We also note that he cured stiff joints by movement, and that he preferred voluntary to passive movement.

UNUNITED FRACTURES AND FALSE JOINTS.

I propose now to pass on to 1791, the last year but one of Hunter's life, to see him apply his ripest experience to the treatment of orthopaedic cases. In March of that year there came into his wards at St. George's Hospital a man suffering from simple fracture of the right femur, situated three inches below the great trochanter. Splints were applied and the man was rested in bed, but three months later it was found that no union had taken place. On inquiring into the matter Hunter then discovered that his patient had an ununited fracture of the right humerus of old standing. "It being evident from the circumstance of the arm that there was a natural backwardness in the constitution to form bony union," Hunter directed the man "to walk upon crutches and to press as much on the broken thigh as the state of the parts would admit, with a view to rouse the parts to action, forcing them by a species of necessity to strengthen the limb." To the initiated, Hunter's language and reasoning seem obscure, but to those who know the meaning he attached to "action" and to "necessity," the principles on which he based his treatment are plain. He recognized that the power of repair was inherent in living tissue; it was an essential property of living matter; it was roused into being by injury—his "stimulus of necessity." If he had coined a learned name from Greek or Latin, as has been done in the cases of other obscure properties of living matter—such as "chemiotaxis," "heliotropism"—he would have impressed his followers, but in reality made them no wiser. He set the man on crutches to call forth anew, by means of injury, the reaction of repair in the tissues between the fractured ends of the bones; the treatment was successful. "In the course of a fortnight there was an evident firmness in the bone, and in less than two months the patient could walk with the assistance of a stick."

I am able to show you the ununited fracture of the humerus of the case which was under Hunter's care in St. George's Hospital in 1791. Hunter was interested in the man, and allowed him to remain in hospital to pick up strength. During that period "he was seized with a complaint of his bowels—which carried him off." The femur was found to be firmly united by bony union, but the humerus "admitted of motion in every direction at the fractured part. . . . The arm was carefully dissected to examine

the state of the fractured parts, between which there was no callus, but a large bag filled with a glairy fluid, resembling synovia." A false joint had been formed, and inside that joint lay thirty to forty loose bodies similar to those which occur in joints. Their presence at once diverted Hunter's mind from the "failure of union" to a subject which had often occupied his attention in former times—the origin of loose cartilaginous bodies in joints. You cannot read and understand Hunter's works unless you know that in his opinion the film of "coagulable lymph" which united the opposite sides of an incised wound was a living bond. That film or plug of coagulable lymph (fibrin) was, he believed, endowed with a most marvellous property. If it lay between the ends of a broken bone, it then took on "from a species of sympathy" the texture and qualities of bone; if between the cut ends of a tendon, then it assumed a tendinous texture; if against the cut end of a nerve or a vessel, then it became nervous or vascular in texture as the case might be. If, then, blood were effused into a joint and coagulated on the surface of the articular cartilage, what was more natural than to suppose that it would, as it became organized, assume the nature of cartilage and form the bases of the loose bodies which occur within, and disturb the action of joints; the occurrence of loose bodies within the false joint of the humerus he regarded as a vindication of his theory. Hunter's theory accounted for many appearances, but fifty years later the microscope showed that naked-eye appearances are sometimes deceptive. But no future discovery can ever destroy the utility of a working hypothesis.

MUSCLES.

We see Hunter at his very best when he comes to speak of cases in which damaged muscles are involved. From his first day in the dissecting room to the fatal visit to St. George's Hospital in 1793, those mysterious and marvellous power-machines of the animal body held as in a vice his curiosity and his ingenuity. If it is true, and I think it is true, that a knowledge of muscles is the beginning and the end of all orthopaedic treatment, then Hunter merits our attention more than any surgeon. Let us see him brought face to face with a case where muscles are involved. He had called on a lady who suffered from the after-effects of a broken patella. She was totally unable to use the limb and was wheeled about in a chair. "Having spent a whole night in considering the probable cause of her loss of power, it appeared to me that the space between the two attachments of the rectus (between the origin and insertion of the muscle) being much shortened, the utmost degree of its contraction would scarcely be able to straighten itself, much less move the patella and leg also. . . . I advised her to sit as before (with her leg dangling free of the floor), but, instead of having the leg moved (passive movement) to exercise the quadriceps), to move it herself. This she could not in the least effect at first. I considered, however, . . . if the influence of the mind were freely exerted on the muscle, it would gain this power of contraction." So it proved; the lady gradually obtained the control and use of her limbs.

In this case Hunter's treatment was based on his knowledge of muscular action. He had noticed that a muscle works within definite limits. It can contract under the domination of the will until the shortest limit allowed by the flexion of the joint is reached; it can elongate to the furthest limit permitted by the extension of the joint. Hunter observed, however, that under certain circumstances—if a tendon be cut or a bone broken—the muscle could and did contract beyond the shortest limit of voluntary contraction. A muscle has a power of contraction beyond that which can be given by the will. In the case of the broken patella he conceived that the extensor quadriceps was in the stage of extreme contraction, and therefore lay outside the influence of the will, but he knew that the will could by effort dominate a muscle in all positions; he knew that a voluntary muscle was the most educable of all structures. It was on these principles he based his treatment. How many muscles are there to day which need the simple reasoning of Hunter's mind to help them! By exercising his will a patient may do more to help the recovery of a muscular function than can be accomplished by the most complicated of gymnastic machines.

TENDONS.

When Hunter was appointed surgeon to St. George's Hospital in 1768, and thus obtained the first real opportunity of applying his peculiar store of biological knowledge, he was already 40 years of age. In the previous year there happened two notable events in his life: he was elected to the Royal Society and had his tendo Achillis ruptured. It is the latter event which interests us here. He had been suffering from cramp in the calf of his leg (he was subject to muscular spasms and cramp), and he had been dancing; he was not married then. He noted that the rupture was unattended by pain; it was only when repair set in that the tendon became sensitive. He noted further that he had lost all voluntary control of muscles yoked to the tendon, by no effort of will could he make the muscles of his calf contract. But he also recognized that in sleep the muscle obtained a power of involuntary contraction. He clearly did not understand why the muscles should pass out of action during consciousness, and assume a power to act during sleep. He knew nothing of the structure and functions of the spinal cord, nor the significance of that kind of action we call reflex—that knowledge came with Marshall Hall. He based his treatment on those two simple observations. He encircled the calf of the leg with a bandage to prevent "involuntary movements," and applied an apparatus during the night "to steady the muscles." After the first day or two following the accident the patient was allowed to walk about, with the heel of the boot somewhat raised on the injured side, and was instructed to step off the inner side of the heel, as is the manner with those who suffer from flat-foot.

At the time Hunter suffered from this accident he had already acquired two acres of land at Earl's Court, where he established what would be described nowadays as an experimental station. Healing of tendons became a matter of interest to him. Ottley states that he cut the tendons of dogs by a subcutaneous method—the earliest record we have of such operations. We know from Everard Home that one of the deer then kept at Earl's Court had a tendo Achillis cut for a double purpose—to keep it from jumping the enclosing fence at Earl's Court, and at the same time to provide information as to the mode of healing. I can show you fine specimens of tendon repair which Hunter obtained by experimental means. He found that a gap between the separated ends was no bar to union; coagulated lymph could eventually provide a strong bridge across a wide gap. After his own death it was found that the cicatricial bond in his tendo Achillis had become calcified.

THE MINIMAL MUSCLE LOAD AND THE WILL.

We come now to another side of Hunter's teaching regarding the nature and action of muscles, which has an important application to present-day conditions. We may call this part of his teaching, in order to distinguish it, the principle of the "minimal load." Let me explain by use of an example what is meant by that expression. Let us take the case of a labourer who has just recovered from typhoid fever. We want to test his strength. We ask him to lift and carry a sack containing 2 cwt. of coal. We should be very foolish if, when we find he cannot move it, we concluded that he has no strength. Yet that is how the strength of weakened and disabled muscles are being tested now in many instances. Let us take the case of the deltoid muscle. If we start it into action as the arm hangs by the side it has to move its maximum load at the very start; it has then to lift the weight of the arm when its purchase is at a minimum. The deltoid may, when so tested, appear absolutely paralysed, yet if the disabled man lies on his back with his arm half abducted and its weight supported on a board, and we then apply the principle of the "minimal load," it may be found that the muscle, far from being paralysed, has a very considerable power of action.

It is characteristic of Hunter that he never did halt or bend to point out the immediate practical application of his observations and "principles." He gives us, as it were, the stick or the knife, but expects that we ourselves will do the whittling. That is why Hunter is a prince to the thinking surgeon and only a babbler to the merely practical one. He tells you the position of a joint which gives

a muscle its greatest power: he points out that the weight of a limb is a heavy burden; he recognizes that muscles may be weakened from many causes; he insists on the mastery which the will can obtain over them, but nowhere does he formulate these observations into a system to be applied to the treatment of disabled muscles. Indeed, I must own that without the aid of my friend Dr. W. Colin Mackenzie I should never have realized the practical bearing of many of Hunter's facts. Dr. Mackenzie makes no claim to be the discoverer of the "minimal load" treatment of disabled muscles, but I am certain that no one has realized its practical importance more than he, and no one has realized and applied the right methods to the restoration of disabled muscles with an equal skill. When you have discovered that a muscle loaded to a minimal degree can exhibit a spark of movement, then you have to bring the will to bear upon that spark. As it increases you will be able gradually to increase the load and thus nurse what is often regarded as a useless structure back to a fair or full degree of vigour. Dr. Mackenzie's methods, as revealed by his published results, bespeak infinite patience on the part of both surgeon and patient, and these are qualities which are hard to obtain in either surgeon or patient. In this we here come back to the bed-rock of Hunterian teaching: the only certain means of treatment are those which employ the natural recuperative powers of the body.

One other aspect of Hunter's teaching has a bearing on the treatment of muscular defects. He was not the first to realize that it is impossible for a muscle or a set of muscles to contract without their antagonists being called into action at the same time. He learnt that doctrine as a student from Winslow's still excellent textbook of anatomy; but he did realize more than any one who went before him that the relaxation of the extensor or antagonist muscle was just as important, as real, and as vital an act as the contraction of the flexor or prime-moving muscle. He never could determine whether the relaxation of the antagonist was due to a voluntary or an involuntary stimulus. That doubt, we shall see, has been resolved in recent times. The surgeon must always think in terms not of single, but of antagonist muscle groups.

Remarks

ON

THE TREATMENT OF NEURASTHENIA
AND PSYCHASTHENIA FOLLOWING
SHELL SHOCK.

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A VERY large number of cases of persistent neurasthenia, psychasthenia, and allied conditions, following shell shock are now under treatment in England. Similar affections are also caused by the shock or continued anxiety of Zeppelin raids and the continued anxiety from other risks of injury. The symptoms may commence suddenly after one severe shock, or gradually after repeated shocks. In many of the severer cases the patient is unable to carry out his duties, military or civil, for a long period, and we have the expense of his continued pension. It is important both for the patient and the country that he should recover as early as possible. The treatment is, however, often very unsatisfactory, and to many medical men very uninteresting. It should be psychological as well as medical. Very slight cases may improve rapidly after a short rest, but in many of the severer cases the symptoms are very persistent. The patients are sent into hospital; they often rest most of the day, take little exercise, and are not occupied definitely in any way. They have time for thinking and brooding all day over their experiences and symptoms, and for thinking of the time when they will be expected to return to the front, or will be exposed to the same risks. Very many of the severer cases do not improve much, and after weeks or months leave the hospital with the symptoms well marked.

The following is a line of treatment which, from a study of these severer cases, I consider useful and would

emphasize, and I think these suggestions will be found useful also by others.

Importance of Diagnosis.

The patient should be examined carefully, the symptoms noted, and signs of organic disease searched for. It is very important to exclude early general paralysis of the insane, organic diseases of the nervous system, commencing insanity, and organic diseases of the various systems. When this has been done, malingering or "shirking" should be carefully considered and excluded before the treatment is commenced. Excluding cases of functional paralysis, loss of speech and deafness following shell shock, etc., which are not considered in this article, and considering only neurasthenic and psychasthenic symptoms following shell shock, the differential diagnosis from malingering or "shirking" is sometimes very difficult. Though very many cases of malingering and shirking are seen, in a large number of cases the symptoms are undoubtedly pathological, and the medical man who regards the cases as all "shirkers" is unsuitable for treating such patients, and should leave the treatment to someone who understands their condition better. Some of the men who have distinguished themselves by the greatest bravery and daring in this war, and received the V.C., D.C.M., and other medals, and some of the men who have been able for months to view the shell fire with the greatest possible calmness, have suffered eventually from shell shock. Such cases should be carefully considered and examined before being diagnosed as malingerers or shirkers. The symptoms may continue long after the patient is discharged from the army and when he has no fear of further risk, though it is important that he should be relieved from anxiety on this account. Further, after suffering from neurasthenia, the patient may recover and return to the front and behave with the greatest bravery.

In this article the symptoms of the neurasthenia and psychasthenia resulting from shell shock will not be described, but the following may be mentioned as they are often especially well marked: mental irritability, sensation of fatigue, headache, difficulty in fixing the attention on any subject, obsessions and sleeplessness; the patient is very nervous and is easily and greatly startled by slight noises; often he is constantly thinking of his past experience of the shell fire, and he has great difficulty in fixing his attention on any other subjects. He often sleeps very badly, it may be only one or two hours at night, and when awake at night is constantly thinking of the war. It is interesting to note that many symptoms are often observed which are frequent in Graves's disease. A fine tremor of the hands like that of Graves's disease is very common, also sweating and palpitation are common, and a von Graefe's symptom in slight degree often noted—less marked but similar to that of Graves's disease. Exophthalmos and thyroid enlargement are not observed.

Anxiety with Respect to Further Shell Shock.

When the diagnosis is quite clear and malingering and organic diseases can be excluded, and the symptoms well marked and persistent, it is desirable, in the first place, that the patient should have no further anxiety from shell explosion and similar risks. He should be sent to a hospital or home in England, or far from the front, and treatment carried out. If the symptoms are very severe or have been very persistent, it is desirable that the patient should be informed that he will be transferred to some department of the army at home, permanently or temporarily, where no further risk from shell shock will occur, or to munition work or to other occupation. This is a point of much importance. If the patient is placed in a hospital and allowed time to think and brood over his experiences he often becomes very anxious and dreads the time when he will be sufficiently well to be sent back to the front and exposed to further risks. This great anxiety and dread of a repetition of the shock from shell explosion or similar risks is a great hindrance to recovery and the patient should be freed from it as early as possible. But this anxiety is only one cause of the persistency of the symptoms, and when the patient is relieved from all anxiety of further risk the symptoms often continue, especially if he sleeps badly. Also anxiety respecting his family or those depending upon him may hinder recovery; he should be relieved from this if possible.

Treatment.

He should be told that he is not suffering from any disease which is dangerous to life, that he will undoubtedly recover, and that perseverance in the line of treatment advised is most important. He should be kept as cheerful as possible. As will be mentioned subsequently, all war news should be cut off at once and conversation about the war should be avoided.

At first a short period of complete rest is desirable, and this is well combined with the "sleep treatment" described in the next section. He should be well fed and any gastric or intestinal troubles treated. The bowels should be kept regular, and any affection of the abdominal or thoracic organs or any other ailments (malaria or dysentery) or their results should be carefully treated. In suitable weather the bed or sofa should be drawn into the open air and sunshine when a garden is attached to the hospital or house where he is treated.

Sleep Treatment.

In a large number of the cases the patient sleeps very badly indeed, for weeks or months, and may be able to sleep only for two or three hours or less every night. Often when awake at night he is thinking of his experiences at the front. It is most important to try and check the insomnia as promptly as possible. Trional is one of the most useful drugs I have tried; in a few cases 30 grains of potassium bromide at night may be of service. A mixture of potassium bromide, with small doses of chloral hydrate, and tincture of opium, or syrup of codeia is sometimes very useful. Other drugs will also be of service. If adalin or chloralamide can be obtained they are very suitable.

When the patient is able to sleep better he often improves rapidly, but in some cases after he is able to sleep well the symptoms continue, especially if he is fearing a return to the front or if he is constantly thinking over his experiences. On the other hand, as already mentioned, if the patient sleeps unsatisfactorily the symptoms often continue even when all dread of further war risk ceases. During the day very often the patient is constantly thinking about his experience of the shell explosions, and the war, or of his symptoms, except when he is occupied by reading, conversation, or in some other way. A very important point is to check thinking on these subjects.

For this a sleep treatment for a few days is often useful. The patient is kept asleep part of the day as well as the night by drugs; potassium bromide may be given three times during the day in addition to the trional or bromide at night, or trional is given at night, and after dinner at midday. Or a mixture containing potassium bromide, with small doses of chloral hydrate, and tincture of opium may be given two or three times during the day (in place of the bromide or the trional). But the dose of the drugs should be carefully regulated, and only just sufficient should be given to keep the patient asleep part of the day. The drugs should be continued for a few days only, and discontinued at once if bad symptoms are noted. He should be closely occupied when awake by something interesting to him—games, draughts, dominoes, patience, billiards, handwork, netting, zigzag puzzles, reading, etc. In summer, when the weather is suitable, the bed may be drawn into the open air if a garden is adjacent to the hospital or bedroom. This sleep treatment may be carried out for four or six days, but it should be very carefully observed.

If the patient can sleep well during the night and half of the day he often improves decidedly. After a dose of 15 grains of trional at night one of my patients would constantly sleep all night and all morning until midday or 1 p.m. But often another dose of trional after midday dinner is useful. Some require very large doses of drugs before they sleep; in these cases we may be content with sleep during the night alone, and the drugs should not be pushed and should be discontinued during the daytime.

This sleep treatment is often of very great service for a week at first, but for some time trional or other drug may be required at night.

Mental Treatment: Occupation.

After the sleep treatment it is desirable that the patient should try to cease thinking about the war and his past experience and of his symptoms.

(a) He should avoid reading war news in the papers, journals, and books. In conversation the war should be avoided. Cutting off all war news in this way is of distinct service. Also he should not discuss his symptoms with others and the symptoms of other patients should not be related to him.

(b) He should direct his thoughts to a new subject, or to a subject not associated with war, and best of all to some new occupation.

(c) The occupation should be one requiring some thought, and he should apply himself very closely to this occupation.

(d) The occupation should be one which is very interesting to him, and which is likely to become more interesting as it is continued.

(e) If the occupation is one which can, after a time, be carried out mechanically without thinking, then the patient is liable to wander back to his old thoughts about the war, whilst he is doing work. It is then often useful to vary the occupation, so that closer application will be needed. Thus, if after spending much time in netting, he finds that he no longer requires to think about the work, he may change to fretwork, or some other work, so that closer application will be necessary.

Suitable Occupations.

The occupation most suitable will vary with different cases. The following may be mentioned:

Games, such as draughts, dominoes, cards (especially patience, which the patient can play alone), billiards, zigsaw puzzles, etc.

Hand occupations, netting, fretwork, wood-carving, "poker work," sewing, knitting and needlework, rush work, raffia work, basket work. Netting mats is often very suitable. Handwork in the ward, bandage rolling, knife cleaning, etc., may be useful.

The study of French or foreign languages in some cases may be tried if he is interested in the language, and finds that he is not wearied by it. Drawing, painting, pen painting, photography, music, typewriting, may be of service.

Later, when he is stronger, gardening and outdoor games, field work, grass cutting, motor wagon driving, etc., are suitable. Driving a motor wagon or transport is very suitable if the patient is interested in it, and some patients will find it of much service. The driving of a motor wagon requires close application; it may be interesting to the man, and the calls for attention are so varied that his thoughts are fixed more or less on the work in hand. He is also out in the open air, and great physical fatigue is avoided.

The occupations must be interesting to the patient, and his attention must be kept to them very closely; hence the most suitable kind of occupation will vary much in different cases; one patient will be interested in netting mats, the next will find it irksome. He should therefore be allowed to take up one or two of the most interesting. He should sell his work if possible, so that he may have the pleasure of earning money; if wealthy, the money may be given to some charitable institution.

Games are useful at first, but very soon most of the time should be devoted to occupations. Later work in the Army Service or Motor Transport Corps or munition work may be suitable. The patient may improve rapidly if he is transferred to some occupation in England in which he becomes deeply interested and has no further risk of shell shock—such as the training of cadets, training in the machine gun section, etc.

SUMMARY.

To recapitulate, the important points which I desire to emphasize in the treatment suggested in this article are:

1. All *anxiety* and fear of further exposure to similar risks to life, and anxiety from other causes, should be removed if possible, and the patient should be definitely told that he will certainly recover.

2. The *sleep treatment* is very useful. At first hypnotic drugs may be given both at night and during the day for a short time; so that the patient may sleep all night and, for a few days, also during part of the daytime.

3. He should *cease thinking* of the war and his experiences. This may be brought about (a) at first by the sleep during part of the daytime as well as during the night as just described, and by occupation whenever he is awake; (b) afterwards he should be kept asleep all night (by drugs); but during the day the drugs should be discontinued and he should be kept fully occupied in a suitable way.

4. As regards the kind of occupation:

(a) A new subject or one not associated with his war experience is desirable.

(b) Very close application to the work in hand is important.

(c) The occupation should be one requiring thought, and if the patient finds, after continuing it for some time, that it can be done mechanically, the occupation should be changed or altered so that thought is required.

(d) It should be one very interesting to the patient, and one which will become more interesting.

Many other methods of treatment have been tried and recommended, but I have not attempted any review of the literature of the subject, and have only considered the treatment which, from my own observations, has appeared suitable. In many of the severe cases recovery is very slow, but I think the line of treatment suggested will be found of much service.

THE RED BLOOD CELL COUNT AND HAEMOGLOBIN CONTENT OF THE BLOOD IN DISORDERED ACTION OF THE HEART.

BY

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(Under the direction of the Medical Research Committee.)

THE accompanying table of estimations sets out the results of the examination of fifteen patients at Hampstead Military Hospital. These were unselected cases of D.A.H. (disordered action of the heart) of all degrees of severity; that is to say, they exhibited the group of symptoms associated with this nomenclature, in varying degree. None of the patients had been "gassed," and none exhibited unusual symptoms, such as nocturnal dyspnoea.

The haemoglobin was estimated by Haldane's haemoglobinometer. The percentage was taken as the mean of two observations, one at a dilution which caused the tints to match, and the other at a further dilution which caused the specimen to be slightly paler than the standard tint. This tends rather to overestimate than to underestimate the percentage. The red cell count was made in a Zeiss-Thoma counting chamber, which was estimated by micrometer measurement to err (if at all) on the shallow side; it would not, therefore, tend to yield excessive estimations.

Two specimens of blood were taken from a puncture in the ear of a patient in separate pipettes at the same sitting; 160 squares of the counting chamber were counted from each specimen, and the average of these two estimations was taken as the true blood count.

The observations were made between the hours of 10 and 12 in the morning on the patients who had taken no exercise and who had remained indoors. This series of observations was made in March and early April during an exceptionally cold and severe spell of weather.

The average number of red cells is commonly given as about 5,000,000 per c.c.m. in males, but there does not appear to be any complete agreement on this point. A rise normally takes place after exercise and at certain stages of digestion. The count also varies with age, and, according to von Limbeck,¹ this variation is considerable; thus he gives the average count between 19½ and 22 years as 5,600,000, 25 to 30 years as 5,340,000. A very high average count was found by P. W. Hawk¹ in a number of healthy young athletes in training—that is, 5,600,000 immediately before exercise.

Case.	Age.	Red Cells.	Hæmo- globin.	Colour Index.	Remarks.
			Per cent.		
1	31	6,600,000	97.5	0.74	Severe D.A.H.
2	26	6,465,000	99	0.76	Severe D.A.H.
3	26	6,275,000	99	0.79	Mild D.A.H.
4	24	6,135,000	93	0.76	Moderate D.A.H.
5	24	6,055,000	100	0.82	Severe D.A.H.
6	—	5,960,000	89.5	0.75	Chronic mild D.A.H.
7	27	5,915,000	91	0.76	Chronic severe D.A.H.
8	19	5,900,000	97	0.82	Severe D.A.H.
9	18	5,867,000	90	0.76	Chronic moderate D.A.H.
10	32	5,675,000	91	0.84	Severe D.A.H.
11	31	5,652,000	—	—	Moderate D.A.H.
12	25	5,526,000	92.5	0.83	Mild D.A.H.
13	27	5,495,000	89.5	0.81	Mild D.A.H.
14	34	5,110,000	92	0.9	Chronic mild D.A.H.
15	32	4,892,000	87	0.89	Severe D.A.H.

The average of the fifteen patients suffering from D.A.H. was 5,837,000, which is quite in excess of anything previously observed in healthy individuals, and is the more remarkable in view of the fact that these men were invalids, who had for the greater part spent a considerable time in hospital before the estimation was made. The average age of these patients was 28 years. One-third of these patients had a count of over 6,000,000, and more than one half (53 per cent.) had a count of 5,900,000 or over.

The hæmoglobin content was for the most part below the normal 100 per cent., the average being 93.4 per cent. (ranging from 87 per cent. to 100 per cent.). Relatively to the number of red cells the hæmoglobin content was low, the average colour index being 0.8.

The cases have been roughly described in the table according as they are severe or mild, chronic, or otherwise, and it is evident that no relationship can be established between these particulars and the red cell count. It is apparent that a high blood count may be found in a patient, such as Case 6, able to undertake a half-hour's physical drill and march three miles without pronounced discomfort, and that a low count may occur in a patient, such as Case 15, readily distressed and only able to undergo mild resistance exercises.

The leucocytes were not counted in this series of cases. The existence of a leucocytosis in cases of D.A.H. has been established and described by Mrs. Briscoe.¹

Multiple observations made at intervals on other individuals indicate a degree of variability in the count, but this is a matter that requires further investigation: amplification of these observations is evidently desirable in other respects, but, my work having been interrupted, I publish these records as they stand.

It does not appear possible in the present state of our knowledge of the pathology of D.A.H. to suggest the significance of this polerythrocythaemic condition.

REFERENCES.

¹ *Eines Klinische Pathologie des Blutes*, Jena, 1895. ² *Amer. Journ. Physiol.*, 1904, vol. x, p. 384. ³ Report on Cases of Soldier's Heart, Medical Research Committee, 1917.

THE first meeting of the Spanish National Medical Congress will be held at Madrid in April, 1918 (21st to 26th). The work will be divided among seventeen sections. The president is Professor Ramón y Cajal, well known as the author of works of the highest importance on the structure of the brain and spinal cord. In the summer of the present year he published an autobiography under the title of *Recuerdos de mi Vida* (Recollections of My Life). Santiago Ramón y Cajal was born in 1852, and studied at Saragossa, where his father was professor of anatomy. After graduating in 1873, he served as an army medical officer in Cuba. In 1881 he was appointed Professor of Anatomy at Valencia; in 1886 he became Professor of Histology at Barcelona; and in 1892 he was called to the corresponding chair at Madrid.

ACUTE TUBERCULOUS BRONCHOPNEUMONIA
WITH PNEUMOTHORAX,SECONDARY TO TUBERCULOSIS OF THE PERI-
BRONCHIAL LYMPH NODES.

By ARCHIBALD MALLOCH, B.A., M.D.,

CAPTAIN CANADIAN ARMY MEDICAL CORPS.

The following case is reported because it illustrates the relation of certain more chronic tuberculous lesions to acute tuberculous pneumonia, and the relation of the latter to pneumothorax.

Pte. J. G., aged 18, was admitted at midnight on January 26th, 1917, with a diagnosis on his field medical card of "incipient trench feet."

Previous History.—He had been a farm worker. During his last few days at the front he had had a cough and pain in the right chest; in the ambulance train this pain was quite sharp.

Clinical Aspect.—The feet were slightly swollen and tender but nowhere was the skin broken. The temperature was normal on admission, and the pulse was 92; the respirations were not rapid, and he made no complaints referable to his chest. He was able to sit up in bed and wash himself, appeared perfectly comfortable, and soon dropped off to sleep. At 4 a.m. (January 27th) he awoke suddenly with very severe pain in the right side of the chest and upper abdomen. He was extremely dyspnoeic and cyanosed. The respirations were 40, the movements of the chest were very shallow, the pulse 152, and the temperature 102.6°; it was 105° a few hours later.

He was almost immediately transferred to the "pneumonia hut," where there is an abundance of fresh air. The apex beat of the heart could be seen in the fifth interspace 14.5 cm. to the left of the middle line, and on percussion the right border was found 2.5 cm. to the left of the left border of the sternum. The heart sounds were clear and no murmurs were heard. The right side of the chest did not move. Tactile fremitus was much decreased over the right lower axilla and base, and at the base behind there was an area of flatness extending upwards for about five inches. Above this in front the percussion note was hyper-resonant. Over the areas of the middle and lower lobes the breath sounds were amphoric, and accompanied by tinkling sounds; over the upper lobe in front the respiratory murmur could scarcely be made out. The amphoric breathing was transmitted to the left of the sternum, and was marked at the level of the second costal cartilage. On the right side, behind, the breath sounds were poorly heard. The *bruit d'airain* was heard over the right chest, and the succussion splash was readily made out. On the left side there was no dullness, but the respiratory murmur was harsh, although nowhere "blowing."

A diagnosis of right-sided pneumothorax was now made, and this was thought to have been caused by the rupture of a tuberculous cavity in the lung. Pneumonia also was thought to be present. A very grave view of the case was taken, but the patient held out until February 2nd. The course of the disease was not without interest.

January 27th: A small amount of fluid was withdrawn from the right base. January 28th: The temperature was 104°, respirations 32, pulse 118. Blood was seen in the sputum. January 29th: Temperature 99.5°, respirations 32, pulse 120. The amphoric breathing was not heard so high up on the right side of the chest, but above this there were numerous rhonchi. No change in the position of the heart was made out, so the pneumothorax was thought not to be "valvular" in nature. January 30th: Temperature 99°, respirations 30, pulse 124. The patient became slightly delirious and was much cyanosed. The upper level of flatness in the right thorax had apparently not changed. The amphoric breathing was still distant and heard on the right side only over a small area close to the lower end of the sternum. Over the right upper lobe the respiratory murmur was inaudible. February 1st: Temperature 97°, respirations 36, pulse 100. There was no blood in the sputum. The patient was not so cyanosed and his pulse was stronger. The apex beat was seen at a point 10.5 cm. from the middle line—that is, a little nearer its normal position. The amphoric breathing at the pulmonary cartilage was not so pronounced. Although there was still pain in the right chest, it was thought that the pneumothorax was decreasing. Over the left upper lobe the breath sounds were still harsh, and numerous moist râles were heard. February 2nd: The patient was again very cyanosed, with much wheezing, and was unconscious most of the time. No blood in the sputum. The apex beat was in the same position as on the previous day. The amphoric breathing was again heard higher up on the right side of the chest and at the base of the heart to the left of the sternum. Still no increase in the area of flatness was observed. Sharp moist râles were heard over the left upper lobe, with prolonged expiration. Numerous bubbling râles were heard in the left axilla. It was thought that the patient had tuberculosis of both lungs. Temperature subnormal, respirations 40 to 48, pulse 120. He died at midnight of cardiac failure.

I am indebted to Major Lawrence J. Rhea, C.A.M.C.,

for the following notes on the pathological aspect of the case:

Pathological Report.—Report on the fluid withdrawn from the right pleural cavity on January 27th: "There is about 10 c.cm. of turbid yellow fluid. The predominating cells are polymorphonuclear leucocytes, although there are a considerable number of endothelial cells and lymphocytes. Smears stained with carbol-fuchsin show numerous tubercle bacilli. These organisms are mostly extracellular in position, although some of them have been ingested by the endothelial leucocytes. There are also a few small diplococci organisms." Report upon the examination of the sputum of January 28th and 30th: "A number of selected particles from the sputum were stained for tubercle bacilli, and after careful and prolonged search only two were found."

Post-mortem Examination.—The skin and pectoral muscles were dissected in such a way as to make a water-tight pouch bounded by the ribs and the dissected tissues. This pouch was now filled with water and a puncture made beneath the water between the second and third ribs into the right side of the thorax. Air, under slight pressure, bubbled through the water. The right thoracic cavity contained a large amount of turbid fluid. The right lung was greatly compressed and forced upwards and inwards against the bodies of the dorsal vertebrae. Over the parietal pleura, especially at the angles of the ribs and over the upper surface of the diaphragm on the right side, there was a layer of plastic lymph several millimetres in thickness, which was easily removed. The visceral layer of the pleura also showed a lymph exudate which was thickest over the posterior surface of the upper lobe. The mediastinum and its contents were pushed to the left. The cause of the pneumothorax—that is, the communication between the respiratory passages and the pleural cavity—was not at first evident, but after removing the lymph exudate from the lower part of the posterior surface of the right upper lobe a small perforation about 2 mm. in diameter was found in the visceral layer of the pleura. The right upper lobe was crepitant in its upper but not in its lower half. A longitudinal section was made through the lower part of the upper lobe and showed the following: There is a band, about 5 cm. in width, of acute tuberculous bronchopneumonia extending from a point close to the hilum of the lung to the periphery of the lower part of the upper lobe. This band follows the general direction of one of the branches of the bronchial tree. For the most part the small greyish-white areas of tuberculous vary in size from about 0.5 mm. to 10 mm. in diameter. One small area of tuberculous, just beneath the visceral layer of the pleura, has broken down, and by involvement of the overlying pleura has caused the tiny perforation already described. This sharply limited area of involvement of the lung is explained as follows: The lymph nodes about the hilum of both lungs are enlarged, and are the seat of old non-active tuberculous. There is, however, one node on the right side which shows changes due to active disease. This node, which is firmly attached to one of the bronchi, has undergone acute necrosis and has led to the perforation of the bronchus. As a result, there is established an opening from the medulla of a tuberculous lymph node directly into a bronchus. The area of diseased lung corresponds to that supplied by the perforated bronchus. There is no gross evidence of old tuberculous in either lung. The left lung shows septic bronchopneumonia. The right side of the heart is dilated.

Comments.

1. This case demonstrates a well-known fact—namely, that the finding of pneumothorax clinically, and of numerous tubercle bacilli in the pleural effusion, does not compel us to diagnose extensive disease of the lung.
2. The amount of fluid in the pleural cavity was underestimated.
3. The changes in the position of the heart and the changes in the clinical signs, especially that of the amphoric breathing, may, we think, be explained. The return of the apex of the heart towards the middle line, and the decrease in the area of amphoric breathing, were evidently due to the fact that the air in the chest was being absorbed after the perforation of the lung had been closed by lymph. The fact that the amphoric breathing was again heard higher up on the chest, may possibly be explained by the greater compression exerted upon the residual air in the pleural cavity by the increasing amount of fluid.
4. The source of the infection of the lung was found.
5. The area of lung involved corresponded to the distribution of that bronchus which had been perforated by an ulcerating tuberculous lymph node.
6. The production of the pneumothorax was due to a factor which plays such an important rôle in many diseases, namely, the accident of position of one of the small foci of acute tuberculous bronchopneumonia.

To Dr. George E. De Schweinitz, now serving as a major in the United States Medical Reserve Corps, has been assigned the task of compiling a handbook on ophthalmology for the use of the Surgeon-General of the army.

NOTES ON TRENCH FOOT.

BY

CAPTAIN R. T. DOBSON, R.A.M.C.

UNDER the exigencies of modern campaigning winter warfare imposes on the troops holding the line conditions to which, previous to the winter of 1914, no armies had been subjected, and to counteract which no measures had been devised, with the consequence that in that winter an enormous proportion of the troops were incapacitated by the various lesions to which as a whole the term "trench foot" is applied.

As the conditions favouring the occurrence of these became better understood, and measures were devised to combat them, the losses from the occurrences of trench foot became less serious in each succeeding winter.

Whilst in charge of the arrangements for preventing and treating lesions of the feet and legs occurring in the troops occupying a certain area, all the cases of so-called trench foot passed through my hands and came under my care; this gave me exceptional opportunities of studying the various kinds of lesions included under the term.

There were three distinct types. The first, which comprised about 15 to 16 per cent. of the cases, commenced with symptoms of marked constriction of the blood vessels, causing the feet to become in the first stage numb, cold to the touch, and strikingly bloodless in appearance. The second type, comprising 4 to 5 per cent. of the cases, commenced as ordinary chilblains. The third type, which comprised the remainder of the cases, arose as septicly infected lesions of the skin, and were obviously due to neglect of ordinary cleanliness or ill-fitting foot-gear, or both. The first two types are to a certain extent unpreventable, but the third should be quite avoidable with ordinary care.

The period during which the observations were made extended from the beginning of November, 1916, to the latter part of February, 1917. The first two-thirds of this period was very wet with low temperature, whilst the latter part was dry and frosty with a temperature much lower than normal, a hard frost prevailing most of the time.

During the rainy period the trenches and ground were very wet, necessitating the almost continuous wearing of thigh gum boots. In the dry frosty weather the men were able to revert to the use of their leather ankle boots and putties.

The greatest influx of cases occurred towards the end of the wet period, although some of the more severe cases occurred during the dry frosty weather.

The cases of the first type mentioned below, those occurring during the wet period, resembled closely the milder cases of frostbite, under which term the cases occurring during the dry frosty weather should properly be included.

Four per cent. of the cases gave a history of having suffered from a mild form of Raynaud's disease; 50 per cent. gave a history of having been troubled by persistent cold extremities, blueness of the hands or other signs of poor capillary circulation. About 30 per cent. of these were also subject to chilblains, whilst about 10 per cent. gave a history of having suffered from chilblains only.

The wearing of gum boots did not appear to prevent entirely the onset of the complaint, since 80 per cent. of the total cases included under the term trench foot and occurring during the wet period were wearing them. In fact, where they were worn continuously during the tour in the trenches, as was the practice with most of the men, they soon became wet inside from condensed perspiration, and the clothing covered by them became soaked by perspiration also, thus subjecting the legs and feet to the very conditions the boots were devised to avoid. These conditions were aggravated by any active work which caused them to perspire undertaken by the men whilst wearing gum boots. On the other hand, the lack of exercise to which the exigencies of trench warfare subjects the men whilst in the front line also has a harmful effect on the circulation, in the lower limbs especially.

The age of the men did not appear to have much influence on the onset or course of the complaint, but the length and thoroughness of their physical training did, as it more easily affected those who had come from sedentary

occupations and had only been in the army a comparatively short time.

Fifty per cent. of those cases which began with constriction of the blood vessels began first to show signs on the fourth day in the trenches, and 46 per cent. on the third day. The remainder had been working in wet trenches, gun pits, or wagon lines behind the lines, and wearing gum boots more or less continuously.

The following is the history of a typical case commencing with constriction of the blood vessels:

Pte. E. P., aged 26. In front line trenches eleven days. He wore long gum boots continuously during his stay in the trenches, as he had to wade knee deep through water to get to a bombing post, where he stayed two days. He then returned to the trench for two days and then had another day in the bombing post. During his stay in the bombing post he was ankle deep in water the whole time, and his clothing was soaked with rain during most of his stay in the trenches.

He had a change of socks the day after getting into the trenches, but they got damp after being worn a few hours in spite of the fact that he was wearing gum boots. He rubbed his feet for fifteen minutes each morning with whale oil. His feet began to give trouble after he had been in the front line two days, that is, on the third day. They first became numb and very white in appearance. This condition lasted about thirty-six hours. They then became very painful, red, and swollen, and the skin became very shiny.

This stage lasted about three days, after which the swelling began to subside. A day or two later the skin began to come away between the toes, leaving a raw surface, which healed rather slowly. The skin on the soles of the feet became wrinkled and loose, and finally peeled off, leaving the soles of the feet tender for some time afterwards.

A slight rise in temperature and some transient albuminuria was noted in the more severe cases. Cases of this class very closely resemble the milder cases of frostbite, and in their second stage are hardly distinguishable from the more severe cases of chilblains; however, there is no history of the feet having passed through the stage characterized by marked loss of sensation and vaso-constriction, and the affection is more likely to be confined to one foot. Blistering and excoriation of the skin are much less common and marked in the case of chilblains.

In some of the cases commencing with vaso-constriction, pain, which is worse at night and neuralgic in type, is marked and severe from the commencement of the complaint, lasting for some time after all signs of inflammation have disappeared and the patient is able to walk.

In a few cases the skin of the toes became livid and discoloured. These gave a good deal of trouble on account of the slowness with which ulcers that developed where the skin had been discoloured healed. None of my cases developed gangrene.

None of the cases of the first and second types suppurated or showed any inclination to do so, neither did any of them develop whitlow or teno-synovitis of the suppurating type.

About 5 per cent. of the cases had to be evacuated owing to the slowness with which ulcers healed. The ulcers were healthy, and only needed time to recover.

Those cases which commenced as chilblains did not show any signs of vaso-constriction, but almost immediately became red, swollen, and painful. They did not so frequently develop blisters and ulcers, and were more amenable to treatment.

Three cases sent to me as trench foot turned out to be acute rheumatism.

The average time taken for the recovery in the vaso-constrictor type was about ten days; some, especially those which were sent early for treatment, recovered in five or six days, whilst the few that developed ulcers and similar lesions took five or six weeks.

Those cases which had had a previous attack were the most intractable, and one case, which had the scar of a large burn received in early childhood on the dorsum of one foot, gave a good deal of trouble on account of the slowness with which ulcers that developed on that foot healed.

Second and subsequent attacks of trench foot gave more trouble than first attacks, and men who had had one attack should be kept out of the trenches in winter if possible.

Prevention.

The preventive measures to be taken are now well known.

They consist partly of means taken to improve the surroundings of the men, draining trenches, the provision of

trench boards to enable the men to carry out their duties without being exposed to the risk of constantly wet feet.

The provision of waterproof coats to prevent their clothing getting wet in wet trenches, as constant exposure in wet clothing is bound to lower their resisting power to disease.

Special attention is paid to the daily massage of feet and legs with oil, and the provision of a daily change of clean dry socks.

Attempts are made to keep the inside of gum boots dry by the provision of special drying rooms, which as a rule are not very effective.

It is important that units should be relieved from their duties in the trenches as frequently as possible, as it is found that the number and severity of the cases increases in proportion to the length of time spent continuously in the trenches. This is due partly to the confinement and lack of exercise which trench warfare entails.

Treatment.

In those cases which developed in spite of precautionary measures, the following method of treatment in the early stages gave good results:

The patient was kept in bed and the affected parts were carefully covered with lint which had been saturated with spirit (methylated) and wrung out until nearly dry. The moist lint was carefully covered by waterproof material to keep it from drying too quickly, then with a layer of wool and fixed with a bandage. As the lint dried it was moistened and reapplied.

The main points in the use of this method are to take care that the lint is not too wet and that it is thoroughly covered by the waterproof material; if too wet the skin gets sodden, and if not thoroughly covered by waterproof material it dries out too quickly. This application acts as a vaso-dilator and aids in restoring the circulation. It also relieves the pain. It was used in both first and second types of cases with extremely good effect.

After the swelling had subsided massage was employed if the skin remained intact. Ulcers and excoriations were treated with the usual astringent and antiseptic lotions.

Good results in the few cases in which it was tried were got from the use of iodine in chemical combination with oil (liquid paraffin). This was used instead of plain oil for massage and seems worthy of a more extended trial.

In conclusion, the necessity for well fitting foot-gear and the importance of not allowing the use of any form of clothing which may interfere with the circulation through the lower limbs may be emphasized.

TREATMENT OF SECONDARY HAEMORRHAGE FROM THE BUTTOCK BY LIGATURE OF THE INTERNAL ILIAC ARTERY.

BY

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TEMPORARY CAPTAIN R.A.M.C.

It is difficult to realize without having seen the tragedies associated with secondary haemorrhage how real they may be in connexion with wounds of the buttock. A brief glance at the anatomy of the part—the muscle mass, the distribution and anastomosis of the vessels after they emerge from under cover of the sacro-sciatic ligament—makes one pause to think.

The spread of sepsis in this area, the softened tissue, and the granulations render the task of the surgeon no easy one. Again, he is faced with the difficulty as to which vessel the bleeding is coming from. The haemorrhage is generally sharp, the patient is collapsed, and very little more will turn the scale against him.

Plugging of wounds has at all times been found unsatisfactory. The septic material is only daunted up and the condition of the patient rendered worse. A slow oozing persists, or the haemorrhage recurs after removal of the pack, and the patient, worn out by sepsis and loss of blood, finally succumbs. Saline packs—tablet and gauze—have been tried and are occasionally successful, particularly in the less serious type of case. Ligature of the bleeding point is, as in all other parts of the body, the method of choice, but is not always possible. To open up the buttock freely of necessity means a considerable loss of blood, and

even then one cannot always be certain of getting at the bleeding point; and this is particularly true if the vessels have been eroded in the region of the sacro-sciatic ligament and their ends have retracted within the pelvis.

It is here, then, that proximal ligation of a main arterial trunk, so exceptionally justifiable in other parts of the body, has a distinct advantage over other methods of treatment. It effectively controls the haemorrhage, and allows, if necessary, free opening up of the buttock without dangerous haemorrhage, while it does not in any way retard the healing of the parts involved. The hypogastric—internal iliac artery—is the main trunk of supply to the buttock, and is easily accessible in the pelvis. Ligation of this vessel was performed by Annardale for gluteal haemorrhages.

To reach the artery the transperitoneal route is selected, a rectus incision made, and the patient put into the Trendelenburg position. The common iliac artery is then easily identified, the posterior parietal peritoneum incised, and, with very little dissection, the internal iliac can be found just as it bifurcates from the common trunk. A double chronic catgut ligature is passed under the vessel and tied. The position of the ureter and vein has to be kept in mind, and care must be taken to secure the vessel before it divides. On the left side a little difficulty may be experienced, according to the position of the pelvic colon and its mesentery. The posterior parietal peritoneum is sutured with fine catgut, and the abdominal incision closed in layers.

The following cases are illustrative of the condition. A temporary plug was employed for a few hours to control the haemorrhage till the patient recovered from the initial shock.

CASE I.

Pte. W. H., aged 35. Wounded November 16th, 1916; admitted two days later. Gunshot wound of buttock. The patient complained of abdominal pain and tenesmus, and there was evidence of pelvic peritonitis; wound in buttock very septic. X rays showed two shell fragments lying in the pelvis.

Laparotomy: Free fluid in pelvis, much inflammation. Shell fragments lying in recto-vesical pouch; small tear of peritoneum of rectum, but not actually perforated. Fine catgut suture introduced; shell fragments removed; pelvis drained.

The patient improved steadily until November 30th, when he had a severe secondary haemorrhage from the buttock; controlled by pack; intravenous saline given. The right rectus was incised and the internal iliac artery ligated; the buttock wound was opened up, washed out, and lightly packed with eusol gauze; vessels found to be eroded at sacro-sciatic ligament in track of shell fragments.

There was daily improvement until December 5th, when there was a slight recurrence of haemorrhage. The wound was now quite clean and granulating well. A small branch of one of the lateral sacral arteries was found to be oozing; it was ligated with catgut. The patient made an uninterrupted recovery.

This case illustrates the rapidity with which collateral circulation can be established in the buttock.

CASE II.

Pte. S. P., aged 32. Wounded February 25th, 1917; admitted March 1st. Gunshot wound of left groin and buttock, with comminuted fracture of ilium. Shell fragments had been removed at the casualty clearing station, but the wounds were still very septic and were treated with eusol and saline.

On March 3rd, early in the morning, there was severe secondary haemorrhage from the left buttock; controlled by pack, and patient given pituitrin and saline. At 9.30 a.m. the left internal iliac artery was ligated. Pack removed from buttock and wound irrigated with eusol and explored with finger, but not opened up, as patient's condition was not good. Track went down to sacro-sciatic ligament in region of vessels; it was lightly packed with eusol gauze.

The patient made a good recovery; there was no recurrence of haemorrhage, and the buttock wound healed well.

CASE III.

Pte. G. E., aged 21. Wounded March 5th, 1917; admitted the following day. Gunshot wound of right thigh and buttock; wounds very septic. X rays showed shell fragment lying in region of sacro-sciatic ligament. Wound excised; foreign body removed, from close proximity to gluteal vessels; eusol gauze.

March 9th. Smart secondary haemorrhage; controlled by pack. Right internal iliac artery ligated. The buttock wound was opened up and clot washed out; vessels eroded at point of emergence from under cover of sacro-sciatic ligament; light pack of eusol gauze introduced.

The patient made an excellent recovery; there was no recurrence of haemorrhage, and the buttock wound cleaned up and healed well.

CASE IV.

Pte. W. H. (Prussian Infantry). Wounded April 3rd, 1917; admitted April 6th. Entrance and exit wounds of right buttock in line of gluteal vessels; wounds mildly septic—opened and drained.

April 9th. Smart secondary haemorrhage in early morning; controlled by pack, and patient given pituitrin and saline. At 9.30 a.m. the right internal iliac artery was ligated; buttock wound opened up—much septic clot, muscles soft and friable, gluteal vessels eroded and ends retracted under the sacro-sciatic ligament. A light pack of eusol gauze left in buttock wound.

The patient made a complete recovery; there was no recurrence of haemorrhage, and the wounds healed well.

CASE V.

Driver J. W., aged 25. Wounded April 28th, 1917; admitted May 1st. Gunshot wound of left buttock. Large entrance and exit shell wound which had been excised at the casualty clearing station. Track of wound crossed line of gluteal vessels. Wounds very septic, edges gangrenous. Treated with Carrel's tubes.

May 3rd. Severe secondary haemorrhage in early morning; controlled by pack, and patient given pituitrin and saline. 9.30 a.m.: Intravenous saline given; left internal iliac artery ligated. Clot washed out of buttock wound—vessel found eroded beneath sacro-sciatic ligament; saline pack introduced into buttock wound. Dressed on the third day—buttock wound now clean and granulating. General condition of patient much improved. There was no recurrence of haemorrhage; the buttock wound granulated and healed well.

FRAGMENT OF SHELL IN THE ARTERIAL CIRCULATION.

By CAPTAIN C. S. O'NEILL, M.D., R.A.M.C.(T.C.),
OFFICER COMMANDING NO. — MOBILE X-RAY UNIT.

THE following interesting case is put on record owing to the great rarity of the condition and its interest from a radiological point of view:

Sgt. P. was wounded at 7 p.m. on August 7th, 1917, and was admitted to a casualty clearing station on the morning of August 8th in a very collapsed condition with a running pulse of 128 a minute and wounds in the left posterior axillary line, fifth interspace, left lumbar region, and left thigh. On admission the patient was too ill for a thorough clinical examination of the chest, but it was found that the heart was not displaced and that there was well marked pericardial friction.

On August 10th the patient was moved to the x-ray room and screened. It was then found that the shadow over the left chest was uniformly obscure and dense, and practically no movement was seen in the left diaphragm, which was depressed and flattened to an obtuse angle. The right chest and diaphragm were normal in appearance. The most striking picture was seen in the cardiac region. The shadow of the heart was much to the right of the mid-line, which would be expected with a large haemothorax which gives the picture of a combination of great obscurity of the chest, depression and fixation of the diaphragm on the affected side, with dislocation of the heart shadow to the unaffected side. However, in this instance not only was the heart shadow more to the right than normal, but it was increased in breadth, and was globular in shape. The cardio-hepatic angle was obtuse and the muscle of the right side of the heart could be differentiated from the extreme edge of the heart shadow, and the diagnosis of pericardial effusion was made. About one inch above the base of the heart and two inches from the right border and two and a half inches deep, a foreign body was made out within the heart shadow with an extraordinary movement. The black shadow of the foreign body, some 2 cm. long with a maximum breadth of 0.6 cm., could not be separated from the heart shadow whatever the incidence of the x rays. The movements seen were a downward movement with the mediastinal respiratory movement, a lateral movement with systole to the right, and a flail-like movement, with the base of the flail to the right side. These movements were synchronous with the heart beats, giving a curious rotary effect. The diagnosis was then made that the foreign body was within a chamber of the heart, probably within the left ventricle, and had one end of it fixed under a valve flap. Half an hour after returning to the ward from this examination the patient called attention to his left leg, which was found to be blue in colour and cold from above the knee to the foot. One hour later the leg appeared to be normal again.

On August 11th the wounds in the left lumbar region and left thigh demanded urgent surgical interference owing to the development of signs of gas gangrene, and on his way to the operating theatre the patient was again screened with a view to more accurate localization of the fragments in the thigh and lumbar region. His chest was also screened, and although otherwise the picture was identical no trace of the foreign body in the heart could be seen, and on rapid examination of the course of the thoracic and abdominal aorta it was found that the missile must have passed through the aortic valve and was lying in the abdominal cavity 2½ in. deep from the anterior abdominal wall, 1 in. below and 1 in. to the left of the umbilicus. No movement was seen and the foreign body was apparently,

within the aorta at its bifurcation. On the morning of August 12th the patient's condition did not seem the worse for the operations on his thigh and loin under gas and oxygen, and the aspiration of 6 oz. of blood from the left pleural cavity. Pericardial friction was well marked, no increase of cardiac dullness could be made out, there was resonance in the left axilla, and the breath sounds were generally harsh on the left side. He died at 6.25 p.m. this day.

Necropsy.

There was surgical emphysema of face, neck, and thorax. The left chest contained a small amount of blood. There was an entrance wound in the left posterior axillary line. The pericardium contained a small amount of blood and a small tear on the posterior inferior aspect. There was an exudate of fibrin over the anterior and left lateral walls.

There was a small hole, surrounded by haemorrhage into the myocardium, on the posterior wall of the left ventricle. The interior of the left ventricle was clear except that there was a ragged tear on the septal wall, and the chordae tendineae of the aortic valve were also torn. The heart muscle was very pale and full of gas.

The liver and spleen were very congested and full of gas. In the left lung was a small haemorrhagic infarct with fragments of indriven rib; the right lung was normal.

The foreign body was found at the bifurcation of the left common iliac artery surrounded by dark red clot; the intima was apparently undamaged. There was no tear of the intima at the aortic bifurcation.

Since the second time of screening, on August 11th, the missile must have moved down the left common iliac artery and become lodged at the bifurcation. At the time of the second screening there was no difference noted in the femoral pulses, but the missile most probably moved down the aorta, passing through the aortic valve within half an hour of the first screening, when the phenomena in the left leg were noted. The patient died of general gas gangrene after having lived five days with a piece of shell free in his arterial circulation.

THE STORY OF A TOOTH-PLATE: AN UNUSUAL WAR INJURY.

BY

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DURING the battle of the Somme a soldier was buried in his shelter by a large shell. He was dug out from amongst the débris in an unconscious state, and ultimately placed on a hospital barge, and thus conveyed to the base. When he recovered consciousness on the barge, one of his first requests was for the artificial tooth-plate which he had been wearing when he was rendered unconscious by the shell explosion. The denture—an upper one—was produced from his wallet by the attendant orderly, but the patient, remarking its size and the number of teeth, quickly declared his doubt as to it being his, or if it were, he assured those in attendance that it must have been broken, and that part of it was missing.

The patient had also shown some signs of a fracture of the skull, and to this was ascribed the difficulty in swallowing of which he complained. No radiogram was apparently taken, and he was speedily evacuated to England, and admitted into one of the auxiliary military hospitals at Eastbourne. The man's story led to an investigation of the denture, which showed clear evidence of having been fractured across its palatal and alveolar portions. Examination with the screen revealed the presence of a foreign body in the thorax, and an x-ray picture showed a denture with two teeth opposite the middle piece of the sternum.

I was asked by the medical staff of the hospital to try to remove it. The use of a Brünig's oesophagoscope fitted with a Hill's tube made it possible to obtain a good view of the offending denture, and it was easily extracted *per vias naturales* by means of an Irwin Moore's forceps. So far as the gullet was concerned, recovery was quite uneventful, but the original diagnosis of a fracture of the base of the skull was only too surely confirmed by the development of a pulsating exophthalmos, which was successfully treated by ligation of the internal carotid artery by an able surgeon in Eastbourne.

The case is of interest in that a fracture of an upper dental plate was produced without any injury of the superior maxilla. This injury is by no means unique, for I have heard of similar accidents in the present war, but

the story of this particular case, where one of the fragments of the broken denture was actually swallowed by a patient rendered unconscious by the same injury that fractured the dental plate, must be almost without parallel.

ABSENCE OF THE RIGHT PINNA AND RIGHT TONSIL, WITH RIGHT FACIAL PARALYSIS.

BY

JAMES J. HEALY, CAPTAIN R.A.M.C.

SOME little time ago an extraordinary case of congenital deficiency came under my care. A recruit (W. G. B., aged 18 years) was brought to me, owing to the absence of the right ear.

It was quite evident that the right pinna had never developed. Smooth skin completely covered the site where the pinna should have been. There was no sign of any scar, or of any external auditory meatus. The helix was represented in a rudimentary manner as a slightly elevated ridge of cartilage beneath the skin. Darwin's tubercle was well marked and better developed than any other portion of the cartilage. A rudimentary tragus was present in the usual position, and caused a very slight elevation of the skin. Posteriorly to the tragus, the outer end of the cartilaginous external auditory meatus could be felt subcutaneously.

The left ear was normally developed. Tests of hearing gave the following results:

Left ear normal in all respects.

Right Ear.—(1) Weber's test, positive. (2) Rinne's test: (a) Air conduction just perceptible; (b) bone conduction normal. (3) Spoken voice: (a) Normal voice heard at 18 inches; (b) whispered voice not heard. (4) Politzer inflation gave sensation of cracking in the ear.

Conclusion: Partial deafness of right ear due to obstruction of external auditory meatus. The middle ear and Eustachian tube were intact.

The face showed paralysis of the right side, complete in all regions, except the angle of the mouth, where slight muscular effort was perceptible. It was impossible to make out whether the stylo-hyoid and posterior belly of the digastric were intact or not, but the hyoid bone seemed to move evenly and normally.

Sensation of both sides of the face was intact, but the vasomotor control of the right side was lost. Eyesight was poor; vision was $\frac{3}{16}$, myopic in both eyes—with chronic conjunctival thickening in the right eye due to its constantly exposed condition.

The right tonsil and right anterior pillar of the fauces were absent. There was no evidence or history of removal. The palato-pharyngeus muscle was intact, and the tongue was quite normally developed. No difference in the sensation of taste between the two sides of the palate could be detected with acid, bitter, salt, sweet, and pungent solutions. Saliva was seen issuing from the mouths of Stenson's and Wharton's ducts, and no diminution in the amount of flow could be detected on the right side.

The family history contained nothing of importance. The man is an only son of a family of seven, the fourth child of a normal father and mother.

It is worth noting that there was no injury during parturition. No instruments were used at his birth. The paralysis was present from birth.

Summary.

1. There was overgrowth at the outer end of the external auditory meatus, shown by the closing in of its margins.
2. Diminished growth at the outer end of the hyo-mandibular cleft or facial nerve region, as evidenced by the almost complete absence of the pinna.
3. Diminished growth in the soft palate or fifth nerve region, as evidenced by the absence of the palato-glossus muscle or anterior pillar of the fauces.
4. Diminished growth in the second cleft or glosso-pharyngeal region, as shown by the absence of the tonsil.
5. Lack of development of, or a lesion causing complete atrophy of, the facial nerve.

Observations.

Points for consideration are:

1. The facial nerve is chiefly concerned with the hyo-mandibular cleft, but overflows to the other regions involved.

2. The condition may be primarily one of nerve absence or nerve lesion in mid-embryonic life, with secondary non-development or partial development of the mesoblastic structures due to the loss of nerve control.

3. The muscular effort perceptible at the angle of the mouth may be due to the nervous supply of the hypoglossal.

The FitzPatrick Lectures

ON

MEDICINE IN ENGLAND DURING THE REIGN OF GEORGE III.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS
OF LONDON.

By ARNOLD CHAPLIN, M.D., F.R.C.P.,

PHYSICIAN, CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST.

(Concluded from p. 690.)

VIII. PHYSICIANS WHO DETERMINED THE ADVANCE OF MEDICAL KNOWLEDGE.

FROM the general topics discussed in the earlier part of his lectures Dr. Chaplin went on to give an account of the individual work of physicians during the reign of George III, considering first the work of those who contributed to the advancement of medical knowledge and then giving an estimate of the activities of those who widened the boundaries of general science.

An idea of the scope of medicine taught during the first thirty years of the reign could, he said, be formed from the work of Dr. George Fordyce of St. Thomas's Hospital, the *Elements of the Practice of Physic*, which appeared to be the chief students' textbook of those days. For thirty years Fordyce lectured on medicine at his house in Essex Street, Strand, and his book might be taken to be the substance of what he was accustomed to teach. Its first hundred pages were devoted to the natural history of the human body—physiology—the remainder to the symptoms, distinctions, prognostics, and cure of fevers and inflammations, all the morbid conditions physicians were called upon to treat being included under these heads. In accordance with the doctrines of the time, little or no attempt was made to distinguish and classify the various forms of fever.

The elder Heberden was the great prototype of the modern clinical physician, and the connecting link between Sydenham on the one hand, and Bright, Addison, and Watson on the other. His *Commentaries*, published after his death in 1801, contained the results of his study and experience, extending over sixty years. So sound was his doctrine, so cautious its treatment, and so endowed with excellent common sense that much of it would require little editing at the present day. It contained no fantastic theories, no appeal to metaphysical disquisitions, but simply the results of the close study by an acute observer of signs and symptoms of disease at the bedside. Dr. Chaplin referred next to Sir George Baker, a former president of the College, whose essay on lead colic might justly be quoted as a model of inductive logic.

Towards the end of the eighteenth century the existing order of clinical physicians, which depended entirely upon knowledge gained at the bedside, was beginning to be replaced by a race who enlisted the sciences of chemistry, anatomy, and physiology in order to elucidate many problems. The desire to profit from knowledge gained by an examination of diseased parts on the *post-mortem* table received its first stimulus in England in the publication, in 1769, of Dr. Alexander's translation of the great work in which Morgagni for the first time directed anatomical knowledge to the service of medicine. The study of morbid anatomy was carried on and advanced in France by Bichat; but it was Matthew Baillie, great as a physician and great as a morbid anatomist, who was the father of medical pathology. His celebrated book on *The Morbid Anatomy of Some of the Most Important Parts of the Human Body*, published in 1793, was the first English treatise on morbid anatomy. Baillie summarized the purpose of his work under the four following heads: "(1) To explain the changes of structure arising from morbid conditions; (2) to distinguish between morbid changes which have been generally confounded; (3) to detect diseased alterations in

the organization of parts which are but little or not at all known; (4) from the observation of morbid structure theories taken up hastily about disease will be occasionally corrected." The chief characteristics of the work were its conciseness and accurate observation; the plates, produced after the appearance of the book, afforded unimpeachable evidence of Baillie's unerring accuracy. Baillie scarcely lived to see the full fruits of his pioneer work, but looking back we could detect in it the beginnings of the science of pathology.

At about the same period the sciences of chemistry and pathology were beginning to be seriously applied to the art of medicine. Chemistry had received considerable attention from certain London physicians, one of the first of whom was Dr. William Saunders of Guy's Hospital, who lectured on chemistry from 1766 onwards. He assisted Sir George Baker in the chemical part of his inquiry into lead colic. Berzelius greatly stimulated study of the subject of animal chemistry, and a translation of his essay on the *Progress of the Present State of Animal Chemistry* was published by Young. It was, however, Dr. William Prout who was the first physician to bring a sound and comprehensive knowledge of animal chemistry to the aid of practical medicine. Prout was one of the famous quartet of great scientists, the others being Young, Wollaston, and Wells, who adorned the medical profession towards the end of the reign of George III; but unlike the other three, he added to his great scientific attainments practical ability as a physician. He began to lecture on chemistry in 1813, and many fundamental truths concerning metabolism were first stated by him, among them the facts that urea was formed in the blood and merely excreted by the kidneys, and that the healthy stomach contained always a percentage of hydrochloric acid. He also was the first to enunciate the doctrine of "secondary assimilation," but his views were to a certain extent perjured by Giessen and Justus von Liebig, and given to the world under the high-sounding title of the "metamorphoses of tissues."

Dr. Chaplin turned aside to speak of the work done in dermatology by Willan—who was the first to place the classification of diseases of the skin on an anatomical basis—and of the progress in midwifery achieved during the reign. Apparently no definite instruction in midwifery was given in London until 1739, when Smellie began a course of lectures. In the same year Sir Richard Manningham established a ward in the Westminster Infirmary for lying-in women, and soon afterwards lying-in hospitals began to be erected, of which the earliest was the British Lying-in Hospital, founded in 1749, with William Hunter as its first physician.

IX. PHYSICIANS WHO CONTRIBUTED TO THE ADVANCE OF SCIENCE IN GENERAL.

Thomas Young.

Reverting then to the quartet of physicians superlatively great in science, Dr. Chaplin spoke next of Thomas Young, of whom he said that it was almost impossible to realize the extent and depth of his mental capacity. Physics, classics, mathematics, Egyptology, philology, music, biography, and actuarial science, he made them all his own; with him there was never any hurry in the acquirement of knowledge, each subject in turn was taken up and deliberately exhausted before another was attempted. He was fortunate in receiving a legacy of £10,000 from his uncle, together with a house and its contents in Norfolk Street, Strand—bequests which relieved him of the necessity of drudging for a living. After visiting Edinburgh, Goettingen, and Cambridge as a student, he was in 1802, when in his twenty-ninth year, appointed to deliver lectures on natural philosophy at the Royal Institution, and at about the same time published his undulatory theory of light, which the scientific world, with the exception of Arago and Fresnel, hesitated for some years to accept, owing largely to Brougham's attack. In the domain of Egyptology, in which he began really to interest himself about 1816, Young met with even more opposition, and had to see much of his work pilfered by others, the chief offender being the great Champollion. There was, however, no doubt that Young could claim priority over Champollion in the discovery of phonetic hieroglyphics from his study of the Rosetta stone. Some of the failure of Young to obtain recognition for his work in science was to be

attributed to faults of his own; he appeared to resent the intrusion of others into his intellectual territory, and his style was somewhat obscure and not a little caustic. As a physician Young was not successful either in practice or as a writer; his *Treatise on Consumptive Diseases* was a compilation, and his *Introduction to Medical Literature*, though it displayed a vast amount of learning, was not in other respects remarkable. Still, Thomas Young rose above all the great men of science produced in the reign of George III in mental stature and comprehensiveness of intellect.

William Charles Wells.

For William Charles Wells, the next name in the quartet, success in the shape of social fame and emolument never came. Of him Dr. Chaplin said: He began his career in London penniless, and after sixteen years of toil was unable to command an income of more than £307 from all sources. Ill health clogged his steps; in his forty-third year he was seized with a slight stroke, and henceforth, for him, it was a grim fight against time to finish the work he had designed. But in spite of these disadvantages he laboured on bravely in his humble lodging in Serjeant's Inn, scarcely known to any but five close friends, and when his work was accomplished, he desired only the modest epitaph that "he had tried to extend the boundaries of knowledge." Shrewd judges of mankind, such as Brodie, described Wells as one of the most remarkable intellects of the age, but his peculiar temperament, and somewhat cold scientific type of mind did not lend themselves to the showy mental exploits beloved by the multitude.

In the sphere of natural philosophy the name of Wells will be for ever honoured. It was his good fortune to investigate and establish the laws which govern the formation of moisture in the air, and although physical chemistry has advanced in all directions, the fundamental principles enunciated by him have never been seriously challenged. For this work Wells was awarded the Rumford medal in 1814, and since then his name has been inseparably connected with the subject. Previous to his work it had been supposed, since the days of Aristotle, that dew was formed in the lower atmosphere in consequence of its moisture being condensed by means of cold, and that in its formation cold was produced. Wells became doubtful of the accuracy of this view, and accordingly carried out a series of experiments in the garden of Mr. James Dunsmore, a merchant friend, who lived in Surrey, three miles from Blackfriars Bridge. To this country house Wells betook himself late in the afternoons, and, with varying intervals caused by ill health, prosecuted his experimental work during the nights, returning in the early morning to his house for the day's work. In his *Essay on Dew* he pays an affectionate tribute to his friend Dunsmore for allowing him to use his garden "at considerable inconvenience to the members of the family." Wells also conducted experiments in Lincoln's Inn Fields when increasing infirmity rendered it impossible for him to go into the country.

Wells used pieces of wool of known weight, and these he weighed again after they had absorbed the dew in various situations and under varying conditions of atmosphere. He thus became acquainted with the laws which govern the deposition of dew. For instance, he found that the exclusion of the sky from the wool diminished the quantity of dew formed, that more was deposited on wool when on grass than when placed on gravel, mould, bright metals, or when suspended in the air. Having obtained these data, he then investigated the part cold played in the formation of dew, and at this stage his original discovery was made. He found, as others had done before, that the temperature of the ground was higher than that of the air above, that passing clouds cause a rise of temperature, and, what was of the utmost importance, that certain substances placed on the ground took on a lower temperature than the ground itself. From these facts he deduced his theory that "Dew is the production of a preceding cold in the substances upon which it appears." He also established the fact that the production of water from the atmosphere actually produces heat. All this was contrary to the view, hitherto accepted, that dew was formed by the cold of the night, and that in its formation cold was produced.

Such was the work of Wells. It is a melancholy picture,

this last effort of his, feverishly labouring to finish his experiments, with water-logged legs, and the agony of cardiac asthma ever present; spending nights in Dunsmore's garden which should have been devoted to repose, and then hurrying back to town in the early morning to write down his results lest death should claim him ere his task was completed. Surely few scientific workers have battled so bravely with adverse conditions.

The medical work of Wells has not, perhaps, received the consideration it deserves. His chief claim to distinction in this sphere rests on the papers he communicated to the Society for the Improvement of Medical and Chirurgical Knowledge, in which he dealt with the occurrence of albumin in cases of dropsy. His first paper, read on November 4th, 1806, related only to cases of dropsy following scarlet fever. This phenomenon had been observed by Plenck of Vienna, Cruikshank, and Berserius long before, but it was Wells who noticed that blood and albumin were present in the urine in these cases. He also established the fact that the dropsy occurred in the upper parts of the body, and described—without, however, giving them a name—the uraemic seizures to which such cases are liable. He found evidences of inflammation present in all the abdominal organs, including the kidneys, and inferred that the process was essentially inflammatory in origin.

On June 4th, 1811, he read another paper before the same society, in which he pointed out that albumin was to be found in cases of dropsy other than scarlatinal, and drew a distinction between hydrothorax, ascites, and dropsy of the skin, in that the two former, if primary, did not have albumin in the urine. This was the first attempt to differentiate between the various forms of dropsy. The point was used with great advantage by Blackall, who, writing two years later, still further elaborated it, but the merit of pointing it out belongs to Wells alone. In support of his contentions, Wells quoted two *post-mortem* examinations, in one of which "the kidneys were much harder than they usually are, and the cortical parts were thickened," while in the other he says, "the kidneys were larger and softer, and on the outside were several vesicles." He gave the credit of the discovery of albumin to Cruikshank who mentioned it in 1798, but points out that he had discovered it independently in 1799. Wells had, therefore, established the fact of albumin in dropsy. He had differentiated the forms of dropsy in which albumin was found. He had even indicated that the kidneys were diseased, but he failed to point out the causal relations between the two. This momentous clinical fact had to await the advent of Richard Bright, but it was Wells who prepared the ground. To complete the consideration of the work of Wells it is to be remembered that Darwin himself, in his historical introduction to the *Origin of Species*, gives to Wells the credit of having been the first to enunciate the principle of natural selection, in a paper read before the Royal Society in 1813. Altogether Wells was one of the great men of the profession during the reign of George III; a man of great scientific ability, with a lofty conception of duty, and with an adherence to truth which never swerved.

Wollaston.

William Hyde Wollaston was so little associated with the practice of medicine that his work can scarcely be considered from that point of view. Very early in his career he definitely severed his connexion with medicine, owing, it is said, to his unsuccessful application for the post of physician to St. George's, and henceforth devoted himself entirely to science. Some of his scientific work, however, related to problems in medicine, and in this field he initiated inquiry which led to important results. He was one of the first to study the composition of calculi and other abnormal constituents of the urine; work which, no doubt, paved the way for the further extension of the subject by Prout and Marcet. He also explained the phenomenon of hemianopia, and demonstrated the partial decussation of the fibres in the optic commissure. But with these exceptions the whole of the scientific work of Wollaston belonged to physics, chemistry, and metallurgy. He discovered rhodium and palladium, and devised a process for rendering platinum malleable. He was the first to see the dark lines in the spectrum, since known under the name of Fraunhofer's lines, but failed to appreciate their true significance. As a point of peculiar interest at the present time, it may be

mentioned that Wollaston invented the periscope, an instrument so frequently in our thoughts to-day.

Excessively cautious, fearing to advance by bold deductions, Wollaston constantly allowed others to reap where he had sown. In this way he lost his claim to be one of the first sponsors of the atomic theory.

CONCLUSION.

Dr. Chaplin concluded his review of the progress made in medical knowledge during the reign of George III in the following words:

We have seen that soon after the beginning of the reign a distinct revival of activity in its study became evident. We have shown that, at first, the revival manifested itself in an increase of clinical knowledge gained almost entirely from observation of symptoms during illness. We have pointed out the manner in which the obstacles to the advance of clinical medicine were surmounted by the application of the sciences of pathology, physiology, and chemistry, which, towards the end of the eighteenth century, had been placed upon a sound foundation. We have also devoted space to the consideration of those physicians whose activities were mainly scientific. In all this the main features of the spirit of the eighteenth century, which laboured unceasingly for the emancipation of the human intellect, for freedom of thought, and for inquiry on scientific lines, can be clearly observed. We owe to the physicians of the age of George III an immense debt for the excellent foundations they built, often with rough and improvised tools. Like the Georgian architecture, the Georgian silver, and the Georgian glass, they were large and solid, and were fashioned to stand the test of time. Men of the stamp of Hunter, Baillie, Prout, and Willan flung open the portals of medical science, through which their descendants have passed to realms of spacious and accurate knowledge.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

FIBROID UTERUS TREATED BY X RAYS.

THE patient, a married woman aged 42, came to me in February, 1917, for a fibroid causing discomfort from its size, with constant backache and pressure symptoms. She had a bilobed fibroid of the whole wall.

During three months she received eight x-ray treatments, each of two to three pastille doses, filtered. The monthly periods were regular before treatment. Under x rays she had one heavy followed by two ordinary periods, and they have stopped entirely since the sixth treatment, now five months ago.

The fundus was 4½ in. above the pubes. During treatment it was reduced to 2½ in., and three months later was only 2 in. above the pubes. In width the tumour was reduced from over 5 in. to 4 in. during treatment, and since then has become reduced another inch.

The front wall was bulged out so that the distance from pubes to umbilicus was 7½ in. at first; this has come down to being flat, and now measures 6 in.

Except during the first monthly period, she has not been in bed for a day since treatment was first begun; pressure symptoms are relieved and the backache is gone. The patient is well and strong and very pleased with the final result.

This is the fourth case of fibroid I have treated in a similar manner, and all with remarkably good results. In one case the menopause was brought about, in the two other cases the periods were only reduced in quantity.

London, W.

FLORENCE A. STONEY, M.D., B.S.

HYPERPYREXIA IN ENTERIC FEVER.

THE case of hyperpyrexia in enteric fever recorded in the JOURNAL of October 20th by Dr. Fonseca recalls a case complicated with pneumonia I saw a few years ago. The temperature was taken every two hours.

H. S., a girl aged 15, who was abnormally fat for her age, was seen for the first time on January 29th. Her mother said she had been ill for a week. Her face was flushed; she complained of headache; pneumonia was present at the base of the right lung. The temperature was 103.6°.

On the following day the temperature was 104°, and there was occasional delirium at night; pulse 140; haemoptysis. The next two days the temperature remained at 104°; there was still occasional delirium, and haemoptysis occurred on each day; pulse 130.

February 2nd. Temperature 103.6°; delirium constant; pulse 130, respirations 40; tympanites, spots appeared on abdomen.

February 3rd. Temperature 104°; delirium constant; pulse 130, respirations 52.

February 4th. Temperature 104.2°; delirium constant; pulse 140, respirations 72. Calomel was given.

The patient was sponged every day, which brought the temperature down, but it soon went up again.

February 5th. Temperature 105.4°; delirium constant; pulse 140, respirations 67. The temperature went up to 105.8° and then suddenly, after the patient had been sponged, it jumped to 109°, when the patient died. Ten minutes after death the temperature was 106°.

P. VERNON DODD, M.D.,

Hythe, Kent.

M.R.C.S.

Reports of Societies.

VALUE AND LIMITATIONS OF SANATORIUM TREATMENT FOR TUBERCULOSIS.

THE discussion on this subject (see BRITISH MEDICAL JOURNAL, November 17th, p. 650, and November 24th, p. 690) was continued at the meeting of the Medical Society of London on November 26th, when the President, Sir ST. CLAIR THOMSON, was in the chair.

Dr. CAMAC WILKINSON, while thinking sanatoriums invaluable and indispensable in the treatment of certain forms of tuberculosis, expressed the opinion that the present system could only touch the fringe of the disease. The victims who could not pay for their own treatment numbered at least 250,000 to 300,000. After the war, including soldiers and dependants, there would be 300,000 needing treatment. There were 11,000 beds in sanatoriums, and all authorities now admitted that each case needed, on an average, six months' residence. Thus there would be room for 20,000 every year. This meant that 6.6 per cent. of these victims could have treatment in one year, and 50 per cent. of these were dead in three to four years, so that benefit was chiefly limited to 3.3 per cent. of the total. Thus 93.3 per cent. of the cases needing treatment could not enter a sanatorium for at least a year. In other words, 20,000 cases were treated and 280,000 left out. The problem should not be discussed as it affected a small proportion of victims; no system could be called a success which could not offer immediate, expeditious, economical, convenient, and effective treatment to the majority of sufferers. The cost might be stated in three distinct ways: (1) The bare cost of treatment, which would certainly be £50 for each case, representing £1,000,000 for 20,000 cases; (2) every man was worth at least £50 a year to the State, many ten times that amount—this represented a further dead loss of £500,000; (3) the economic loss from loss of occupation and wage, varying from £50 to £150 per case, represented another £1,000,000 to £3,000,000 per annum. The total loss from prolonged residence in sanatoriums was from £2,500,000 to £4,500,000 every year. He disagreed with Dr. Lister's opinion that the tubercle bacillus was a harmless pest to most of us, considering that it caused one-third of the total deaths of men and women occurring in the prime of life.

Dr. CRACE CALVERT thought that statistics were not of much use, as it was difficult to get particulars of patients who had gained permanent benefit, most of whom did not report again to the sanatorium. Every patient should be given sanatorium treatment except those suffering from advanced or marked disease. He thought sanatorium should be given before home treatment. Sanatoriums

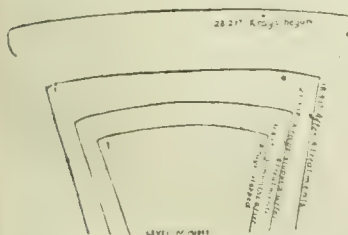


Diagram of fundus uteri to scale.

were of value because (1) a patient came under the care of a physician who could advise him on all conditions of his life; (2) he could be taught how to regulate his life and activities; (3) the moral effect was good; (4) the educational value was useful; (5) in the majority quiescence of the disease was obtained and this might go on to arrest. The unsuitable cases were the acute, auto-inoculations, alcoholics, and patients of the flabby type. Three months was the least which should be spent in a sanatorium; six months was preferable. With regard to after-care, he advocated the starting of colonies along the lines of the Cambridge after-care colony.

Dr. HENRY ELLIS said that sanatoriums, from a national point of view, were a failure; the number of beds was increased to 11,000 without a drop in the death-rate; but from the point of view of the individual they were of enormous value. Sanatorium figures were very unsatisfactory, as they were limited to cases showing tubercle bacilli in the sputum, and cases were not counted until there was definite evidence of tissue destruction. There should be separate sanatoriums for patients in Class I and those in Class II. Lighter treatment was required along the lines of the convalescent home. Even a short time away from work would improve enormously the condition of the tuberculous. Resistance was the main factor, loss of which was due to overwork, poor food, illness, and home conditions. Statistics showed that the mortality among the independent classes was greater than among the working classes. More than 50 per cent. of the patients died within six months of notification. It was known that sanatorium treatment was good for early tuberculosis, but it was eliminated from the statistics; it was known that delay in sanatorium treatment was fatal to success, yet there were waiting lists; it was known that environment, by lowering resistance, produced the disease, but nothing was done to make environment better; it was known that early recognition was the keystone of success, but had anything been done to investigate how early recognition might be made more simple and certain?

Dr. JANE WALKER thought that the results of sanatorium treatment were disappointing if regarded from the physical point of view, but the social and educational factors were of great value. The treatment of tuberculosis in children was very important. Infection occurred at a very early age; previous history could be obtained more easily, and tuberculous children were much more intelligent than others. Boarding schools for working-class children were urgently needed. Working-class patients should return to their previous work, as in this way much of their anxiety was relieved. Means for treatment of surgical tuberculosis in adults was much needed.

Dr. HECTOR MACKENZIE said it was impossible to tell with certainty whether any particular case of consumption was curable. Sometimes the best efforts ended in failure on account of the virulence of the organism or the low resistance of the patient. Sanatoriums should be reserved for early cases, those with a slight and limited lesion, but these were not often met with in practice. Immediate results should be most marked among the poorer classes, where sanatorium surroundings differed most from home conditions. Ultimate results should be better among the well-to-do. The sanatorium was only one means of attacking the problem, and was designed for hopeful cases, but there was need for permanent institutions for the incurable advanced cases and for the dying.

Dr. NEVIN ROBERTSON said that the sanatorium was the best existing method of raising resistance. The limitations were financial, patients not having enough money to get treatment for a sufficient length of time. Of 1,141 patients who had been in Benenden Sanatorium from 1907 to 1914, 36 per cent. were on full work, 3 per cent. on partial work, 11 per cent. on no work, 41 per cent. were dead, and 6 per cent. were readmitted. Of 563 cases traced at the end of 1914 who had left in the years 1907-11, 20 per cent. were on full work, 2 per cent. on partial work, 2 per cent. on no work, 63 per cent. were dead, and 12 per cent. had been readmitted. There were two alternatives—earlier diagnosis on the one hand, and after-care colonies and improvement of housing and environment on the other. He thought the results in early cases were often permanent. Bad housing was only one factor; others which lowered resistance were alcoholism, syphilis, overwork, dissipation, poverty, and lack of food. The people should be taught to be conscientious in regard

to health, and the general practitioner had this field to himself. The value of sanatorium treatment depended upon (a) discipline and the healthy life of the patient, (b) healthy environment. The limitations were due to the absence of a sanatorium life in the general community. In removing the limitations there were two lines of action: (1) prevention of the disease and (2) prevention of infection. For the prevention of the disease there must be thorough education of the people in the laws of health through preaching the gospel of health in schools, homes, and pulpits, and the conditions of bad environment must be removed by improvement of housing, factories, and workshops. Chronic and advanced cases often caused massive infection. There were two ways of preventing infection: (1) by early diagnosis and treatment, so that the cases which reached an infective stage were diminished, and (2) by isolation of all infective cases from beginning to end of the disease. The dispensary should be a place for examination of contacts and for their supervision.

Dr. MURRU said that much of the confusion and uncertainty as to the best methods necessary to combat tuberculosis was due to want of clear ideas as to the real causes of the disease. The question whether tuberculosis was a social or infectious disease must be decided. If it were an infectious disease every measure of inoculation and injection and internal administration of antiseptics would be legitimate and essential. But it was inconsistent while believing in infection to swing round and attack poverty, alcohol, bad housing and low wages, and other social evils. He was convinced consumption was more a product of vicious environment than of infection, that the mental factor was more important than the microbe factor, that man created soil favourable to infection, and that without such suitable soil there could be no infection. Study of the mortality-rate of phthisis in England and Wales for forty years, from 1875 to 1915, showed that during the last twenty years (1895 to 1915), in spite of active propaganda and great efforts to destroy infection, the rate of mortality had not declined so much as in the previous twenty years when no such efforts were made. On the other hand the very fact that improved well-being of the people had been the means of reducing the mortality of phthisis was a proof that it was more a social and economic disease. The success of sanatorium treatment had proved this, for if the provision of fresh air, food and rest, and healthy environment had brought about a cure or arrest of consumption, then the want of such provision or insufficiency must surely be the cause of it. Home treatment was more or less a failure. When due allowance was made for the possibility of spontaneous arrest of the disease, still sanatorium treatment had undoubtedly saved many lives. The value of sanatorium treatment depended among other things upon the nature of cases admitted, the management and discipline among the patients, and upon the personality of the physician. The limitations of sanatorium treatment arose from many causes. Cases were not got early in spite of compulsory notification. Patients did not stay long enough or had not the patience and perseverance to continue treatment. Some had drawn upon their vital powers too freely in their youth or were handicapped by family predisposition; hence their failure to respond to treatment. Sanatorium treatment had its limit; it could not prevent tuberculosis or cure every case. It was the first link in the treatment, and showed the patient how to live the right life. It was for the nation to devise larger and more comprehensive measures, such as farm colonies, industrial settlements, garden cities, etc., to meet the needs of both the disabled soldier and the disabled consumptive.

Dr. JOHN SORLEY thought that undue importance was attached to physical signs in classification. Early cases only were to be sent to sanatoriums, but he had patients with cavities doing seventy hours' work a week, and patients with the disease in an early stage with a few crepitations at an apex going downhill quickly. The death-rate of those who did not avail themselves of sanatorium treatment was 84 per cent. higher than among those who did.

Lord GLENCONNER, President of the National Association for the Prevention of Consumption, said that much progress had been made, not in cure, but in investigation, and in care in providing healthy surroundings for our working people. He was favourably impressed by all he had seen

in sanatoriums. Only the fringe of the problem was touched, but in time to come that margin would become larger.

Dr. JAMES STEWART also spoke, and Dr. LISTER replied briefly.

Reviews.

THE LIFE OF LISTER.

THE publication of the life of a great man should usually be delayed for some years after his death in order to ensure an unbiassed and considered perspective. The interval of five years since Lord Lister's death is not long, but circumstances have been altered in an unprecedented degree by the intervention of the war, which has rapidly dislocated the ordinary limitations of time and set up a permanent barrage between 1913 and the present year. Further, the condition of the wounded has acutely emphasized the importance of the antiseptic as against the aseptic method applicable to civil life, and the search for the most suitable antiseptic agents, so patiently pursued by Lister years ago, is now engaging the attention of many bacteriologists and surgeons. The time for the appearance of this engrossing memoir is therefore fully ripe. Foreseeing that some kind of biography was inevitable, Lord Lister had expressed a wish that it would be confined to an account of his scientific and surgical work; but such a narrow scheme is incompatible with a true biography, which should deal with character as well as with achievements, and Sir RICKMAN GODLEE, feeling that the world has a right to know something of the inner life of one of its greatest benefactors, has described the man as well as the surgical pioneer with discrimination and success.¹

The atmosphere of the Society of Friends in which Lister was born (1827) and brought up has so long faded into the past that the sympathetic account of his home is interesting for this reason, and further is of special value in throwing light on the factors influencing his character and outlook on the world. His wish to be a surgeon was spontaneous in childhood, for none of his family except a distant cousin was a doctor, and at first his father rather discouraged the idea. After school at Tottenham he entered University College in 1844, and spent the next nine years in taking an arts as well as a medical degree, a course which his father advised and Lister himself always recommended to young men when their circumstances made it possible. His rather secluded life there was not very happy, and an attack of small-pox followed by a premature return to enthusiastic work precipitated a severe breakdown with mental depression. Like many other men afterwards distinguished he came much under the influence of Sharpey and was attracted to Wharton Jones, then ophthalmic surgeon, whose experiments on the circulation in the frog's web he subsequently repeated when investigating the early stages of inflammation. After a transient attraction to medicine, possibly the result of his house-physiciancy to W. H. Walshe, one of the most brilliant physicians of the day, he went in 1853 to Edinburgh with an introduction from Sharpey to Syme, who was destined to guide his professional progress during the most critical stages of his life, and to become his father-in-law. He was received with open arms, was given ample opportunities of work, and eventually became house-surgeon in the Royal Infirmary to Syme, then in the zenith of his powers. It is almost impossible to avoid a comparison between these two men who successively led the surgical profession in the northern Athens: Syme arousing strong opposition as well as friendships, and enjoying contests; Lister peace-loving, humble-minded and retiring, though in the future often obliged to defend his principles. Things now began to move rapidly with Lister, for he became an extramural lecturer in 1855, assistant surgeon to the infirmary in 1856, and in the same year married Syme's daughter, who for thirty-seven years devotedly helped and sympathized with his labours and anxieties. His marriage necessitated his retirement from the Society of Friends, but did not entail any break in his family relations, as is shown by the charming letters to

his father and brother interspersed throughout the book. Incessant application to work occupied his six years in Edinburgh, for, in addition to surgery, he carried out investigations on the structure of smooth muscle, the early stages of inflammation, and the coagulation of the blood.

In 1860 he was called to the Regius Professorship of Surgery in Glasgow, but his life continued on much the same lines; two articles contributed about this time to Holmes's *System of Surgery* on amputations and anaesthesia may be mentioned; a high reputation for scientific ability often renders us slow to recognize the value of practical results from the same source, and it must be admitted that Lister's new operations and modifications of surgical technique have been thrown into the shade by his outstanding achievements and so escaped the notice they would have received had he done nothing else. Meanwhile, as the result of constant thought, the germ of the campaign against infection of wounds was gradually developing in his mind, and with the close of 1865 the period of his life during which he was on much the same lines as other surgeons comes to an end. The present generation can hardly conceive what a revolution the antiseptic method induced in the practice of surgery. The graphic chapter on "hospital diseases"—namely, erysipelas, pyaemia, septicaemia, and hospital gangrene—which were so rampant in the middle of the last century that operations were reluctantly performed and mainly confined to the extremities in urgent cases, and hospitals had sometimes to be closed on account of the appalling operation mortality, reads like a nightmare. Pasteur's discoveries on fermentation were applied by Lister to the infection of wounds, and formed the starting point of experiments, observations, and constant modifications of methods involving such an amount of work that the reader is lost in admiration at his perseverance in the face of recurrent disappointment, opposition, and misrepresentation. Comparatively soon, however, his clear grasp of the essential principles and his extreme care in carrying them out gave encouraging results, and for a short time in 1866 he thought of writing a book on the subject; this was never done, and indeed it is difficult to believe that he could have carried it through, for though his papers read clearly and smoothly, he found composition difficult as he painfully weighed the exact meaning of each word and corrected and rechecked the proofs with conscientious anxiety. The very considerable bulk of the collected papers, published to celebrate his eightieth birthday, gives some impression of the self-imposed burden in making his message known to the world. The work entailed in the prevention of wound infection was continued in Edinburgh when he migrated in 1869 to succeed Syme as professor of clinical surgery.

The history of the opposition to antiseptic surgery, though humiliating in the light of the present day, is not surprising, since all great advances pass through various phases of opinion before final acceptance. At first the general attitude was that of apathy, then that of more active measures. The following incident, sketched with Sir Rickman Godlee's characteristic light touch, refers to a representative surgeon of the time: "When full of the confidence of youth, and doing my best to educate my superior officer—no less distinguished a man than Sir John Erichsen—I lamentably failed with a compound fracture, for reasons now easy to recognize, and received from him the stern injunction, 'No more antiseptics.'" A more extreme instance was that of one of the best known London surgeons, who, on hearing of Lister's open operation for wiring the patella, was reported to have delivered himself thus: "Now when this poor fellow dies it is proper that someone should proceed against this man for malpraxis"; the occasion did not arise. In numerous instances the method was given a perfunctory trial, and after the inevitable failure was dismissed as no better than the old and cherished routine. It was, perhaps, because London was so slow to adopt his principles that in 1877 Lister accepted a call to King's College and left his large and enthusiastic following in Edinburgh in order to fulfil his mission. His second period there had been the happiest and probably the most brilliant in his career, and contrasted with the somewhat chilly and depressing reception at King's College, where his classes were so small that for years Sir Watson Cheyne, who accompanied his chief as house-

¹ Lord Lister. By Sir Rickman John Godlee, Bt., K.C.V.O., M.S., F.R.C.S. London: Macmillan and Co. 1917. (Pp. 676; 33 illustrations. 28s.)

surgeon with three others to inaugurate the antiseptic method, attended the classes to add one more. In a very short time, however, the medical societies of London showed their estimation of Lister's worth, homage was poured out abroad, and in time prejudice passed away and the London profession fully accepted the man and his message. In a chapter devoted to an interesting comparison of antiseptic and aseptic surgery Sir Rickman points out how Carrel's recent practice would have delighted Lord Lister, as it is an extension of his fundamental principles. In 1892 the age limit terminated the professorship at King's College, and after another year his wards and private practice were given up. In this latter year the death of Lady Lister left him a lonely childless man, but fortunately his time was fully occupied by the Royal Society, of which he was first foreign secretary and then president, until 1901. Both before and after his retirement from practice honours crowded upon him, the most exceptional being that of a peerage in 1907. But after 1901 the weight of years exacted an increasing penalty, and the last eight years of his life were tedious and overclouded with increasing disabilities, but the arrangement of his collected papers for publication was a source of great interest to him. It was obvious to all those in any way associated with carrying the proposal through that it gave him pleasure, and we now know from Sir Rickman Godlee that it removed a weight from his mind; he had been making arrangements for such a publication after his death, but doubted whether he was altogether justified in imposing so heavy a task on his nephew, the late Dr. A. H. Lister, who was even then not in robust health.

Successful biography depends on two essentials—a fit subject and a proper manner or style in the representation; that Lord Lister is one of the great figures in the history of the healing art there can be no question, and that Sir Rickman Godlee has provided a memoir that will live as one of the great biographies every competent critic must cordially agree.

NOTES ON BOOKS.

Women of the War,² by Mrs. FRANCIS McLAREN, contains thirty-one brightly written personal sketches of women who have taken a prominent part in some field or other of war work. As Mr. Asquith states in an introductory note: "These narratives are as good evidence as could be found of the depth and universality of the appeal which the war has made to our women, not only for sympathy but for service." The author, by choosing the biographical method, succeeds in giving a more vivid story than a merely general description would convey. If her selection and arrangement of subjects seem at times capricious, this is a minor blemish in a work which makes no pretence at exhaustive treatment. Her sketches will bring home to the casual reader something of the industry, bravery, and versatility shown by women in countless directions, notably in hospitals, munition works, canteens, and hostels, in the supply of medical comforts and equipment, in work on the land, and in driving motor cars, and other auxiliary services of the army. In the opening chapter on the pioneer work of Dr. Garrett Anderson and Dr. Flora Murray, who organized the first hospital unit staffed by women, the author states quite justly that the success of this enterprise has greatly advanced the position of women in the medical world. The volume is freely illustrated with portraits, and the frontispiece is a charming example of the art of Edmund Dulac. A fuller account of women's work in munition factories is given by Miss FOXWELL in a little book called *Munition Lassies*,³ founded on the experience of six months as principal overlocker in the danger buildings of the Woolwich Arsenal. Many people will be glad to gain an insight into the life of the woman munition worker through the medium of these bright and gossipy pages.

When we take up a book with the title *Adolescence*,⁴ by STEPHEN PAGET, we know that we shall find a difficult subject handled, delicately indeed, but courageously. It is courage that in real life most of us lack. Mr. Paget

advises a solemn talk between father and son, or mother and daughter, at some suitable age; the difficulty of choosing the age aright has perhaps influenced him in preferring parent to school teacher. However this may be, and whether the heads of the talk Mr. Paget suggests will be the best for all children, many parents will be grateful for the middle part of the book, which turns on that wise saying, "The reasonable soul and flesh is one man." His comment is, "it follows that what we call temptation addresses itself not to the flesh alone, but also to the reasonable soul," and he has the courage to go on to praise early marriages. The book is very short, no more than a brief lecture to Oxford University extension students. But this is one of its merits; it is just enough to set a father or mother thinking, as we believe, along right lines. It is to be hoped that Mr. Paget will resist any temptation to make another edition longer.

Captain PRICE-JONES'S *Blood Pictures*⁵ is a brief but well written introduction to the clinical study of the blood. It begins with an account of the technique of haemacytology and the normal blood picture. Then follows an account of the use of blood counts in the diagnosis of disease that is short but most serviceable. There are five coloured plates of blood corpuscles, which are well reproduced. The book should be in the hands of all medical students, and will be found useful by many of their seniors, too.

⁵ *Blood Pictures: An Introduction to Clinical Haematology*. By Cecil Price-Jones, M.B. Lond., Captain R.A.M.C. (T.C.). Bristol: John Wright and Sons, Ltd. 1917. (Demy 8vo, pp. 91; 5 coloured plates, 4 figures. 6s. 6d. net.)

HEALTH PROBLEMS AND RECONSTRUCTION.

ADDRESS BY THE MINISTER OF RECONSTRUCTION.

A MEETING under the auspices of the Faculty of Insurance was held at the Central Hall, Westminster, on November 24th to hear an address by Dr. Christopher Addison, M.P., Minister of Reconstruction. The chair was taken by Mr. H. KINGSLEY WOOD, Chairman of the London Insurance Committee, who, in some introductory remarks, said that if the national health problem were solved, the master key to reconstruction was found. It was useless to erect an educational ladder for the child if the child had not the physical stamina to climb it. Since the outbreak of hostilities a quarter of a million children had died whose lives might have been saved, and no fewer than a million weak and defective children were now in the schools. Some four million parents and children were living in slum areas. The health conditions of the country were an urgent war problem.

DR. ADDISON'S ADDRESS.

Dr. ADDISON, after expressing his indebtedness to the Faculty of Insurance for the practical and accommodating spirit in which they had approached this question, said that Mr. Bonar Law, in answer to a question in the House of Commons, had said: "Steps are being taken which it is hoped may secure substantial agreement amongst those who are actively engaged in the work of national health." It fell to his (Dr. Addison's) lot, as Minister of Reconstruction, to do what he could to arrive at an arrangement which would be workable, comprehensive, and practicable, and to bring into it as far as possible by agreement the various parties concerned. The question was complex and must be approached in a courageous spirit. He warned them against taking hold of phrases such as "A Ministry of Health" without having clearly in their minds why they wanted it and what they wanted it to do. Too many people were satisfied with phrases, and what was required more than anything else in health matters was reality. At present fourteen Government departments and 1,800 local authorities were more or less concerned with health administration.

Tuberculosis.

It did not necessarily follow from this multiplicity that the system was inefficient, but the way in which it worked out could be seen if he took as an illustration the case of a man coming out of the army. Should this ex-soldier be tuberculous, quite a number of departments were concerned with him and his household. The Ministry of Pensions would desire to get him into a sanatorium, which was provided by the Local Government Board after consultation with the Treasury. But before the Treasury gave its

² *Women of the War*. By Barbara McLaren. With an introduction by the Right Hon. H. H. Asquith, M.P. London, New York, and Toronto: Hodder and Stoughton. 1917. (Demy 8vo, pp. 160; illustrated. 3s. 6d.)

³ *Munition Lassies*. By A. K. Foxwell, M.A., D.Litt. London, New York, and Toronto: Hodder and Stoughton. 1917. (Cr. 8vo, pp. 156; illustrated. 1s. 3d.)

⁴ *Adolescence*. By Stephen Paget. London: Constable and Co., Ltd. 1917. (Pp. 59. 7d. net.)

consent it would have to consult the Insurance Commission, and when these three departments had settled the question as to the necessity of the sanatorium, the institution would be administered by the local authority. Further difficulties arose if and when the man was discharged from the sanatorium as an advanced case. It had sometimes happened that men had to be accommodated in hospitals which were formerly—or were still to some extent—under the Poor Law.

Then the man's family and its liability to infection from him came into the question. In many places—but not by any means covering the country—there was an organization by which those who were brought into contact with people affected with this disease could be examined at the local dispensary or clinic. If the consumptive's child attended school it would be examined by the school medical officer, who was responsible to the Board of Education. After school age, the youth was looked after by the Home Office, so far as concerned the health conditions of his place of employment. All these authorities and others—including the local health authority in its supervision of the sanitation of the home, and the Board of Agriculture, in which was vested the responsibility for the supply of good milk for the child—were concerned in a simple and common case of that kind.

Maternity.

As a second illustration he took maternity. Mr. Kingsley Wood had said that a quarter of a million children whose lives might have been saved had died since the war began, and even this left out of account the loss of prenatal life, owing to the conditions of employment of the mother and other circumstances. Schools for mothers were in existence, partly under the Board of Education and partly under the Local Government Board, but he was glad to say that a very satisfactory working arrangement between those two departments was now in sight and the division of functions was quite rationally and properly defined. Another authority came in with the need for proper attendance on the woman at the time of confinement—namely, the Privy Council, which was concerned with the organization and control of midwives. Then the insurance society to which the woman belonged, if she was a worker, was interested in seeing that she was properly cared for. Apart from all the organizations he had mentioned, there still remained the Poor Law authority, which had done a great deal to provide for the necessities both of maternity cases and of the sick poor. But the Poor Law organization had no relation either to the insurance organization or to the local health authority.

Need for a Central Department for Inquiry and Supervision.

Health was a complex matter; food, and habits of life, and hours of work, and many other factors, were concerned. Unhappily, there was no body of men whose business it was to consider all these matters—now under the control of many different departments—and to formulate a policy and advise the Government. At the Ministry of Munitions under Mr. Lloyd George there was set up a Health of Munition Workers Committee, who had studied all these various aspects of the question as they affected munition workers, and one of many results of a precise investigation was that a relation had been discovered between hours of labour and working efficiency. In the case of women engaged in turning aluminium fuse boxes, whose hourly output at 66 hours a week had been taken as 100, it was found that the output rose to 134 when the hours were brought down to 54.8, and to 158 when the hours were again reduced to 45.6. In the case of boys on light work, 100 again being taken as the hourly output for a 72-hour week, the figure became 117 for a 54-hour week, and 129 for a 53-hour week. Among men engaged on heavy work, with 100 as the standard for a 58-hour week, the output rose to 139 for a 51-hour week. Up to the present it had been no one's business in particular to find out such things so far as they related to the general community, and in after-war conditions, when it would be vital to increase the productive powers of the nation, there must be some body whose work it would be to collect all information bearing on the health of the people, and to discover where the gaps were and how they might be filled. They must not blindly embark upon policies. He

was at present trying, for instance, to get some precise information as to the effect of good physical training on young people between the ages of 14 and 18, and the answer to the question whether and to what extent such training should be given was one to be based, not on guesswork, but on properly acquired data.

The new central health authority, when it was set up, would obviously be concerned in the first place with matters relating to disease, its origin and treatment, but this could not be handled by an authority unless it had powers to deal with matters affecting sanitation. The proper housing of the people was one of the most important elements in a health system. Then there had to be considered all the functions—great and growing ones—which attached to insurance committees as affecting health, and also those of that other great branch of the health service—namely, the Poor Law administration. The popular objection to associating health administration with the Poor Law arose quite rightly from a recognition of the fact that health was something quite different from destitution; they were not entitled to label ill health as poverty. But for all that it was evident that the Poor Law health service must be taken into consideration. A good hospital could not be scrapped because hitherto it had been called a Poor Law hospital.

Local Administration.

Any proper system of health administration must depend on a good working arrangement between the publicly elected bodies and the insurance committees. While the first thing to aim at was to get the general plan right and the central executive department constituted on right lines, he did not anticipate that anybody, after the experience of war control, would want everything to be done by a department in Whitehall. They must look forward to a considerable measure of decentralization of control, otherwise the central department would be greatly over-weighted, too congested with ordinary routine business, and too far removed from the realities of a locality to work efficiently. The first thing to which the central department would have to address itself would be the working out of a proper health plan and policy, and the necessity of the situation at the moment was to get the body created whose business it would be to take this in hand. Parliament had no time now to carry through a highly controversial measure, and therefore if progress was to be made, a sufficient amount of agreement in advance must be forthcoming with regard to the setting up of this central authority. It was not a fact that departments and authorities were fighting one another, but simply that each department was keenly absorbed in its own work and had no time for the difficulties and tasks of others. It had been his business as Minister of Reconstruction to try to work with different Government departments, and he found that when a big national question was put before them, departmental rivalries bulked nothing like so largely as people supposed.

This matter would not wait. With the end of the war a burden of quite unprecedented character would be thrown upon health authorities, not only in respect to demobilized soldiers, but to civilians in the reaction after war tension. The machinery ought to be ready and competent to deal with the problem, otherwise the whole subject would be lost in the babel of counsels. Three great branches of work in particular ought to be arranged before the emergency arose—namely, the whole question of hospital organization, the whole question of nursing and midwifery provision, and—a most thorny one—the whole question of the relation of State health administration to the medical profession. He knew that the British Medical Association strongly took the view that it was the first necessity to create a central organization which would think out and consider the subject in advance. He confidently appealed for the sinking of minor differences and for the question to be regarded as a whole from the point of view of the national interests.

DISCUSSION.

At the close of Dr. Addison's address brief remarks were made by Mr. W. S. BENNETT (National Conference of Friendly Societies), Mrs. OGLVIE GORDON (National Union of Women Workers), Mr. A. W. YEO, M.P., Mr. P. ROCKLIFF (National Insurance Joint Committee), Mr. E. PORTS (Association of Insurance Committees), Dr. ALFRED COX (British

Medical Association), and Sir ROBERT MORANT, who, as a civil servant addressing a public meeting, asked that he might not be reported.

Dr. Cox said that Dr. Addison had given proof that he was behind the efforts which were being made in public and private to bring about an agreed bill, and the British Medical Association had shown that it was prepared to do what it could to further such an agreement. Quite thirty years ago the Association arrived at the opinion that there ought to be a unified body to deal with health matters. Since the advent of national insurance many of those in that room had come into contact with the medical profession over quite sordid questions of remuneration, and this had upset the relations which might have existed between the organized medical profession and other bodies. Such a process was inevitable until the economic conditions governing medical service were satisfactorily settled, but he hoped that the new spirit which would permeate the Ministry of Health would make all such unprofitable bickering a thing of the past. The only stipulation, to be made from the very beginning, was that the medical profession must be consulted, for it was not right to fix the future terms of medical employment without first asking the approval of those most concerned.

Dr. ADDISON, in reply to a vote of thanks, said that the thing which had impressed him was that he had seen in that room, for the first time on an unanimous errand, the representatives of great organizations, medical, locally and centrally administrative, Government departments, and other authorities, and he thought it betokened a willingness on the part of all to try and work in a patriotic and wise-minded manner towards their common objective. He hoped people would realize more fully that the war was going to sweep many old things away, and that they would need all their resolution and good sense to face the difficulties ahead.

THE SANATORIUM TREATMENT OF TUBERCULOSIS.

ANNUAL REPORTS.

Lancashire County Council.

THE Central Tuberculosis Officer for Lancashire has issued a very full statistical report of the work done by the twenty-two dispensaries and by the pulmonary hospitals and sanatoriums at present available throughout the county. The actual accommodation projected for such institutional treatment has had to be greatly curtailed owing to the war.

A large number of cases have been dealt with, and in so far as the early cases are concerned, with a good percentage of success. From 78 to 80 per cent. of these have been enabled to return to work or were fit for work. In the later stages of the disease the relative amount of success has been progressively smaller. It has to be noted, however, that the death-rate shows a definite increase. This may be due in part to more careful diagnosis. Many cases formerly returned as due to pulmonary disease are now more correctly attributed to tuberculosis, but the fact remains that a very large proportion of these deaths have occurred within three months of notification, and an almost equal number without notification at all. This neglect of notification would appear to be increasing, and hence any statistics founded on notified figures in any district must be more or less misleading. Whether it be due to the unwillingness of patients to allow themselves to be branded as infectious, or to carelessness on the part of the local practitioner, or to mistaken diagnosis, there is an evident need for greater strictness on the part of local authorities if the full value of the system is to be obtained.

The treatment of discharged soldiers and sailors suffering from tuberculosis has not been attended with great success, owing to the difficulty of enforcing discipline apart from military control.

Dispensary and domiciliary treatment has proved satisfactory in many cases and progress has been made in bringing home to consumptives of the poorer class the advantages to be gained by the intelligent use of fresh air. In a few cases, where the environment has permitted of it, shelters have been lent to those willing to make use of them, and good results have been observed.

After-care committees have been able to keep an eye on many of those patients who have returned to work locally, but they have met with the difficulty that has so often hampered their efforts, that sick pay is stopped as soon as work is commenced. At the very time when such extra money is most needed the supply is cut off. This system, it is universally recognized, calls for drastic alteration. Co-operation between the tuberculosis officers and the benefit societies ought to be able to overcome such an obvious defect.

In Lancashire, as elsewhere, the question of the supply of extra nourishment as a part of treatment has had to be seriously discussed, with the result that in many cases it was reduced. A maximum of 4s. a week for milk and cream has now been established. Separate reports from the assistant tuberculosis officers in charge of the areas into which the county has been divided contain many interesting practical points, and the report as a whole deserves careful attention, embodying as it does a very full account of the work done and of the methods employed in doing it.

City of York.

In his annual report the tuberculosis officer for the city of York comments upon the greater prevalence of tuberculous adenitis amongst children during the past year, and indicates very clearly that opportunities for infection within the household are only too numerous. If it be not possible to remove the infecting agent, it is plainly necessary that the susceptible members of a crowded family should be protected in some other way. Open-air schools and separate sleeping accommodation can do a good deal in this direction, and the efforts of after-care committees can be concentrated upon the control within the home of the advanced case. A Tuberculosis Crusade Committee undertakes supervisory work in York and is able to record a creditable account of assistance given where it was most needed, by enabling patients to take full advantage of the treatment prescribed for each case. Friendly visiting and advice, provision of means for temporary isolation and for greater comfort within the home, the loan of shelters for open-air sleeping, and assistance in obtaining admission to seaside homes, or to suitable light employment, have all been forthcoming, and have yielded satisfactory results.

Special stress has rightly been laid upon the importance of dental treatment. Defective teeth and oral sepsis have over and over again been found to be militating against complete digestion and well-being. In dealing with a disease where the proper assimilation of food is all-important, the neglect of dental hygiene is unpardonable. Especially is this the case with respect to the military patients, and vigorous efforts are now being made to remedy the evil.

The want of accommodation for satisfactory institutional treatment is felt as acutely in York as elsewhere, but it is evident that a vast amount of useful work can be done without it. The disease is bred in the home, and it is in the home that its effects must be watched and counteracted. The early case may be arrested by timely sanatorium guidance, but the established and advanced cases can only be alleviated by medical treatment, which can be applied equally well within the home provided that it be controlled by intelligent supervision. The dangers of contact can be greatly lessened by the provision of separate sleeping accommodation and by removal of susceptible inmates to school or other occupation during the daytime.

ACCORDING to the *Annuario Statistico* for 1915 the number of cases of suicide in Italy increased steadily from 2,880 in 1910 to 3,187 in 1914, representing respectively rates of 84 and 89 per million inhabitants. The percentage of women was 24 in 1910 and 28 in 1914. The figures show that in the period of forty years from 1877 to 1914 the proportion of suicides had more than doubled.

STATISTICS published by the United States Public Health Service show a very high proportion of cases of poor eyesight, bad teeth, flat-feet, insufficient weight, and other defects among the men drafted for the American army. There are from 7 to 20 per cent. more young men with defects or in other ways needing medical attention in country districts than in towns. This is believed to be due to the fact that the health of school children is almost entirely neglected in rural districts.

British Medical Journal.

SATURDAY, DECEMBER 1st, 1917.

MEDICINE IN THE REIGN OF GEORGE III.

DR. ARNOLD CHAPLIN has won for himself a special place among medical historians. His researches on Napoleon entitle him to be regarded as the leading authority on the dark days when the sun of the mighty conqueror was sinking into the valley of the shadow of death at St. Helena. He has now embodied in his first course of FitzPatrick Lectures some of the results of the attention he has given to the state of medicine in England in the sixty years from 1760 to 1820 when George III was king. The eighteenth century is often regarded as a very reign of dullness, when learning was largely mere pedantry, literature lifeless artificiality, and religion cold formalism. Yet to some it makes a strong appeal by the polish of its manners at one end of the social scale and the frank naturalism of its life at the other, as portrayed by the pens of Fielding and Smollett and the pencil of Hogarth. The truth is that in the history of human development it was a time of intellectual revolution, when the shackles which for ages had held the human mind in bondage were finally broken. Traditional dogmas were everywhere being called in question, and in science the figments of fancy which had so long passed for knowledge were beginning to fade away under the test of direct appeal to fact. Medicine shared in the general upheaval, but the theorizing spirit which had for ages held sway in that sphere did not readily give way to the experimental method. The mental outlook of the profession in the early part of the eighteenth century is not unfairly represented in the account of the dispute of the Strassburg doctors in *Tristram Shandy* where one side argues that a man in a certain condition *must* spit blood and go off in a consumption, and the other side replies that "it happens otherwise," to be met with the crushing retort "It ought not!" The whole of the old *a priori* medicine is in that contention. It was the natural outcome of an intellectual discipline which taught men to look at things through the spectacles of authority rather than with their own eyes. The great majority of doctors were still of the type of Thomas Diafoirus, who though *fort comme un Turc sur les principes* was in his practice hidebound by traditional rules. In the words of a French satire, they "spat Greek and Latin," and thought, as Kant said, that by giving a name to a disease they had done their duty by their patient.

When George III came to the throne the medical profession was divided into three distinct parts, which were orders of a professional hierarchy consisting of physicians, surgeons, and apothecaries. These classes differed widely in their intellectual equipment, as in their rank in society. The physicians retained much of the tradition of high literary culture which had distinguished them in the earlier part of the century when John Arbuthnot could more than hold his own among the wits of Queen Anne, that brilliant group which included Swift, Pope, and other leaders in thought and letters. Johnson thought him the first man among them, "the most universal genius, being an excellent physician, a man of deep learning, and a

man of much humour." Garth, who by his *Dispersary* won for himself a considerable reputation as a poet, wrote the epilogue to Addison's *Cato*. Among the contributors to the second volume of Addison's *Musae Anglicanae* was Sir Edward Hannes, predecessor of Arbuthnot as physician to Queen Anne, who is described by W. J. Courthope as "one of the many scholarly physicians of the period." John Douglas, whose "soft obstetric hand" is celebrated by Pope, was a man of great learning and formed a unique collection of all the editions of Horace with the commentaries and translations. His successor, William Hunter, made a magnificent collection of works of art, manuscripts, and books; he numbered all the leading men of his day among his friends. Johnson corresponded with his physician, Lawrence, in Latin, and Brocklesby capped quotations with the great moralist on his death-bed. William Heberden wrote his *Commentaries* in classical Latin.

The academic training of the doctor in the time of George III was sound and extensive, but in medicine it was very inadequate, being particularly deficient on the practical side. It is not easy to give a clear notion of what was required of the student of medicine at Oxford and Cambridge, but Dr. Chaplin has taken great pains to get at the facts. The course was long and arduous, and a degree in medicine represented a standard of general culture very much higher than that of the surgeons and apothecaries. But men had to go abroad in search of the practical instruction they could not find at home, and many got their medical degrees at Leyden, Padua, Montpellier, Rheims, and elsewhere.

The account which Dr. Chaplin gives of the long contest between the Fellows and the Licentiates of the College of Physicians is a curious example of the growth of a privilege and of the tenacity with which men will fight for it long after it has been shown to be ill-founded, and of little or no value to the holder. In this instance the first step was taken within forty years of the foundation of the College, when it decided to limit the number of its Fellows, and instituted a grade of Licentiates, who also were physicians. Outside the walls of the College a Licentiate enjoyed the same privileges and distinction as a Fellow. Next the practice grew up of limiting the Fellowship to M.D.'s of Oxford or Cambridge, and for the retention of this shadowy privilege graduates of those universities fought hard for over a century in the law courts and finally before a Parliamentary Committee. It was not until after this committee had reported, in 1834, that the by-law limiting the Fellowship to graduates of Oxford and Cambridge, which the courts had nearly forty years before declared to be bad, was amended. The practical effect of the closing of the doors of the College against all but men from the older universities, whose medical education had often been little better than a farce, was the exclusion of some of the most progressive spirits among the physicians of the day, including William Wells, of whose scientific investigations, carried on under great difficulties in a race against death, Dr. Chaplin gives a moving account.

The character of the physicians in the eighteenth century stood high; as to this we have Johnson's testimony when he says that "every man has found in physicians great liberality and dignity of sentiment, very prompt effusions of benevolence, and willingness to exert a lucrative art where there is no hope of lucre." These social virtues found their due reward, not only in the esteem of the best men of the day, but also in money, for Dr. Chaplin has come to the

conclusion that a relatively larger number of physicians gained a handsome competence from their practice in the reign of George III than is the case at the present day.

The apothecaries were the general practitioners of the day, and fine ladies spoke of "using the 'poticary'" when they meant calling in the doctor, a form of speech which continued till far on in the nineteenth century. Among the apothecaries the standard of general education was low and their medical knowledge was largely made up of traditional superstitions, while their treatment of disease consisted in the routine administration of drugs of the properties of which they had no scientific knowledge. They were, in the words of Pope, "bold in the practice of mistaken rules." The commercial part of pharmacy was, however, well understood; hence *purgare* and *clysterium donare* were the cardinal rules of practice. The business of an apothecary was in the truest sense a trade, which was learnt, like other trades, by an apprenticeship. But it is only fair to state that the Apothecaries' Society, by its fine Physick Garden presented by Sir Hans Sloane and at a later date by the institution of lectures on materia medica, did much for the promotion of scientific pharmacy. The teaching of anatomy was a matter of private enterprise. When William Hunter offered to contribute £7,000 towards the foundation of a central school the offer was rejected. Surgery was also taught by private lecturers. A number of lying-in institutions were formed which offered opportunities for the practical instruction of students, and doctors who conducted such institutions took private pupils.

There was no central authority empowered to regulate medical education or the practice of the art. The College of Physicians, the Corporation of Surgeons, and the Society of Apothecaries respectively exercised some sort of jurisdiction over their own subjects. But their powers were limited, and, such as they were, they were often not strictly enforced. The College of Physicians, by its original charter granted by Henry VIII, had authority over all physicians in London and within an area of seven miles around, and could grant licences to all physicians in England; but it had no control over graduates of Oxford and Cambridge practising in the provinces. In 1775 we find Johnson in his opinion, inspired by Lawrence, on the case of the Aberdonian Memis, who objected to be called doctor rather than physician, writing that "in England whoever practises physic not being a doctor must practise by a licence; but the doctorate conveys a licence by itself."

The Corporation of Surgeons and the Society of Apothecaries each exercised jurisdiction over its own members, but the control was less effective than that of the College of Physicians, particularly in the provinces. To this lack of jurisdiction was due the fact that unqualified practitioners were in a large majority. The country surgeon, in fact, seems to have looked upon the obtaining of a diploma as an act of grace and professional expediency rather than of legal necessity. Towards the end of the eighteenth century these "buccaneers of the profession," as Dr. Chaplin calls them, became so numerous that it was felt the time had come for sweeping away a crying abuse. The results of the efforts of some enlightened reformers was the passage of the Apothecaries Act in 1815. That Act, which was the forerunner of all subsequent medical legislation, was the first formal expression given in this country to the principle that all who practise medicine must be legally qualified. But, though it constituted an immense advance by enforcing

examination on all who wished to practise the art of healing, there was still much need for reform in medical education. To say nothing of the narrowness and general inadequacy of the curriculum, the London hospitals were close boroughs, and the privilege of "walking" them was more a shadow than a reality. There was no clinical teaching except for the private pupils of the surgeons, and the resident appointments were reserved for the few who could pay handsomely for them. Thomas Wakley set himself resolutely to let daylight into the dark places of hospital management by a campaign which it required no small courage to undertake, for he had all the powers and dominations of the profession arrayed against him. He conquered, but only after a fierce struggle. The end of the old reign of privilege and favouritism came when the newly founded University College Hospital threw open its appointments to competition. That reform was nothing less than a revolution. It was the fulfilment in the republic of medicine of the Napoleonic maxim, *la carrière ouverte aux talents*.

Dr. Chaplin has interpreted his title very strictly, carefully eschewing any reference to surgeons. We could hope that the College of Surgeons, after he has completed by his course next year his account of the physicians, would ask him to render a similar service to the surgeons. Though the art of the surgeons in the reign of George III was rude and limited by ignorance of morbid processes and the methods of preventing sepsis, and by the lack of anaesthetics, they were brought into more direct contact with facts than the physicians. This made them less visionary and more practical than the more learned practitioners at whom Abernethy was never tired of gibing as "the doctors," and these qualities must have had an effect upon the physicians with whom they came into relation. Moreover, any account of the progress of the study of morbid anatomy in the period must be imperfect which takes no account of the work of John Hunter, who possessed that touch of genius which, while it rouses opposition in some, exercises a profound influence over the more active minds of a generation.

FOOD PROBLEMS.

In our issue of November 17th we briefly alluded to the revised edition of Dr. Leonard Hill's memorandum on the feeding of munition workers. We propose now to refer to certain problems suggested by the new data published by Dr. Hill.¹

The memorandum contains a table (p. 11) of the quantities of food received by munition workers in fifteen hostels and canteens. If we exclude three of these, those lettered E, J, and O, in which Dr. Hill states the diet to have been insufficient, and reduce throughout to "man values," we find that the daily consumption per man was approximately 121 grams protein, 143 grams fat, and 411 grams carbohydrate—yielding 3,511 calories. Similarly the average weekly consumption per man of bread was 5½ lb.; but the individual figures are irregular, several hostels showing a consumption of more than 6 lb., the average being affected by one or two in which the amount taken was extremely small. The actual quantities of meat consumed are not stated, but it may be concluded from the absolutely high fat and relatively high protein values that they were above the level of ordinary working-class populations. By analysing the data of working-class budgets published by the Board of Trade which relate to conditions obtaining

some years before the war,² we find that the man value in calories varied from 3,094 in families earning less than 25s. weekly to 4,013 in those receiving upwards of 40s., while the amount of bread and flour never fell below 7 lb. 5 oz., and that of meat never exceeded 2 lb. 6 oz. The percentage of total energy derived from cereals was over 50 in all the Board of Trade's families, while it only reached this level in one of Dr. Hill's series, and was below 40 in more than half the observations. It is therefore obvious that the munition workers in the spring and summer of this year were receiving a far larger proportion of their energy from animal food than has been usual among the hand-working classes of this country.

There are no doubt certain advantages in this. Major McCay in his valuable treatise on *The Protein Element in Nutrition*³ pointed out, as a statistical fact, that the fighting and working races of all parts of the world, including India and Japan, do habitually consume large quantities of animal protein; it is certainly arguable that the specific dynamic energy of protein in metabolism is normally an important factor of high-pressure working capacity, and that this *luxus* consumption (a *luxus* consumption from the point of view of minimum protein requirements, which, as Rubner showed, might be reduced to as low a figure as 25 to 35 grams for a 70 kilo man) has played a part in the enormous production of munitions of war in our factories. On the other hand, certain difficulties are created. High protein feeders, and in ordinary practice this means large consumers of meat, will necessarily suffer more from a curtailment of their rations than those accustomed to derive a large proportion of their energy requirements from carbohydrates. The high protein feeder is in effect maintaining a larger cellular mass, the requirements of which will immediately become irksome when the ration is reduced, always supposing that he is in active muscular work and does not possess considerable accumulations of *dépôt* fat.

A secondary consequence is that German docility under privations may be an unsafe guide for us. It would appear from Loewy's data⁴ that the Germans have for some time, probably from the very commencement of the war, subsisted upon a diet extremely rich in carbohydrate and poor in animal protein; our own working classes, on the other hand, have, down to a recent date, been directly and indirectly encouraged to consume animal in preference to vegetable food. Consequently a reduction of meat consumption to a level somewhat below that of all but the very poorest families before the war and to far below the standard of Dr. Hill's representative sample of munition workers, is a much more considerable change than appears on the surface. That even the proposed meat ration is much greater than the amount consumed by German civilians for years past, is a proposition at once true and irrelevant.

We state these considerations, not as implying any censure upon the proposed ration which Lord Rhondda has stated to have been approved by scientific men (doubtless the Food Committee of the Royal Society), but in order to dispel the impression that what is demanded will be an easy sacrifice for people who are working hard; for the sedentary there should be no great difficulty. But for manual workers it is a change of some gravity, the more so as the rationing of bread and cereals does not permit of a return even to the pre-war working-class standard,

but necessitates the large utilization of potatoes. To make this point plain, we recur to the analysis of the voluntary ration published in our issue of November 17th. For men on medium work the ration provides just under 2,100 calories, and on the Atwater standard basis (practically endorsed by the Royal Society) some 3,500 calories are required, so there is a deficit of 1,400 calories. The only unrationed articles of high energy value are fish, dried pulses, and potatoes, for cheese and milk are specified as not being generally available, although the official utterance on this point is, as we remarked, vague.

Dr. Hill's memorandum gives no data respecting the consumption of fish, but, from inquiries we have made, we conclude that a weekly consumption of 0.6 lb. is unlikely to be exceeded in industrial centres. On similar grounds, we think that a daily consumption of one pint of milk is the utmost that can be reached. These two additions would provide about 457 calories daily, leaving 943 to be obtained from potatoes; we are assured the available quantities of dried pulses are too insignificant to enter seriously into the reckoning. Taking the energy value of potatoes to be 427 calories to the pound, this means a daily consumption of 2.21 lb., or a weekly supply of just over 7 kilograms.

According to the report of the Royal Society's Food Committee⁵ the total weekly supply of home grown and imported cereals (1909-13 average) works out to 93,557.7 metric tons. Taking the Committee's estimated man value for the 1916 civilian population, the cereal quota is 2,613.3 metric tons per million "men." The value reached above for covering the energy deficit of the ration with potatoes requires a weekly supply of seven thousand metric tons per million men; this is more than two and a half times the whole supply of cereals normally available. It is obvious that the effective substitution of potatoes raises transport problems of great magnitude and complexity, and the figures emphasize the wisdom of the Wheat Commission's policy, epitomized by Dr. Hill, which is to make the widest use of all energy-producing substances capable of milling in the production of flour. The transport of cereals and their derivatives has long been highly organized, while that of potatoes upon so large a scale has never been attempted, although the need for an experienced and expert organization is actually greater. Official advice to the public to make free use of the unrationed potatoes will not produce the desired effect unless the method of distribution is more efficient than it has so far been.

The medical profession has it in its power to render important service at the present juncture, although, so far as we are aware, the Food Ministry has not made any attempt to obtain the collective advice and aid of the profession as a whole. In the first place, medical practitioners can further the policy of the Wheat Commission by discountenancing the complaints, in the vast majority of cases quite frivolous complaints, made against war bread as a source of digestive troubles. In the second place, those practising in districts, such as the outer suburbs of London, where large crops of potatoes are locally available, will be fully justified as scientific men in urging the inhabitants to make the fullest use of them. It should be pointed out that the utilization of the protein of potatoes by the body is singularly good. Rubner,⁶ for instance, has shown that it is possible to bring a man into

² Report of an Enquiry by the Board of Trade into Working Class Rents, etc. Cd. 6955, p. 300.

³ London, 1912, Arnold.

⁴ Ueber Kriegskosten, *Deut. med. Woch.*, February 8th and 15th, 1917.

⁵ Cd. 8421.

⁶ *Arch. f. Hygiene*, lxxxi, 1913, pp. 202, etc.

nitrogenous equilibrium with less than half the intake of protein requisite upon a bread diet when potatoes formed the source of supply. Assurances should be given that the increased bulk of the faeces upon such a diet does not in the slightest degree prejudice health.

A not less important duty of the medical profession is the instruction of the public in the fundamental principles of nutrition. Our experience is—an experience confirmed by almost every issue of the daily press—that few members even of the educated public really grasp the fact that the law of conservation of energy applies as stringently to the human body as to any other machine. Such persons do not comprehend the relation between mechanical output and energy intake, and seem to suppose (as did the late Food Controller) that “calories” are a scientific fad of the “doctors” without importance to the practical man. The sedentary office worker and the society or suburban lady should be taught why the hand-working classes need large quantities of food, and dissuaded from attributing the growth of consumption of foods in these days of strenuous labour to the reckless and improvident habits of the working classes receiving high wages.

If the view we take of the situation is just, ill informed statements of the kind mentioned are peculiarly liable to precipitate a crisis, and the efforts of the medical profession, the only class of the community which can claim to speak with authority upon these matters, should be put forth.

THE PROBLEM OF THE DISABLED SOLDIER.

THE Ministry of Pensions is engaged in a fresh effort to persuade disabled soldiers to be rebuilt and to be trained to greater efficiency, in their own interest and that of the nation. Were it not for the importance of the matter this endeavour to study the psychology of the disabled soldier would have a humorous aspect. Oliver Wendell Holmes long ago remarked on the suspicion men have of anything which is freely offered to them, and in the present instance the sense of regained liberty—so very sweet despite its handicaps—probably gives rise to further hesitation. Some of the men apparently fear that if they are cured and their earning capacity thereby increased their pensions will be cut down. That is not so. Others are concerned to take up the immediate opportunities for work. A few may even have a prejudice against the medical profession, and a distrust of modern science, or, as they would call it, of “new-fangled notions.” Before they became well-set-up quickly moving soldiers of the King, many of them lived within village environment, and knew little or nothing of “book-learning.” In the mind of such men the word “orthopaedic” awakens vague apprehensions; to refer to them as “neurasthenic” seems a term of opprobrium, or as they would say, “calling them names”; and they have not the smallest inclination to go into sanatoriums. In these circumstances it is recognized that the ordinary notices published in departmental style are inadequate, and little books are being issued by the Minister of Pensions to tell disabled sailors and soldiers how fatherly his office really is. These booklets are all the better because, without any condescension or patronage, they are yet written in simple and popular language with due regard to the audience addressed—a consideration too often neglected in Government productions. Some facts cannot be too often repeated. The first is that the pension given on discharge is permanent; hence there will be no reduction while a man is under cure or treatment, nor, as has already been said, will the fixed pension be affected by increased earning capacity derived from the cure. The second is that if this fixed pension be not on the highest scale, it will for the period of treatment be put on that scale. A private

soldier will get at least 27s. 6d. (non-commissioned officers and warrant officers more—up to 42s. 6d.), and he will not have to pay more than a shilling a day towards his maintenance if he has to live in an institution. If, while being cured, he lives away from home he has allowances for wife and children. If his cure goes on while he lives at home he has allowances for the children. The story of the methods of cure reads like a modern romance, and yet we know it to be true. Incidentally it shows how the medical profession has risen to the great occasion of the war and how rapidly fresh extensions of this national service are proceeding. And, indeed, the value of the treatment has only to be properly known to be appreciated.

THE MEDICAL RESEARCH COMMITTEE.

THE third annual report¹ of the Medical Research Committee, dealing with the year ending September 30th. 1917, has been presented to Parliament. The report begins by pointing out that though, as a matter of convenience for purposes of reference and historical continuity, schemes of inquiry are set out in two groups—those initiated before peace was broken, and those framed to meet the special needs and opportunities for research that have arisen from the conditions of war—the distinction has in practice become insignificant. The report calls attention again to the value, in permanence, which may spring from the study of problems emerging, as in war time, from unusual and temporary conditions. The occasions of war have called imperatively for inquiries into the proper treatment of wounds and of their various infections, into the control of epidemics like those of cerebro-spinal fever, into the physiological meaning of surgical shock and collapse, into the nature and treatment of functional nervous disorders, and, indeed, into almost every corner of the whole field of medical science and practice, whether for Europe or the tropics, and into every branch of surgical manipulation and contrivance. Further, the disturbance of civil life has offered other problems of equal urgency in the medical sphere, due to the stress of industrial work and the unfamiliar limitations in food supply. The conditions of war have provided not only insistent demands for the application of scientific method, but many exceptional opportunities for its easy and fruitful use. As an example, reference is made to a section of the report which deals with the study of the kidney efficiency of no fewer than fifty thousand young men considered to be in good normal health, and leading active lives in a training camp. This survey had immediate importance as part of an inquiry into the kidney deficiency found to result from life in the trenches in a small percentage of men, but at the same time it has given new information upon a scale never obtained before, or easily obtainable with regard to the health of the young male population of the country. Another point made in the introductory passages of the report is that the conditions under which patients are admitted to the great civil hospitals have caused medical investigations in them in peace to be directed commonly to the study of disease in its advanced stages rather than to the detection and study of the early stages, which, if a patient is aware of their existence at all, he accepts for the time as private or unimportant. Owing to the fact that to the medical services of the armed forces and in the medical supervision of workers at home prevention is more important than cure, the bias of effort is rightly directed towards the general and preventive measures guided by research work. As an example is quoted the rapid and organized study of the so-called irritable heart of soldiers, which, though it could hardly have been made in any civil hospital in peace, has given results valuable alike to medical knowledge and to the preventive work of the service. Again, the treatment of men suffering from the effects of poisonous gases has confirmed

¹ London: H.M. Stationery Office. Cd. 8825. To be obtained through any bookseller. Price 6d. net.

the opinion that the methods of administering oxygen commonly followed are wasteful and inefficient, and the results obtained will be applicable in civil practice to the treatment by oxygen of pneumonia and other conditions in which it is indicated. Again, the supply of oxygen to flying men at high altitudes, where it is needed, as in the more familiar case of mountain sickness, has called for the application not only of mechanical ingenuity, but of physiological principles, which, it may be noted, have been founded almost wholly upon scientific work done in French and British laboratories in the last half-century. Of the studies and devices thus called out by these new needs in the upper air it is already clear that some will bring long-needed improvements to the apparatus and methods used in the depths of mines for the rescue of life. It will never be possible to express the results of this scientific work in the medical services in terms of life and money, for the value either of knowledge as such, or of the saving of life and the reduction of suffering cannot be calculated, but on the narrowest commercial view the monetary gain has been vast. Owing to the fact that when an insured person enlists he loses that definition, the annual sum at the disposal of the Committee, which is provided by Parliament at the rate of one penny for each insured person in the United Kingdom, has been seriously diminished, in spite of the fact that an abnormally large number of women have become employed, and thus insured persons; the annual sum available for purposes of medical research has been reduced by about £7,000. We hope in subsequent issues to refer in detail to some of the researches carried out under the direction or with the assistance of the Committee.

SCIENCE IN EXAMINATIONS.

THE earlier part of the new report of the Committee on the Neglect of Science (in education and examination) makes the reader wonder whether the lion has not lain down with the lamb. To have Sir Ray Lankester, the Chairman of the Committee, blessing a system of examination favoured by the Civil Service Commissioners seems to argue the millennium at hand. It only means, however, that even he has learnt to be thankful for so small a mercy as a facultative breach in the defences, hoping that presently it will become practicable. A conference held in May, 1916, under the chairmanship of Lord Rayleigh, O.M., Chancellor of the University of Cambridge, on the neglect of science by the legislative and administrative authorities of the country and by the people generally, unanimously adopted certain resolutions, and the Committee undertook to submit the substance of them to the Government. This was done in interviews with Lord Crewe and the Civil Service Commissioner (Mr. Stanley Leathes). The definite practical purpose was to obtain such alteration in the examinations for first-class appointments in the Home and Indian Civil Service as would lead to an increased attention to the study of the natural sciences in public schools and universities. The Government thereupon appointed two committees, one under the chairmanship of Sir J. J. Thomson, President of the Royal Society, to report on science in the educational system of Great Britain, and the other, under the chairmanship of Mr. Stanley Leathes, to report on the scheme of examination for Class I of the Civil Service. Sir J. J. Thomson's committee advised Mr. Leathes's Committee that it was indispensable that a course of science extending over several years should form a serious part of every candidate's previous education, feeling strongly that if the men with higher scientific qualities, who will undoubtedly be needed in the Civil Services, are to be secured at a comparatively early age by examination, then candidates offering science only (without mathematics) should in future be placed on complete equality with other candidates. The report of Mr. Leathes's Committee advised that while such subjects as languages, literature, and history, are on the whole, and for most

young men, the best preparation for the higher Civil Service, reform is necessary, and should be considered at once. It made the important recommendation that the examination should be divided into two sections—compulsory and optional. For the first section a maximum of 800 marks would be allowed; it would include an essay, English, questions on contemporary subjects, and others on general principles, methods, and applications of science, together with Latin, and one modern language not taken in the second section. Latin, however, might be dropped by those who took two modern languages among the optional subjects; these are fifty-two in number, and in them marks ranging from 100 to 400 would be obtainable, with a possible total of 1,000, so that the possible total for both sections is 1,800. Among the optional subjects are Latin, Greek, French, German, Spanish, Russian, and English, each receiving 200 marks, with 200 more for the history and literature of the same nationalities. Other optional subjects are modern history, economics, politics, law, and philosophy, from which 200 to 100 marks may be earned; mathematics receives 400. A candidate might try for his possible 1,000 marks by selection from the above list, or he might take five branches of natural science, with the choice of chemistry, physics, botany, zoology, physiology, anthropology, or geography; or he might take fewer natural science subjects and fill up from the list of other optional subjects. Sir Ray Lankester says that the Committee's report puts the natural sciences on a really fair footing as compared with classics or any literary study, though the fair working of the new scheme must depend upon the action of examiners, who have it in their power to make it easy or difficult to secure marks in any given subject. Mr. Leathes's Committee has stopped short at securing equal opportunity for all subjects, so that the main purpose of the resolutions of the conference is not accomplished. Schools and the old universities are to a large extent in the hands of teachers of classics, and in the great public schools the head masters are, without exception, "classics," and the importance of the natural sciences as an essential and dominant part of sound education is ignored. Sir Ray Lankester's conclusion is that Mr. Leathes's Committee, "instead of rescuing education from the professional vested interests of the classical schoolmasters, hands back the victim, after many professions of goodwill, to the tender mercies of those who are banded together to starve, torture, and discredit her, and remorselessly to maintain the domination and the pecuniary allurements of the 'classical system.'"

SPECULATIONS ON LIFE.

DR. WILLIAM TIBBLES recently delivered a lecture at Nottingham on creative evolution and the origin of life. Beginning with G. H. Lewes's definition of life as "a series of definite and successive changes of structure and composition which take place in an individual without destroying its identity," he pointed out that the origin of life and the manner in which these changes are brought about have been an object of discussion from ancient times; philosophers being divided into two camps—the Vitalists and the Materialists. The former hold that life is due to a directing agency, and more especially to a vital force different from any other kind of force. The argument that the formation of living organisms is due to a vital principle was set out thus by the lecturer: The distinguishing marks of life in an organism are assimilation, growth, voluntary movement, and reproduction. In an inanimate machine every action leads to the dissipation of energy and retardation of movement; but a living organism can persist in movement and has the power of accumulating energy. In spite of ceaseless changes of matter and energy in its system, a living organism retains its integrity of form, or identity; within limits it is self-feeding, self-repairing, self-moved, and self-controlled. It is autonomous, whereas a machine

is not. These characteristics have never been exactly explained by chemical and physical laws. Materialism, on the other hand, is the theory that matter is the only ultimate reality. The materialist holds that there is no special vital force, but life is the sum of the chemical and physical activities in the organism, and the intellectual powers and moral nature of man, his reason and judgement, are the result of the interactions of matter. Dr. Tibbles referred to the vast amount of support which this theory derives from science. Thus almost all the characteristics of living organisms have been imitated. Movement is not confined to living matter; colloidal substances form semi-permeable films which take up substances in solution just as living cells do, and thus, to some extent, imitate the process of assimilation: crystals grow and multiply; inorganic colloids, under certain conditions, exhibit growth and division. Tracing the chemistry of living tissues and its relationship to ionic action, the lecturer pointed out that every life process is accompanied by changes in the crystalloidal and colloidal substances of the cells. Van't Hoff's formulation of the laws of chemical dynamics has been so fruitful in other fields of organic chemistry that it is believed the metabolic processes of the body are governed by the same laws. The properties of protoplasm may, as Huxley said, result from the nature and disposition of the molecules; but this, in Dr. Tibbles's view, does not prove that the properties of protoplasm are the additive result of the properties of its parts: a living organism contains something quite new. Even if protein were made, and cells resulted, the biologist would have to ask whether the artificial cells bore the hallmarks of vitality. Until lately there was hope that the problems of life would be solved, but the methods of Nature are not those of the laboratory. Thus, while materialism has perhaps failed to establish its thesis, vitalism has certainly revived. Turning next to the recent effort to formulate a theory of evolution of organic material, Dr. Tibbles remarked that he had long held that matter is subject to an evolutionary process, and this opinion was expressed in the preface to his book on *The Theory of Ions*, published in 1908. Since energy is capable of transformation, it is thought that matter, too, may not be constant. According to this view life is a gradual growth, a gradual transformation from the dead to the living by evolution, a change of character, step by step, until from the crude elements of the earth, air, and water, there is evolved the motile and sentient substances of our muscles and nerves. This point of view depends on the theories of evolution, of the transformation of energy, and of ionization, and postulates the existence of intermediary substances between the living and the not-living. The living materials of an organism consist of compounds of carbon, hydrogen, oxygen, and nitrogen, which have plasticity and a capacity for living. Such materials are not drawn directly from inorganic materials, and the argument is that, beginning with the dissociated ions derived from CO₂ and water, their growth into carbohydrates, fats, and proteins is a gradual process of evolution. The proteins, for instance, are formed of amino-acids which have been evolved from simpler bodies containing the necessary elements. In each of these hypothetical changes the substance becomes more plastic, but more unstable; more nearly living, but more easily decomposed. As Dr. Tibbles admits, this idea of creative evolution under the influence of an entelechy or guiding principle is distinctly vitalistic; and by a coincidence in the same year that he wrote his book on the theory of ions, Henri Bergson published *L'Évolution Créatrice*.

BRISTOL ROYAL INFIRMARY.

The histories of some of the metropolitan hospitals, such as Guy's, the London, and Charing Cross, were published before the war, and now a cordial welcome can be extended to the account of one of the oldest, if not the oldest, of the provincial hospitals, the Bristol Royal Infirmary, from its

foundation in 1736 to 1912,¹ when the new surgical wing was opened by the King and Queen. This work, however, is much more than a history of the infirmary and its staff, for it gives a contemporary picture of the social and medical life of Bristol in a kindly gossiping strain and is full of curious items of local interest. There is a refreshing freedom from dull details and statistics which, valuable in their place, do not appeal to the ordinary reader, and the several hundred biographies, many of course necessarily quite short, are human documents and not copies of the proverbial tombstone epitaphs. For much of this intimate information down to 1842 Mr. Munro Smith was indebted to fourteen volumes of most miscellaneous notes and scraps accumulated by Mr. Richard Smith, jun., surgeon to the infirmary (1796-1843), who with Boswellian zeal collected every fragment, some of them rather uncanny, that came his way. The author, indeed, compares his struggle with the material in the fourteen volumes to those ascribed by the author of *Sartor Resartus* to the editor of Professor Diogenes Teufelsdröckh's memoirs. The account of body-snatching a hundred years ago gives a graphic picture of the adventures of teachers and students in their efforts to provide the necessary material for dissection; a teacher of anatomy had a huge bunch of labelled keys by which he could gain access to any churchyard in Bristol or its immediate neighbourhood, and an entry in the old infirmary memoirs states that one student "got up" thirty subjects. In this connexion the author quotes a story, not previously published, of a callous Essex farmer who shot a burglar in his house and, not knowing what to do with the body, thought that it might be useful for dissection, and so packed it up in a box and sent it to the late Sir George Paget at Cambridge, with a letter to say that "he was sending him a man he had shot." There is an interesting note on the rise of antiseptic surgery in the West of England, the way for which was prepared by Dr. W. Budd's views on bacteria. Mr. Munro Smith unfortunately died while the book was in the press, and so will not see the success of his labour of love.

AMENORRHOEA IN WAR TIME.

This subject is discussed in a number of papers in the recent German periodicals (for example, Spaeth, *Zentralb. f. Gynäkologie*, No. 27; Feig, *Med. Klinik*, August 5th, 1917; Strickel, *Zentralb. f. Gynäkologie*, No. 28, 1917). All the authors remark on the great increase of amenorrhoea in women of child-bearing age. They put it down, no doubt correctly, to the defective nutrition under the existing food conditions, and to the fact that many women are now doing men's work. In the Charité-Frauenklinik in Berlin, according to Strickel, cases of amenorrhoea are seven times more frequent than before the war.

Medical Notes in Parliament.

Insurance (Amending) Bill.

Second Reading in the Commons.

In the House of Commons, on November 23rd, Sir Edwin Cornwall explained the provisions of the National Health Insurance (Amending) Bill, a summary of which was published in the *BRITISH MEDICAL JOURNAL SUPPLEMENT* a fortnight ago. The Minister gave some fresh information as to the work already done, and also dealt broadly with some objections already made to the new proposals, promising that they would be met in Committee. In these circumstances the bill was given a second reading without division, and was referred to a Grand Committee, which it is hoped will be set up next week. Sir Edwin said that, roughly speaking, 95 per cent. of the bill represented an agreed measure—the result of conferences with representatives of approved societies and of others concerned. On the whole, the debate supported this view,

¹ *A History of the Bristol Royal Infirmary*. By G. Munro Smith, M.D. 1917. Bristol: J. W. Arrowsmith, Limited. 8vo, pp. 507, 87 figures. 12s. 6d. net.

while making apparent that certain important matters, more especially as to finance, had definitely to be cleared up, and some amendments made in order to meet criticism.

Sir Edwin Cornwall at the outset gave statistics of the work. There are fifteen million insured persons. From 1912 to 1916 the total income was £99,000,000, the contributions amounting to £82,000,000 and the Exchequer money to £17,000,000. During 1916 the employers and employed people contributed £18,500,000, and the State contributed £5,000,000. That money was disbursed in that one year as follows: Sickness and disablement benefit £6,000,000, medical services £4,800,000, maternity benefit £1,250,000, sanatoriums benefit £750,000, administration expenses £2,250,000, and balance invested £8,500,000.

Afterwards the Minister took up the financial proposals, particulars of which have already been given. He emphasized that, except in so far as they are varied and enlarged by an additional grant of £250,000 promised from the Exchequer by the Prime Minister since the report of the Ryan Committee, these proposals follow the recommendations of the Ryan Committee. The proposals now made increase the State provision for women's excess of sickness, and place upon the State the principal part of the residual burden of deficiencies due to special risks, thus relieving the Sinking Fund *pro tanto* of the charge made upon it under the Committee's recommendations. Under the scheme the period for redemption of reserve values which in 1913 was extended to 1932 is further extended to 1947. Sir Edwin explained that this extension releases £1,500,000 out of the £4,500,000 annual income of the money thus retained. In that way they had available £1,500,000 of Sinking Fund, the additional grant of £250,000 already mentioned as promised by the Prime Minister, and £150,000 the continuance of the married women's sickness grant of 1914, making a total sum of £1,900,000. The intention is to apply £280,000 to societies to augment their Women's Ordinary Benefit Fund. It is further proposed to carry £250,000 to the Women's Equalization Fund, which it is proposed to distribute to societies in proportion to the number of married women in the particular society and their expenditure on pregnancy sickness. The Contingencies Fund, of which one-eighth may be called upon for the Special Risk Fund, is put at £1,190,000, and the Central Fund from the State at £150,000.

Sir Edwin Cornwall explained how the amount £1,190,000 was reached. It was proposed to divert from the Women's Sinking Fund £280,000 and from the Men's Sinking Fund £910,000, thus making the total. It is proposed that seven-eighths at least of this money should go direct to societies in proportion to their membership. This was new money to the society. It went to every society in proportion to the membership of the society, and it became society money, available for society purposes. It was not at the present time available for anything but for Sinking Fund purposes. The object of devoting this money to Contingencies Fund was, first, to meet any deficiency disclosed by valuation, and secondly, to augment the Benefit Funds after the next valuation. Under the bill it was proposed that the money, where there was no deficiency, should be held in the Contingencies Fund until the next valuation. Objections had been taken to this and the desire expressed that the money should be held in the Benefit Fund, remaining there to accumulate until after the next valuation instead of remaining in the Contingencies Fund. That amendment the Government proposed to make in Committee.

The Minister afterwards explained the proposal already mentioned that one-eighth of the Contingencies Fund, amounting to £150,000, should be held in reserve to be used only if necessary. Objection had been taken to the title, Special Risks Fund, which was to be given to this allocation, and he said that if members preferred it should be called the Central Fund; that could be done. It was intended to deal with societies where segregation had driven them, or compelled them, to take members engaged in exhausting and hazardous occupations, members living in unhealthy environment subject to exceptionally low standards of life and conditions. The proposal was that £150,000 of the £400,000 of State money should go to the Special Risks Fund. If that was not sufficient for the purpose of relieving any societies of any special liabilities, it was proposed that up to £150,000, one-eighth of the Contingencies Fund, should be made available.

The point to which, however, Sir Edwin Cornwall attached most importance was clearing up a misapprehension that societies with surpluses would be called upon to meet the deficiencies of other societies. He showed that the Contingencies Fund would be obtained through the change in the reserve values arrangement and that under the Act of 1911 the reserve values money was retained by the Commissioners for Parliament to decide what was to be done with that money when the reserve values had been redeemed. The extension of the redemption period enabled the Contingencies Fund to be provided in the way he had described. The Minister afterwards explained in some detail the various changes in the administration and in rules that were to be made under the bill. Touching the amendment in Section 63 Sir Edwin recalled that under this in the original Act it was provided that where undue sickness arose from unhealthy dwellings and insanitary areas the position should be inquired into and some claim made upon those responsible

to relieve the National Health Insurance Fund. As a matter of fact that section had not, he said, had much strength or weight behind it, but it was hoped that with this amendment its use might be possible. Before concluding his review, Sir Edwin Cornwall touched briefly on Clause 31, which deals with doctors on the panel. At the present time the Commissioners can, he reminded the House, remove a doctor from a panel, but cannot remove him from all the panels. He may be removed, for example, from Bermoudey, and yet may continue to practise in Bethnal Green. The desire was to take power to remove a doctor from all panels if removed from any. At the present time the Commissioners had no power to restore a doctor to a panel, and they proposed to take powers to do that. The amendment would enable them to do what was right if the doctor was at fault, and to restore him if such a course was justified. In the course of the discussion, Mr. Godfrey Locker-Lampson criticized the provisions relating to benefits for married women, urging that Parliament should do nothing to discourage the gift of the maternity benefit and the 7s. 6d. a week at a time when it might be needed not only for the women's sake, but for the sake of the health of the child when it was born. He hoped, also, that the increase of the waiting period for maternity benefits—from twenty-six weeks to forty-two weeks—would not be maintained, though he agreed that the existing system had lent itself to a good deal of fraud. Mr. Locker-Lampson made it clear that he presented these considerations in no hostile spirit to the bill, which he thought would go a long way to place societies on a sound financial basis, and to simplify machinery. Other members spoke similarly. Sir Worthington Evans, who did so much as a private member to improve the original bill when it was before the House of Commons, said it was quite true that the Sinking Fund was in part to be diverted, but that Sinking Fund was never available for the purpose of going to any society, except after the period when the reserve values would have been redeemed, a period of not less than twenty years, afterwards extended to twenty-two. Under the new proposal the Sinking Fund would be brought nearer as regards the provision of benefits to the insured person, because after the seven years the surplus which would arise from the Contingencies Fund would be capable of providing immediate benefit. The real effect, therefore, in point of view of insured persons, of this raid on the Sinking Fund was that instead of additional benefit being postponed for twenty-two years, as it was in the 1913 Act, it would be brought within reach at the end of about seven years. When that happened and benefit was distributed, the State's two-ninths contribution would come in so that as far as the insured person was concerned he received the benefit earlier under the provisions of this bill than he would have received it under the Act.

Royal Army Medical Corps.—Major David Davies asked whether a decision had yet been reached as to the comparative rates of pay of those officers in the Royal Army Medical Corps, Territorial Force, who held commissions at the outbreak of the war, and medical men who had been given temporary commissions in the Royal Army Medical Corps since that date. Mr. Forster replied that the matter had been referred to the Government Committee on Officers' Pay, and it was hoped that their decision would be announced shortly. Major Davies asked, in view of the demand for doctors for purely clinical work both here and in France, whether Mr. Macpherson could state the duration of the period of drill which medical officers who joined the Royal Army Medical Corps had to undergo before they were able to give their full time to the clinical duties of their profession. Mr. Macpherson: The duration of the course, which includes not only drill, but military sanitation, anti-gas protection, and the duties of a medical officer with troops in the field, depends on the demands which have to be met for overseas reinforcements, and the shipping available, but usually lasts three weeks. In reply to another question by Major David Davies, Mr. Macpherson said that Surgeon-General Sir Arthur Sloggett exercised control over the R.A.M.C. in France and Belgium under the Commander-in-Chief in France, in the same way as any other head of a department in the field. He was sent to France by Lord Kitchener no doubt because he thought him the best man for the appointment.

The New York Women's Hospital has organized and equipped a unit of ten medical women for service in a base hospital in France.

THE WAR.

PALESTINE: MARCH-JUNE, 1917.

A DISPATCH from General Sir Archibald Murray, late General Officer Commanding-in-Chief, Egyptian Expeditionary Force, dated June 28th, and dealing with the period from March 1st to that date, was published almost simultaneously with the news of the recent successes in Palestine.

The dispatch gives the story of the two attacks on Gaza (March 26th and April 17th). On the first occasion the enemy was severely punished, 950 Turkish and German prisoners being taken and casualties, estimated at 8,000, inflicted. The British casualties were under 4,000. On the second attack the British casualties amounted to some 7,000. Both attacks failed to reach Gaza, but a certain amount of ground was won and retained. Sir Archibald Murray says that no praise can be too high for the gallantry and steadfastness of the cavalry, infantry, artillery, Royal Flying Corps, and all other units which took part in the two battles for Gaza. With regard to the medical services he writes as follows:

The health of the troops has throughout been singularly good. All branches of the medical services under Surgeon-General J. Maher, C.B., deserve the highest commendation for their successful work at the front, on the lines of communication, and in the base hospitals. The presence in the force of a number of civil medical consultants, who have so patriotically given their services, has been of the very greatest value, and they have worked in successful accord with the regular medical services of the army. The Australian Army Medical Corps and the New Zealand Medical Corps have also been remarkable for their efficiency and unremitting devotion.

The dispatch notes that the impossibility of granting leave home on an extended scale rendered the army in the field dependent on rest camps and voluntary institutions for the rest and relaxation so necessary in view of the arduous conditions of campaigning in the desert and in tropical heat. The difficulty of supply was throughout very great. The force was more than usually dependent on animal transport, and important mounted forces were employed, including detachments of the Imperial Camel Corps and the Australian and New Zealand mounted divisions and the Yeomanry. The difficulty of supply was lightened by the pushing forward of the railway. The composition of the infantry is not stated, but seems to have consisted largely of Home and Indian battalions. The dispatch concludes with the promise that the names of officers, non-commissioned officers, and men will be brought to notice for gallant and distinguished services at a later date.

TETANUS IN HOME MILITARY HOSPITALS.

SUMMARIES of the first four analyses of cases of tetanus treated in home military hospitals have already appeared in these columns. We have now received from Surgeon-General Sir David Bruce a fifth analysis of such cases, covering part of December, 1916, and most of the first quarter of the present year.

The Falling Death-rate.

The numbers of cases of tetanus dealt with in the five periods and the rates of mortality are given in the following table, which speaks for itself:

Analysis.	No. of Cases.	Recovered.	Died.	Mortality per Cent.
1914-15	231	98	133	57.7
1915-16	195	99	95	49.2
Aug.-Oct., 1916 ...	200	127	73	36.5
Oct.-Dec., 1916 ...	100	69	31	31.0
Dec., 1916-Mar., 1917...	100	81	19	19.0

In the second analysis the statement was made that "early treatment should be striven for, and if this were done and the antitoxin applied thoroughly, one would not despair of reducing the mortality to, say, 20 per cent. instead of 50 per cent., at which it stands for the past

year." It will be seen that this ambition has been more than realized so far as the returns of the last 100 cases are concerned. This large reduction in the death-rate is most satisfactory, but Sir David Bruce wisely refrains from expressing an opinion as to whether it has been due to the specific treatment or to one of the several other factors involved. Whatever be the cause—the prophylactic dose of serum, better surgical treatment, quicker diagnosis, more thorough therapeutic treatment—the result is gratifying.

Referring to the factor of surgical treatment, it is pointed out that if this could be made entirely successful, by cleansing and sterilization of wounds at the outset, there would be no more cases of tetanus; but while there is some evidence of an improvement in surgical technique much remains to be done. The present analysis repeats and brings up to date figures showing the number and distribution of cases of tetanus treated in home military hospitals since the beginning of the war.

The Lengthening Incubation Period.

Among the last 100 cases we find that where the symptoms of tetanus appeared within ten days of receiving the wound, the mortality was 40 per cent.; where they appeared between the eleventh and twenty-fourth day, it was 25 per cent.; in the remaining 66 cases, with an incubation period greater than twenty-five days, the mortality was 13.6 per cent. In one patient the incubation period was stated as 786 days; but this for various reasons is regarded as a doubtful case which should be ignored for statistical purposes, although, as Dr. Goadby has shown, the tetanus bacillus may remain for a long time quiescent at the site of old wounds. Disregarding this case, the longest incubation was 365 days, and the shortest three days.

Since the beginning of the war the average incubation period has been steadily lengthening. This should probably be attributed in the main to the prophylactic injection of antitoxin. In the first year of the war 47 per cent. of cases had a short incubation period; in the last analysis this had fallen to 10 per cent. Correspondingly the percentage of cases with a long incubation period has risen from 6.4 to 69.

General and Local Tetanus.

In our summary of the last analysis (September 15th, 1917) we printed Sir David Bruce's working definitions of general tetanus and local tetanus. In the present series it was found on examination that 81 cases could be placed in the general group, and 19 in the local group. Among the former there were 58 recoveries and 23 deaths, giving a mortality of 28.3 per cent. All the cases of localized tetanus recovered. There is no evidence to support the view that the presence of a fractured bone complicating the wound is a source of danger heightening the death-rate from tetanus.

Prophylactic and Therapeutic Inoculation.

In six of the cases tetanus is reported to have followed an operation, and one died. In none of these was a prophylactic inoculation of antitetanic serum given before the operation, although the advice of the Tetanus Committee is that this should always be done. As in each preceding series of cases, the mortality among patients who had received no prophylactic injection in France was considerably greater than among those so protected. It should be noted here that the present policy advocated by the Tetanus Committee of the War Office is that four prophylactic injections should be given to every wounded soldier at intervals of seven days, but in periods of hard fighting this might sound a counsel of perfection.

The whole of the 100 cases under review received therapeutic doses of antitetanic serum; in the preceding series all but two were so treated. The considerable reduction in the mortality from 31 to 19 per cent. would not appear, therefore, to be due to this factor, and, as Sir David Bruce states in his conclusions, the evidence as to the therapeutic effect of antitetanic serum is still inconclusive. Once again the figures furnish no case either for or against the intrathecal route as compared with other methods of injection; similarly, from the figures relating to dosage no useful deduction can be drawn.

SURGICAL REQUISITES EXHIBITION.

The Surgical Requisites Association, of 17, Mulberry Walk, Chelsea, a war organization connected with Queen Mary's Needlework Guild, held an exhibition last week at the Grafton Galleries. Various dépôts from all over England, but principally from London, sent examples of their work, and woman's share in the national war industries showed to great advantage. The exhibits were remarkable for ingenuity of design and finished workmanship. It is not so much that new types of appliances have been invented as that many useful, and for the most part simple, modifications have been introduced. Among the many contrivances for the comfort of the patient and for the carrying out of treatment, it is only possible in a brief notice to name a few. Of the larger exhibits the Balkan and Sinclair beds call for special mention. These, as every one now knows, are of incalculable value in the nursing and treatment of dorsally placed injuries, and the association is turning out these beds to keep pace with the increasing demand for them. A useful modification of the McIntyre splint has been introduced in one exhibit. Here the footpiece has been made very wide, so that the natural tendency of the foot to eversion is allowed for, and further, the footpiece is bored on either side to admit of the bandage grasping the foot firmly. A padded malleable metal jaw splint deserves notice: the metal supports to the chin are arranged so as to hook on to a net cap, thus affording firm and equable supports. Strips of Gooch splinting, into which transverse strands of malleable metal had been introduced, so that the splint could be moulded to the limb, seemed a useful modification. The apparatus known as "Hallé's glove" is being made either attached or not to a "cock-up" wrist splint, with strands of elastic to take the place of the paralysed extensors of the hand; thus it is intended to do for the fingers what a toe-raising spring does for foot-plant.

Another noteworthy feature of the exhibition was a large collection of waterproof papier-mâché splints, made on an actual cast of the affected part. The advantages claimed for them are that they are light, accurately fitting, non-inflammable, waterproof, relatively transparent to x rays, and, furthermore, that they lend themselves readily to standardization for the treatment of some of the commoner injuries. Splints made of this material for Colles's fracture, finger-extension splints, and the Acheson splint for abduction of the upper arm, all seemed practical and useful. Apart from splints the exhibition was rich in samples of hospital clothing and utensils, and the promoters have good reason to be proud of a most useful and suggestive venture.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

SURGEON PROBATIONER J. L. NOLAN, R.N.V.R.

Surgeon Probationer J. L. Nolan, R.N.V.R., was reported as killed in action, in the casualty list published on November 24th.

ARMY.

Killed in Action.

COLONEL W. W. HEARNE, D.S.O., A.A.M.C.

Colonel W. W. Hearne, D.S.O., Australian Army Medical Corps, was reported as killed in action, in the casualty list published on November 24th. He received the D.S.O. as a Lieut.-Colonel on June 4th, 1917, so his promotion to administrative rank must have been recent.

MAJOR N. J. BULLEN, A.A.M.C.

Major N. J. Bullen, Australian Army Medical Corps, was reported as killed in action, in the casualty list published on November 23rd.

CAPTAIN JOHN ALSTON, M.C., R.A.M.C.(S.R.).

The name of Captain J. Alston, R.A.M.C., was given as killed in action, in the casualty list published on October 29th. In the BRITISH MEDICAL JOURNAL of November 3rd was published an obituary notice in which it was assumed that the Captain Alston killed was Dr. James Alston who took the licences of the Irish Colleges in 1911. We have since been informed that this gentleman died last year. It was Captain John Alston of Glasgow who was killed.

He graduated M.B., Ch.B.Glas. in 1916, and held a commission in the R.A.M.C. Special Reserve. The award to him of the Military Cross was gazetted on October 18th, 1917.

Died of Wounds.

MAJOR W. L. MACLEAN, C.A.M.C.

Major W. L. Maclean, Canadian Army Medical Corps, was reported as having died of wounds, in the casualty list published on November 22nd. He was born in Western Canada, received his early education in Nova Scotia, and graduated in medicine at Dalhousie University in 1907. In February, 1915, he went to France with a Canadian stationary hospital, and served with various medical units—Canadian and British. At the time of his death he was attached to a British casualty clearing station. Major Maclean was one of the most promising of the younger members of the medical profession in Canada. He was a first-rate surgeon, a good organizer, and a very hard and conscientious worker. He was extremely popular with all his colleagues. His death is a great loss to the armies in the field, and to the medical profession.

CAPTAIN L. L. MCKEEVER, R.A.M.C.

Captain Louis Lawrence McKeever, R.A.M.C., was reported as having died of wounds, in the casualty list published on November 22nd. He was educated in Dublin, and took the L.R.C.P.I. and L.R.C.S.I. in 1914. He joined the R.A.M.C. as a temporary lieutenant on February 14th, 1915, and was promoted to captain after a year's service. He was attached to the Royal Scots when killed.

Died on Service.

CAPTAIN N. J. H. GAVIN, M.C., R.A.M.C.

Captain Niel John Hay Gavin, M.C., R.A.M.C., was reported as having died on service, in the casualty list published on November 23rd. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1904. He then took up lunacy as a speciality and served as assistant medical officer successively in the Norfolk County Asylum, in the West Riding Asylum at Wakefield, and in the Three Counties Asylum at Hitchin, Hertfordshire. Joining the R.A.M.C. as a temporary lieutenant nearly two years ago, he was promoted to captain after a year's service and received the Military Cross on June 3rd, 1917.

Wounded.

Major W. M. A. Fletcher, Australian A.M.C.

Captain C. F. Backhouse, R.A.M.C.(T.F.).

Captain R. T. Caesar, R.A.M.C. (temporary).

Captain H. P. Caithness, R.A.M.C. (temporary).

Captain T. H. Carson, Canadian A.M.C.

Captain J. F. Edmiston, R.A.M.C.(T.F.).

Captain A. H. Falkner, R.A.M.C.(T.F.).

Captain G. M. Forbes, Canadian A.M.C.

Captain D. H. A. Galbraith, R.A.M.C. (temporary).

Captain G. Hislop, R.A.M.C. (temporary).

Captain D. A. Macleod, Canadian A.M.C.

Captain W. L. Millett, Australian A.M.C.

Captain B. R. Mooney, Canadian A.M.C.

Captain E. L. Morgen, Australian A.M.C.

Captain W. W. Morrison, R.A.M.C. (temporary).

Captain W. A. Murphy, R.A.M.C. (temporary).

Captain J. R. Paul, R.A.M.C. (temporary).

Captain E. H. Scholefield, R.A.M.C.(T.F.).

Captain W. H. Scott, Canadian A.M.C.

Captain D. P. Thomas, R.A.M.C. (temporary).

Captain H. W. Whybock, Canadian A.M.C.

Lieutenant A. S. Porter, Canadian A.M.C.

Lieutenant A. Rodd, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Brown, G. L., Lieutenant Loyal North Lancashire Regiment, youngest son of Dr. Andrew Brown, of Hatch End, Middlesex, killed November 15th, aged 31. He got his commission on November 24th, 1914.

Butlin, Sir Guy, Bt., Captain and Adjutant Cambridgeshire Regiment, only son of the late Sir Henry Butlin, President of the Royal College of Surgeons of England, and of the British Medical Association, reported wounded and missing on September 16th, 1916, now presumed killed on that date, aged 23. He was born in 1893, educated at Harrow and at Trinity College, Cambridge, where he took his degree with honours in June, 1914, and had entered the Inner Temple, when he took a commission on August 26th, 1914. He went to the front in February, 1915, and was promoted to captain in the following June. He

was killed while bringing in a wounded officer. He succeeded his father as second baronet in 1912, and by his death the baronetcy is left without an heir.

Saundby, William Spencer FitzRobert, Second Lieutenant Yorkshire Regiment, in his 19th year, youngest son of Dr. Robert Saundby of Birmingham, a former President and Chairman of Council of the British Medical Association. He was educated at West House School, Edgbaston, and King Edward's High School, Birmingham. He entered the army through Sandhurst in the spring of 1916 and joined the Royal Flying Corps. He went overseas in October, 1916, and was reported missing on November 17th, 1916. It was believed that he had had to make a forced landing and been taken prisoner, but as no news has since been heard of him this hope has been abandoned.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SPECIAL Supplement to the *London Gazette*, issued on November 26th, contains a further list of awards for gallantry and distinguished service in the field. The acts of gallantry for which the decorations have been awarded will be announced in the *London Gazette* as early as practicable. The following medical officers are awarded the decorations indicated:

Bar to the Distinguished Service Order.

Major (temporary Lieut.-Colonel) Patrick John Hanafin, D.S.O., R.A.M.C. (D.S.O. gazetted January 14th, 1916).
Temporary Captain Robert McCowan Hill, D.S.O., M.B., R.A.M.C. (D.S.O. gazetted May 16th, 1916).

Distinguished Service Order.

Majors William Bannerman Craig, A.A.M.C.; William Allan Hailes, A.A.M.C.; Harrie Bertie Lee, M.C., A.A.M.C.; Kenneth MacCormick, N.Z.M.C.; Robert Maxwell McMaster, A.A.M.C.
Captain and Brevet Major Henry Forbes Pantou, M.C., M.B., R.A.M.C.
Temporary Captains James Churchill Dunn, M.C., M.D., R.A.M.C.; Ernest Harrison Griffin, M.C., M.D., R.A.M.C.

Bar to the Military Cross.

Captains: Charles Herbert Leadman, M.C., A.A.M.C. (M.C. gazetted July 18th, 1917); George Reginald E. G. Mackay, M.C., M.B., R.A.M.C. (M.C. gazetted September 22nd, 1916); Patrick Joseph Francis O'Shea, M.C., A.A.M.C. (M.C. gazetted November 18th, 1917).

Temporary Captains: William Thomson Brown, M.C., M.B., R.A.M.C. (M.C. gazetted September 26th, 1917); Charles Reginald R. Huxtable, M.C., M.B., R.A.M.C. (M.C. gazetted July 18th, 1917); Charles Joseph O'Reilly, M.C., M.D., R.A.M.C. (M.C. gazetted November 4th, 1915); John Finlayson McG. Sloan, M.C., R.A.M.C. (M.C. gazetted July 18th, 1917); Gideon Walker, M.C., M.B., R.A.M.C. (M.C. gazetted November 14th, 1916).

Temporary Lieutenant (temporary Captain) Henry Alphonsus Harbison, M.C., M.B., R.A.M.C. (M.C. gazetted August 25th, 1916).

Military Cross.

Captains: William Norman Abbott, N.Z.A.M.C., Douglas Lewis Barlow, A.A.M.C., Charles Henry Brennan, R.A.M.C. (S.R.), John Herald B. Brown, A.A.M.C., George Crawshaw, M.B., R.A.M.C., Arthur Curtis, A.A.M.C., Frederick Ellis, R.A.M.C., Stuart Galloway Gibson, A.A.M.C., William Evans Graham, M.B., R.A.M.C., Charles Edward K. Herapath, R.A.M.C., Frederick William Kemp, N.Z.A.M.C., David Mackie, M.B., R.A.M.C. (S.R.), James Purdie, R.A.M.C. (S.R.), James Rafter, M.B., R.A.M.C. (S.R.), Stanley Arthur Railton, A.A.M.C., Edmund Lewis Reid, S.A.M.C., Hugh Arthur Sandford, M.B., R.A.M.C., Frederic Battinson Smith, R.A.M.C., Edwin Cyril W. Starling, R.A.M.C. (S.R.), Adam Annand Turner, M.B., R.A.M.C., Harry Whitaker, M.B., R.A.M.C., Eric William B. Woods, A.A.M.C.

Temporary Captains: Douglas Erith Derry, R.A.M.C., Thomas Duncan, R.A.M.C., Andrew Gaston, R.A.M.C., John Lewis A. Grout, R.A.M.C., John Charsley Mackwood, R.A.M.C., William Strolley Martin, M.B., R.A.M.C., John Louis Menzies, M.B., R.A.M.C., James Bertram Mitton, M.B., R.A.M.C., John Henry Morris Jones, R.A.M.C., Joseph Herbert Porter, M.B., R.A.M.C., Norman Pallister Pritchard, R.A.M.C., Alan Randle, M.D., R.A.M.C., William Logan Scott, M.B., R.A.M.C., John Aylmer Tippet, R.A.M.C., John Wilfred Watthews, M.B., R.A.M.C., Henry Dewi H. Willis-Bund, R.A.M.C.

Temporary Lieutenant (temporary Captain) Raymond John Clausen, R.A.M.C.

Lieutenant Henry John Henderson, M.B., R.A.M.C.

The Distinguished Conduct Medal is bestowed upon one non-commissioned officer and five privates of the R.A.M.C. and one non-commissioned officer of the A.A.M.C.

THE late Captain Harold Ackroyd, V.C., R.A.M.C., who was killed in France, left estate valued at £39,748 gross.

England and Wales.

LONDON COUNTY COUNCIL AND THE PROPOSED MINISTRY OF HEALTH.

In a report presented by the Public Health Committee to the London County Council on November 27th the draft bill for the establishment of a Ministry of Health, submitted by National Insurance organizations to the Prime Minister on October 11th, was criticized on the ground that, while it proposed the formation of a Ministry of Health and would transfer to it various powers at present attaching to a number of Government departments, it did not transfer the powers of the Local Government Board relating to housing, town planning, drainage, water supply, and the like, the proper exercise and development of which were essential to the health of the community. It appeared to the Committee inevitable that one of two things must happen—either environment must be separated from health or the powers relating to environment must also be transferred to the new Ministry. The Committee was strongly of opinion that the former course was undesirable in the interests of efficient administration. The Committee also regarded the proposal to set up hybrid committees of representatives of different authorities—some of them non-elected bodies—to administer public moneys provided out of the rates or national funds as being contrary to the principles of local government. The Council adopted a recommendation that the functions of a Ministry of Health should not be separated from those of the department entrusted with the central supervision of local powers; and also that any further powers to be granted by Parliament with regard to public health should form part of the existing system of local government. A rider was adopted suggesting that a public inquiry be held as to the cost of the policy and the position of local authorities.

LONDON ASSOCIATION OF MEDICAL WOMEN.

At a meeting of the London Branch of the Medical Women's Federation on November 13th, with Lady Barrett in the chair, it was resolved to draw the attention of the Food Controller to the national importance of safeguarding the supply of milk and sugar for all young children. A discussion was held on the two questions referred to the associations at the annual meeting of the Medical Women's Federation: (a) The advisability of establishing a Ministry of Health; and (b) which departments required more urgently to be dealt with by such authority. Dr. Mary Scharlieb said that all were agreed that the formation of a Ministry of Health was a national necessity in order that the medical work now performed by various departments might be co-ordinated. Dr. Ethel Bentham, discussing the proposals of certain members of the National Insurance Committee, said that as long as the urgent question of housing was postponed, the other suggested arrangements for crèches, hospital beds, etc., would be of comparatively little use. It was essential that the Ministry of Health should, as soon as established, take control of the medical services now rendered under the Poor Law administration and also of the housing powers of the Local Government Board. Lady Barrett spoke of the necessity for unifying and co-ordinating the authorities dealing with infant welfare centres and with the prevention of infantile mortality. Dr. Jane Walker held that the Local Government Board, the Board of Education, and the National Insurance Commission should be united and work as one central authority. Local Health Councils would then be formed, uniting all the services with the medical officer of health as chief medical officer, to deal with matters locally. Housing must form part of any scheme. Dr. Eleanor Lowry pointed out the importance of establishing a proper basis of work for nurses, so that they might earn a living wage and have an eight hours working day. Dr. Sophia Jevons, in a paper on the medical services now included under the Poor Law administration, said that the Public Health Act, 1875, empowered a sanitary authority to open any hospital. This authority should take over the infirmaries and thus banish the pauper taint.

INSURANCE BENEFITS IN WALES.

Some remarkable figures relating to the administration of the Insurance Act in Wales were submitted at a welcome

given on November 22nd by the Lord Mayor of Cardiff (Alderman Roberts) to the members of the Association of Welsh Insurance Committees. The President of the Association, Mr. J. E. Tomley, said that in July, 1914, the number of insured persons in Wales was 632,923 males and 150,246 females, a total of 783,169. On October 1st, 1917, the numbers were 586,521 men and 195,050 women, total 781,571, showing a decrease in the three years of 1,598. But the decrease was entirely on the men's side, and reached the large figure of 46,402; the number of insured women, on the other hand, increased by 44,804. This, of course, is due almost entirely to the changed conditions of male and female labour owing to the war. It was stated that the number of insured persons in Wales was approximately one-third of the whole population. Sir Thomas Hughes, Chairman of the Welsh Insurance Commission, said the sickness benefit paid during 1916 to men amounted to £291,000, to women £46,000. Maternity benefits paid to men's wives amounted to £72,000, and direct to women members £2,766. Disablement benefits for men amounted to £53,000, for women to £12,000. The medical and sanatorium benefits amounted to nearly £300,000. He claimed that during the year insured persons in Wales had received in money or money's worth nearly a million of money. In the course of further proceedings (at the fourth annual meeting of the association), a paper was read by Mr. F. Llewelyn Jones of the Flintshire Committee advocating the establishment of a Ministry of Health, and after discussion it was resolved:

That it is essential in the national interest that a Ministry of Health should be created at the earliest possible date, the Ministry to be represented by a Minister of Cabinet rank responsible to Parliament, and that all the health functions of the existing central authorities should be transferred to and vested in the proposed Ministry of Health, inasmuch as it is not considered advisable that any of the existing central departments should be constituted a Ministry of Health.

A NEW NATIONAL FUND FOR WALES.

At the invitation of Mrs. Lloyd George, Chairman of the "National Fund for Welsh Troops," and Sir Owen Thomas, Chairman of the "Welsh National Fund," a National Conference is being held at the Shire Hall, Shrewsbury, on Friday, November 30th, for the purpose of establishing a "Welsh National Fund for the Welfare of the Sailors and Soldiers of Wales and their Dependants." The object is to provide for the further welfare of the persons named without relieving the State of any of its obligations. It is understood that the promoters of this extension of the work carried on, or proposed to be carried on, by various funds, have been largely guided by the views of Colonel Sir Robert Jones on the urgent need of providing for the wants of discharged and disabled soldiers over and beyond the provision to be made by the Government. It is intended to entrust the work to a National Committee consisting of Lords Lieutenant, members of Parliament, chairmen of county councils, mayors of boroughs, chairmen of urban and rural district councils, chairmen of War Pensions Committees, representatives of discharged and disabled soldiers and sailors, and of labour organizations, and for the furtherance of the fund an early appeal is to be made to the people of Wales. The constitution of the National Committee appears, on the whole, to be widely based, but it does not include a direct representation of the medical profession.

THE TREATMENT OF TUBERCULOUS PERSONS.

At the meeting of the London Insurance Committee on November 22nd, the chairman, Mr. Kingsley Wood, reported that he and other members of the Committee had attended a conference called by the President of the Local Government Board to consider the treatment of tuberculous persons in London. The Insurance Commissioners, the London County Council, and the Metropolitan Asylums Board, were also represented. Negotiations were still proceeding, and it was hoped that the outcome would be a comprehensive scheme for both insured and uninsured persons, the distinction between whom was arbitrary. On the basis of the Astor report, giving one sanatorium bed and one hospital bed to every 5,000 of the population, London would have 904 sanatorium beds and an equal number of hospital beds. For the insured population of 1½ million in London, the figures would be 300 sanatorium

and 300 hospital beds. At the present time there were only about 350 beds in all available for the ordinary civilian insured persons; 120 others were occupied by service men. Under a comprehensive scheme, such as had been adopted in Liverpool, London would become entitled to a grant of £90,000 for sanatorium benefit, and he hoped that through the good offices of the London County Council a great step forward in this direction would shortly be taken.

Scotland.

WOMEN MEDICAL STUDENTS IN EDINBURGH UNIVERSITY.

At the present time 285 women are studying medicine in the University of Edinburgh. Those who have proceeded to graduation during the past months are not included. Forty-two new students began in the past summer session, and sixty in the present winter, making 102 in all for the year.

INSPECTION OF SCHOOL CHILDREN.

The report of Dr. G. Arbuckle Brown, principal medical officer of the Govan School Board, contains some points of interest. Govan is a suburb of Glasgow, with a population of over 80,000. It contains forty-one schools, for the medical inspection of which the board makes provision. They comprise thirty-two public schools, two special schools for physically and mentally defective children, and seven voluntary schools. During the year 8,642 routine examinations, 9,259 non-routine examinations, and 2,731 special examinations in the investigation of necessitous children were made. The report states that the total number of children on the roll of the special schools was 420, classified as follows: rickets 175, tuberculous disease 92, nervous diseases 86, circulatory disease 20, pulmonary disease 8, and other conditions 39. There was a total of 151 mentally defective children, classified as follows: "high grade" 56, "medium grade" 71, and "low grade" 24.

Correspondence.

THE "HAEMOGREGARINE" OF TRENCHELL FEVER.

SIR,—Ever since the publication by McNee and his fellow workers of their classical investigations on trench fever this disease has come to be recognized by medical officers in France as a very definite clinical entity. Although, however, the condition has been carefully studied by a number of competent laboratory investigators with a view to determining its etiology, it can, I think, rightly be said that no one has as yet clearly demonstrated the existence of a visible parasite as the responsible causative agent.

In this respect the recent appearance, in the pages of the *Lancet* of September 8th, 1917, of a communication by Captain Lyn Dimond entitled, "Trench fever or P.C.O. associated with the presence of a haemogregarine," has excited widespread interest, for here, according to the author, is a parasite which is not only of considerable size but which can be demonstrated by a relatively simple technique.

I need not here discuss the misapplication of the established nomenclature of protozoological literature which trammels Captain Dimond's description, for this aspect of the question has been already sufficiently dealt with in the pages of the *Lancet* for September 22nd by Dr. Low and by Mr. Clifford Dobell. The real problem that presents itself is this: Of what nature are the bodies that Captain Dimond finds in his blood films?

During a recent visit to London I have had the opportunity of examining certain of Captain Dimond's preparations at the Hampstead Hospital, and since returning to France I have seen preparations made by a number of workers who have followed Dimond's technique. The work done in France has confirmed the Hampstead findings in that preparations of venous blood taken from cases of trench fever and haemolyzed in distilled water before being stained have shown the presence of bodies which are identical with those depicted by Dimond in

Figs. I, II, III, IV. The important point, however, lies in this, that using the same technique and the same distilled water control specimens of blood taken from healthy individuals show the same bodies. This finding, coupled with the fact that the search through direct smears of blood stained without any previous laking process have proved quite fruitless, brought under suspicion the distilled water used as the laking reagent.

This suspicion I have succeeded in confirming in the following manner. A specimen of distilled water that had been used to lake specimens of blood, which on staining yielded the bodies referred to, was passed through a Berkefeld filter. The scraping from the candle yielded in small numbers a very active flagellate. This organism was transferred to distilled water containing a minute trace of normal human serum, and at the end of six days at room temperature gave a rich culture of flagellates. Stained preparations of this culture show Dimond's gametocytes as pictured in Figs. I, II, III, IV. The organism is about the size of a red corpuscle, young forms being slightly smaller and older forms slightly larger than a red cell. It has bright blue cytoplasm which is coarsely reticular, and contains numerous vacuoles. Dimond's "nucleus *de reliquat*," however, is really a trophonucleus, while his peripheral deep red-stained nucleus rich in chromatin is really a kinetococcus. The creature is endowed also with two flagella which have not been depicted or described. Further, the deeply staining globules which Dimond takes to represent division of the nucleus are not nuclear at all. They have none of the staining characters of chromatin, and are really large spherical metabolic granules. Again, certain individual flagellates as they grow ingest large numbers of bacteria and then die. These individuals when stained present no more than a degenerated trophonucleus surrounded by more or less radially arranged bacteria. These latter are Dimond's merozoites (Fig. V).

From another specimen of distilled water passed also through a Berkefeld filter I have obtained preparations showing in numbers Dimond's fully developed merozoite (Fig. VI), and also his micromerozoites (Fig. VIII). Both these bodies are really large bacteria in which, with Romanowsky staining, the chromatinic material has aggregated itself in the centre of the bacillus.

It seems impossible, therefore, to avoid the conclusion that Dimond has mistaken for the causative agent of trench fever a flagellate protozoan and a bacillus that are present in impure distilled water. Trained observers have long ago called attention to this source of error in dealing with blood films treated by the laking method, and they are familiar, to take an instance, with the description given by Captain Archibald in the Wellcome reports of a similar flagellate organism found by him in distilled water in his laboratory in Khartoum.—I am, etc.,

HERBERT HENRY, M.D.,

Captain R.A.M.C.

November 3rd.

THE CENTRAL POOL AND THE INVALIDED SOLDIERS' FUND.

SIR,—I wish to draw the attention of every panel practitioner to the account of a discussion at a meeting of the London Panel Committee, held on November 20th, on the "regulations for the medical attendance of discharged disabled sailors and soldiers," which is reported in the SUPPLEMENT to the JOURNAL of November 24th on p. 103, and particularly to the following passage therein: "There was no statutory obligation on the part of the Commissioners to consult Panel Committees, but the Commissioners made it clear that they did recognize a moral obligation to consult the profession fully." That refers to the introduction of new regulations generally. On the motion, which was passed, to take counsel's opinion on "the rights and powers of the Panel Committee under the Acts and regulations," Dr. J. V. C. Denning pointed out that the Commissioners were *not* bound to consult with Panel Committees before making any changes in the regulations; that they were *not* bound to give six to eight weeks' notice of such changes as they proposed; and that they *had* the power to substitute a dividend for a capitation scheme of payment.

Over twelve months ago I drew attention to the first two of these three points in certain letters to the JOURNAL, and insisted that this position was the direct and necessary consequence of the fact that our agreements were made with the Insurance Committees of counties and county

boroughs and not with the Commissioners direct. I am convinced that this arrangement is at the bottom of our present troubles and difficulties, and that it will be a never-ending source of friction unless and until every panel practitioner's agreement is with the Commissioners. Now they have an absolutely free hand to alter our terms of service anyhow and any when they like. They admit a moral obligation to consult us with regard to changes, but what man with half an eye to business would submit to an agreement when the obligations on one side were only moral and on the other legal? I cannot imagine anything more crass and stupid.

I have been told that the change I suggest could only be made by an alteration of the Acts. I am doubtful about that, but it is one of the points upon which the London Panel Committee might well take counsel's opinion; also as to its advisability. If it cannot be done under the present Acts, then an alteration of them to permit it is the most important thing the profession can fight for at present.—I am, etc.,

Ashton-under-Lyne, Nov. 24th.

SAM'L. CRAWSHAW.

THE FUTURE OF THE POOR LAW MEDICAL SERVICE.

SIR.—Dr. Withers Green asks for short replies to his query, in his letter in the JOURNAL of November 17th, p. 673. Do you wish the Poor Law medical service to be merged into the present and future general insurance scheme? As there are a good many men who perhaps do not study their JOURNAL and SUPPLEMENT very carefully, may I point out to them that it is suggested by the Association that the post of Poor Law doctor be abolished, and that Poor Law patients should become insured patients. I think the large majority of men who hold these appointments will quickly and decisively answer Dr. Withers Green's query in the negative. Speaking as a country practitioner, I should be sorry to attend these people at a rate a good deal in excess of the present insured rate. They consist largely of old people who are always more or less ill, and require constant attention. Moreover, I am sure this proposed change would not be in their interests.

As I understand there are some four thousand men holding these appointments, I hope they will communicate with Dr. Withers Green. Otherwise they must not be surprised if, at no distant date, they find themselves deprived of their appointments owing to their own slackness in answering a simple question.—I am, etc.,

Gillingham, Dorset, Nov. 24th.

R. W. MORGAN, M.D.

MIDWIVES (IRELAND) BILL.

SIR,—In the BRITISH MEDICAL JOURNAL of July 29th, 1916, and subsequent issues I felt bound to criticize the attempt of a "committee consisting of distinguished medical gentlemen" to extend to Ireland the Midwives Act of Scotland amended in such a way as to inflict additional labour on the dispensary medical officers of Ireland, and deliberately to exclude them from remuneration accorded to all other medical men working under the proposed Act. The correspondence in the JOURNAL extended over many weeks, with the result that the committee of distinguished medical gentlemen considered it expedient to hand over to the Local Government Board the charge of the bill. I presume they saw it would be a hazardous proceeding to out-pace the feelings of nearly 1,000 medical men in this country.

The bill, with its objectionable proposal, is now before Parliament—backed by the Chief Secretary and the Solicitor-General—and will probably become law. I suggested in my first letter, "in the event of the Act being extended to Ireland, an amendment exempting dispensary medical officers who have trained midwives employed under the Medical Charities Acts in their districts from the obligation of attending maternity cases on red tickets with registered or unregistered handy-women where the service of the trained midwife is available."

I was promised the fulfilment of that condition, but there is no such provision in the bill. I would therefore ask to have it included after Clause 22. You must be aware that cases of emergency provided for in the bill are not likely to occur where those seeking treatment under the Medical Charities Acts honestly desire to avail themselves of the assistance of the trained midwife provided

for them free of charge under those Acts; however, such cases can be multiplied indefinitely where people consider it more desirable to employ a handy-woman who remains in residence during the lying-in period, and washes and housekeeps for the household, while the unremunerated dispensary doctor is compelled to take over the work, and also the opprobrium of the untrained midwives' too-frequently fatal mistakes.

Where in the bill are we empowered to expel untrained women from the charge of a "Poor Law emergency case" and substitute our trained nurse? No such provision is made. Is the Local Government Board prepared to publish a rule empowering us, if summoned on a red ticket, to refuse to take up a case where the patient or her husband refuses the attendance of the midwife provided under the Medical Charities Acts? Should they insist on retaining the services of the untrained nurse, must the dispensary medical officer continue in attendance though specifically excluded from obtaining any remuneration by the Irish Midwives Bill?

As to what the Midwives Board might do under Clause 5 (10) we are perfectly indifferent, as we take nothing for granted.

Personally I believe the handy-woman should be suspended at once wherever she is found at work, but since the House of Commons is so particular about vested interests—even those prejudicial to human welfare—as not to intervene directly and abolish them even under such circumstances, I would suggest it would be much cheaper in this country—apart from public safety and advantage—to pension handy women than to incur the cost of giving effect to the proposals of this bill. However, that aspect of the matter does not immediately arise, and is one more for county councils.—I am, etc.,

Ardinnan, co. Tipperary, Nov. 26th.

J. POWER, M.B.

HOW IS THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS TO BE MADE?

SIR,—With much of Dr. Garvie's letter on this subject I am in complete sympathy. I think, however, the criticism on Dr. Sutherland's memorandum is too severe, and, in the circumstances, unjust. This memorandum was drawn up by Dr. Sutherland not on his own initiative, but in response to the request of a subcommittee representing the Manchester Insurance and Medical Committees. This subcommittee, I think, felt that, with a little more care on the part of some practitioners, some cases of pulmonary tuberculosis might be notified at an earlier stage. It was with the object of directing attention to, and securing earlier notification of, these comparatively advanced cases that this memorandum was issued. If it had been a question of the diagnosis of incipient cases only, the memorandum would have been largely irrelevant.

Though I personally had occasion to dissent from one or two of Dr. Sutherland's conclusions, I quite concurred with the feeling of my colleagues that Dr. Sutherland had secured the immediate object in view, and that he had accomplished a difficult and somewhat invidious task satisfactorily. It is open to question whether such earlier notification as we had in view would be of any great value to the individual patient. But notification gives the M.O.H. a chance of dealing with insanitary conditions; it may be useful for statistical purposes; it may result occasionally in the recognition of cases which would otherwise escape detection at the moment; it is now a legal obligation. It was therefore desirable to secure notification before some of these patients were moribund or dead.

Of course, it must be obvious to any one with experience of this disease that what is wanted is the earliest possible recognition of incipient cases. But at present that is a matter of extreme difficulty. If all cases were recognized and treated before gross lesions had developed, it appears certain that much better results would be shown; but there can be no doubt that in such improved results there would then appear many cases which would have recovered in any circumstances, without recognition and without treatment. What one feels to be uncertain is whether we have any treatment which can be relied on really to control, to any great extent, the natural course of events. Rest and change of air are no doubt factors of considerable practical importance, but something more is wanted in order to satisfy ideal therapeutic requirements.

I venture to suggest that for the present the efficiency of institutions for the treatment of pulmonary tuberculosis be estimated rather by their contributions to our knowledge of the numerous complex problems of diagnosis and immunity, than by statistics of "cures" which may be entirely misleading. If such a standard were set up, more money might be invested before long in research by public authorities anxious to make some headway towards a solution of the tuberculosis problem; and there might also be less disposition on the part of certain tuberculosis experts to shift all the blame for comparative failure on to the shoulders of the long-suffering general practitioner.—I am, etc.,

Manchester, Nov. 26th.

J. STAVELEY DICK.

SIR,—In your last issue Dr. Garvie has a letter in which he criticizes sanatorium benefit as administered in his own area, and apparently objects to a memorandum by Dr. Sutherland. In view of this letter, I think your readers should be informed that this memorandum was drawn up by Dr. Sutherland at the request of the Manchester Panel Committee, was discussed with them clause by clause, and finally issued by the Local Medical and Panel Committee to all practitioners in Manchester.

The reasons for this step were too many to trouble your readers with, but the chief was that the Insurance Committee had become convinced that the co-operation of practitioners was essential to any scheme for dealing with tuberculosis, and asked for the assistance of the Panel Committee to obtain this. The Panel Committee found that the ideas of practitioners about the early diagnosis of phthisis were so conflicting that they thought it wise to have an up-to-date statement by the local expert on the subject as a guide.

I am not in any way traversing Dr. Garvie's opinions, but wish to make it clear that his criticisms of Dr. Sutherland's pamphlet must be at least shared, if not entirely borne, by the Manchester Panel Committee.—I am, etc.,

R. G. MCGOWAN,

Honorary Secretary, Manchester Panel Committee.

Manchester, Nov. 26th.

LAY RADIOGRAPHERS AND ELECTRICIANS.

SIR,—“Electro-therapist” does well to urge the Medico-Political Committee to consider the question of laymen in medical electricity. As one of the medical men whom he censures for supporting a lay body in granting certificates to lay people I can the more keenly invite this investigation. His criticism of our own efforts is easily met. The general public and the mass of the medical profession are both absolutely indifferent in the matter of qualification to carry out electro-therapy. The latter are more to blame, for their medical training should have taught them wisdom. These lay bodies are censured for having been more intelligent and conscientious than the profession, and for endeavouring to supply people with some training to carry out this work, for which the war makes so great a demand. In teaching or examining these people we are under no delusion that they are perfect, but we do feel that their training affords to the patients some protection from the doctor who merely orders “electricity,” or “ionization, but on no account to use the galvanic current.” These certificate holders are quite capable, under skilled medical control, of safely and effectively carrying out the ordinary treatments of which some thousands are given every day in the military hospitals. It is obvious that in the present state of the medical profession in this country it would be an absolute impossibility to find a sufficient number of medical men qualified in this speciality to do the routine work. On the other hand, many doctors do not hesitate to leave the prescription of electric treatment to the masseuse and do not trouble to inquire if she has any knowledge of this subject.

Let the Medico-Political Committee get to work as soon as may be, and let it see to it that medical men no longer call for prescriptions of electric treatment or for investigations of electrical reactions by unqualified people.

If the mass of the profession can be prevailed upon to act professionally, there will be no “detriment to the public and the profession,” and that is, after all, the aim of those who assist in the granting of these certificates.—I am, etc.,

November 21st.

ELECTRO-THERAPIST.

MEDICAL CERTIFICATES.

SIR,—Having regard to the Government's new scheme for the medical re-examination of men for the army, specialists and medical practitioners will no doubt now be consulted in large numbers and asked to give certificates for use before appeal tribunals.

As is known, there have been, and no doubt will be, many cases of false personation; so may I suggest that doctors should take all necessary precautions before giving certificates to men who are strangers to them—for example:

1. Require the man to sign his name on the certificate before he parts with it, so that it may be compared with the man's signature on his application to the tribunal.
2. Require in the case of a Russian the production of his Alien Registration Card, which has his photograph on.
3. State on the certificate the name and address of the doctor or person by whose suggestion or recommendation the man says he has been advised to consult him.

This latter precaution may seem strange, or perhaps be thought unprofessional; but may I point out that, in the present anxious times we are going through, doctors have a duty to the State as well as to the man who consults them, and should not forget that the object very often of their being consulted at all is not any real anxiety of the man about his health, but to try and get exempted from military service of any kind.

A man does not now need a certificate from any well-known specialist to get a new examination and be "regraded." His own medical or panel doctor is sufficient.

Of course the medical profession cannot help being consulted, but they might, I think, help the tribunals and the authorities as much as they can, and not let the obtaining of certificates become a scandal. At one sitting of a tribunal over which I presided lately we had certificates from the same specialist in no less than five cases, and in two of them the specialist was not a specialist in the man's alleged trouble; and in asking one why he consulted this particular specialist, he said he was told he would be more likely to get off if he had one from him. "Why didn't you bring a certificate from your own doctor?" I asked a man, to which he replied in an unguarded moment: "That would have been no good. He knows there's nothing really wrong with me." *Verb. sap. sat!*—I am, etc.,

F. BRINSLEY-HARPER,

Member of the Appeal Tribunal for London,
and of the Russian Tribunal.

London, E.C., Nov. 26th.

BIPP AND SIMILAR PASTES MADE WITH
PARAFFIN: A WORD OF WARNING.

SIR,—If the paraffin is not perfectly refined, as late samples do not seem to be, its use in these pastes is often followed by a rash of a pseudo-erysipelatous nature on the skin round the wound. This is not due to the iodoform, as may be proved by leaving the latter out.

In some cases this rash spreads all over the body. I have had several cases lately in which the internal use of paraffin has been followed by a similar rash—particularly one striking case, in which the patient had been using paraffin harmlessly for years until the last few weeks, when she evidently struck on an impure sample.—I am, etc.,

Highbridge, Somerset, Nov. 27th.

NESBITT BURNS, M.D.

Universities and Colleges.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved in the subjects indicated:

SURGERY.—†C. W. Bower, *†R. H. Chadwick, *†I. Harding, †S. Mikhail, *D. Mintzman, †S. G. Mohamed, †K. S. Vine.

MEDICINE.—†J. Behesnilian, †C. W. Bower, †C. G. Bunn, *D. A. Dyer, *†I. Harding, †S. C. Ho, *†D. Mintzman, *†T. F. Reason, †K. S. Vine.

FORENSIC MEDICINE.—J. Behesnilian, I. Harding, M. Ibrahim, S. Mikhail, J. E. Nicole, T. F. Reason, G. E. Spero, K. S. Vine, MIDWIFERY.—L. E. Lewis, D. Mintzman, J. E. Nicole, K. S. Vine.

* Section I.

† Section II.

The diploma of the society was granted to Messrs. C. W. Bower, R. H. Chadwick, S. Mikhail, S. G. Mohamed, T. F. Reason, and K. S. Vine.

Obituary.

THE RIGHT HON. SIR L. S. JAMESON, Bt., C.B.,
M.D.LOND.

SIR LEANDER STARR JAMESON died at his house in London on November 26th, in his 65th year. He and M. Clemenceau were the two most striking figures contributed by medicine to politics in this age. Both were general practitioners in their early days; both in early middle life took to politics on very stormy seas. Jameson was for four years Prime Minister of Cape Colony, and Clemenceau is just commencing his second term of office and fourth year as Prime Minister of France.

Jameson was the son of an Edinburgh Writer to the Signet, but the family removed to London, and he received his medical education at University College, London. He was a typical specimen of the student who never seems to work but gets through his examinations punctually, and often with distinction. Probably he never read very much and learnt the medicine and surgery he knew in the best school—the out-patient room and the wards. However he got his knowledge, he was a very competent practitioner, and gave his contemporaries the impression that he could become quickly proficient in any subject to which he chose to give his attention. He took the diploma of M.R.C.S. in 1875, graduated M.B., B.S.Lond. in the same year, and M.D. in 1877. After holding the office of house-surgeon he became resident medical officer of University College Hospital. His tenure of this office was interrupted by illness, and later by a visit of many months to the United States with a patient. It was no great surprise to those who knew his adventurous, energetic, and ambitious temperament that on his return he accepted an offer to go into a practice in Kimberley. There he was eminently successful as a practitioner, and became the fast friend of Cecil Rhodes. In 1889, in response to an appeal from Rhodes, Jameson threw up his practice and went on a mission to Lobengula, the Matabele chief, who respected him for his medical skill. Jameson was successful, the Chartered Company was founded, and he went with the pioneers of 1890, but not in an official capacity. In the following year he became Administrator of Rhodesia, and had to encounter difficulties of all sorts—disease, scarcity of food and water, and disaffection among the pioneers. He succeeded in overcoming these, but in 1893 had to face a rising of the Matabele. This he quelled, and established British administration on a firmer and wider basis. In 1894 he was in England with Rhodes; in the following year he went back to South Africa, and became the most ardent champion of the political rights of the new settlers—the Uitlanders—who had flocked to the Rand. In December, 1895, he led the raid into the Transvaal. However his motives may be judged, it was no prudent enterprise, but prudence was not one of Jameson's qualities. The raid failed miserably; he surrendered with a small force to the Boers on January 2nd, 1896, was tried in London in the following May, and sentenced to ten months' imprisonment; owing to the state of his health he was released in December and soon went back to Cape Colony. He served in the South African war in 1899–1900, and in the latter year entered the Cape Legislative Assembly as member for Kimberley. Rhodes died in 1902, and before the general election of 1904 Jameson had become the recognized leader of the Progressive party; that election yielded that party a small majority, and Jameson became Prime Minister. His administration was marked by great financial reforms, by a vigorous policy of railway extension and agricultural development, and by an Education Act, but the great feature and merit of his administration was the pressing forward of the movement for the consolidation of the British States of South Africa in a national union. A Customs conference at Pietermaritzburg in 1906 confirmed the fiscal union, and in 1907 Jameson attended the Imperial Conference in London. Jameson extended the franchise, and one result of the bitter feeling the war had left was that his Government was defeated at the general election of 1908. In opposition he continued to work for the consolidation of the South African union. He sat again in the Cape Parliament from 1910 to 1912 as the leader of the Unionist Party, the policy of which had been settled at the Bloemfontein

Conference in 1910. In March, 1912, illness forced him to resign the leadership of the party, and afterwards he lived mostly in England, occupying himself especially in the work of the Chartered Company and the progress of Rhodesia. He had become a director of the De Beers Company in 1900 and of the British South Africa Company in 1902; in 1903 he became the president of that remarkable company, which has added great provinces to the British Empire, and retained the office till his death. He received the C.B. in 1894, when administrator of Rhodesia, was created a Privy Councillor in 1907, and a baronet in 1911.

This is a very brief sketch of an astonishing career. It seems impossible that any one should make such a career again. There are no more empty continents left. He made one gigantic blunder in supposing that he could do with a handful of men that which it took all the resources of the British Empire and years of hard fighting to accomplish. He was rancorously assailed by politicians, who hoped to use his failure to further their own party purposes; but in the darkest days his integrity and patriotism commanded the respect of his enemies, and he never lost the affection of his friends.

A memorial service will be held at St. Margaret's, Westminster, on Wednesday next at 12.30 p.m. It is intended that the remains shall eventually rest at Matopos, beside those of Cecil Rhodes.

We regret to announce the death of Dr. ELSIE INGLIS, on November 26th, at Newcastle, shortly after landing on her return from Russia. Dr. Inglis was the organizer and leading spirit of the Scottish Women's Hospital Units, which have been established and maintained in France, Serbia, Corsica, Salonica, Rumania, and Russia. Elsie Maud Inglis was the second daughter of the late J. F. Inglis, Chief Commissioner at Lucknow. She studied medicine in Paris, Edinburgh, and Glasgow, and took the diplomas of L.R.C.P. and S. Edin. and L.R.F.P.S. in 1892. In 1899 she graduated M.B., C.M. Edin. She served as surgeon to the Edinburgh Hospital* and Dispensary for Women and Children, and lecturer on gynaecology in the school of medicine of the Royal Colleges, Edinburgh. On the outbreak of war Dr. Inglis proceeded to organize a medical service of women. The Scottish Women's Hospital Units, staffed entirely by women, having been refused by the War Office, offered their services to various allied Governments. During the first months of the war Dr. Inglis and her staff worked at Royanmont. In April, 1915, she went to Serbia to act as Commissioner to the Scottish Women's Hospital established there. The greatest hardships were heroically overcome, and in recognition of her splendid services, notably in dealing with an outbreak of typhus, she received the Serbian Order of the White Eagle, 5th Class, as announced in our columns of April 22nd, 1916. Through the Serbian retreat the party remained to care for the wounded during the enemy occupation of Krushevatz. Subsequently the hospital was evacuated and the staff sent as prisoners to Vienna, being eventually released through the intervention of the American Embassy. In September, 1916, Dr. Inglis took out a new field medical unit of seventy-five women, which was attached to the Serbian Division of the Russian army, and did fine work through the Dobrudja campaign. The unit subsequently worked for nine months at Reni on the Russo-Rumanian front, and on November 24th they arrived in England. Dr. Inglis's health, which had held up through indescribable hardships, gave way soon after reaching port. She was a born leader, entirely patriotic, and free from self-seeking.

LIEUT.-COLONEL HENRY AUGUSTUS FITZROY NAILER, Madras Medical Service (retired), died at Bedford on October 12th. He was educated at the universities of Madras (where he graduated M.B. in 1874) and of Edinburgh, taking the diplomas of L.R.C.S. and L.R.C.P. Edin. in 1875. He entered the I.M.S. as surgeon on March 31st, 1877, became surgeon-major on March 31st, 1879, surgeon-lieutenant-colonel on March 31st, 1897, and retired on October 20th, 1903.

Medical News.

DR. SIDNEY REGINALD DYER, P.M.O. H.M. Prison, Brixton, has been appointed medical inspector of prisons for England and Wales.

DR. ARTHUR HENRY NORRIS, medical inspector since May, 1914, has been appointed by the Home Secretary to succeed the late Mr. C. E. B. Russell as chief inspector of reformatory and industrial schools.

At a meeting of the Harveian Society of London to be held at the St. Mary's Hospital Medical School on December 13th at 5.30 p.m., a discussion on neurasthenia will be opened by Dr. F. W. Mott, F.R.S.

THE report of the Medical Research Committee for the year ending September 30th, 1917, states that its income was diminished by £7,000. As its income is made up of one penny for each insured person, it would seem that there were 1,680,000 fewer insured persons.

SURGEON-GENERAL T. M. CORKER, C.B., M.D., A.M.S., Lieut.-Colonels J. C. Cottell, R.A.M.C., and C. K. Morgan, C.M.G., R.A.M.C., and Major J. Fitzgerald Martin, C.M.G., R.A.M.C., have been appointed Knights of the Grace of St. John of Jerusalem.

DURING December the Camera Club (17, John Street, Adelphi, W.C.2) is showing an exhibition of black-and-white drawings of ward life by patients and staff of the 3rd London General Hospital. Admission, between 11 a.m. and 5 p.m., is free; tickets can be obtained from any member of the club, or on application to the honorary secretary.

At a meeting of the Zoological Society of London on November 20th Mr. R. I. Pocock, F.R.S., F.Z.S., curator of mammals, exhibited the head of a castrated bushbuck (*Tragelaphus*) which had lived several years in the Zoological Gardens at Clifton, to show the effects of the operation on the horns. The horns differed from those of a normal bushbuck in being slender, subcylindrical, untwisted, unkeeled, with a backward curvature like that of the horns of a goral or serow.

THE West Midland Joint Disablement Committee, formed under the scheme of the Ministry of Pensions, provides for three medical representatives being elected by the profession in the five counties constituting the area of the joint committee. The following have been elected: Dr. T. Ridley Bailey (Staffordshire and Shropshire), Dr. Evans (Worcestershire and Herefordshire), Mr. W. F. Haslam (Warwickshire and Birmingham). Dr. Ridley Bailey was also appointed a member of the Executive Committee and chairman of the Treatment Subcommittee.

THE doctors of Wimbledon and district have unanimously agreed: "That, owing to the increased cost of living and the still greater increase in the cost of conducting medical practices, there shall be a general increase in the fees charged for professional attendance and consultations; such increase to be subject to variation or remission in individual cases where some good reason is shown." When messages arrive after a doctor has left home, and these entail inconvenience to other patients by compelling doctors to postpone or break appointments, it has been agreed to charge an extra fee for the special visit.

IN a paper read before the Southern Association of Gas Engineers and Managers, Mr. John West, M.Inst.C.E., gave the results of recent experiments in the carbonizing of coal in which he had co-operated. The application of such methods would, it was calculated, bring about a general increase of from 20 to 25 per cent. in the make of gas per ton of coal carbonized. This would mean a corresponding reduction of the amount of coal necessary, a saving of plant and labour, and a reduction of cost to the public. He urged the necessity of fixing a calorific power standard, and said that the great aim of all gas engineers should be to make and sell gas as cheaply as possible so that the public might be encouraged to use it more extensively for all purposes. It had been calculated that if the 100,000 tons of coal used in Southport for domestic purposes were carbonized, 5,500 tons of tar, 1,000 tons of ammonia sulphate, and 600 tons of high explosive products could be saved, and crude material obtained for the manufacture of dyes and drugs.

ON November 28th a meeting was held at Lady Wantage's house, 2, Carlton Gardens, to discuss the progress of the work of Queen Mary's Convalescent Auxiliary Hospitals, Rehampton, and to promote the establishment of a permanent institution for limbless sailors and soldiers. Lieut.-General Sir Francis Lloyd, chairman of the committee, presided, and spoke warmly in support of the proposal to

raise a fund of £100,000. The object of the fund will be to extend the accommodation for limbless men whilst they are waiting to have artificial limbs fitted, and to put the hospitals on a permanent basis for the future, so that the necessary repairs, replacements, and refittings may be continuously undertaken. There is accommodation at present for 600 officers and men, but the hospitals are always full, and there is a long waiting list. It is hoped to raise the number of beds to 1,000. An indication of the work already done at Roehampton is given by the following round figures: 11,500 officers and men have been fitted with artificial limbs; 2,200 men have been placed in permanent employment; and 6,400 have been passed on to local pension committees or restored to their old employment. Sir Francis Lloyd's appeal for funds was endorsed by the Right Hon. Walter Long in an eloquent speech.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are:

1. EDITOR of the *BRITISH MEDICAL JOURNAL*, *Antiloggy, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

EDWARDS'S LITHOTOMY SEARCHER.

LITHOTOMY asks for information about a lithotomy searcher presented to the Museum of the Royal College of Surgeons of England in 1871 by its inventor, Dr. G. Edwards, who practised for many years in Cheltenham and died in November, 1886. It is made of nickel-plated steel, is over a foot in length measured by the curve, and is of the calibre of a No. 8 catheter, English scale. The dealer's name is "Weiss, London," but this firm has not now any record of it.

LETTERS, NOTES, ETC.

TRANSFUSION OF WHOLE BLOOD.

IN the article on the transfusion of whole blood, published in the *JOURNAL* of last week, p. 695, the citrate method was inadvertently attributed to Kimpton. The citrate method, as used in the transfusion of blood in man, was designed in the winter of 1914-15, the earliest writers on the subject being Hustin of Brussels and Lewisohn and Weil in America. A modification of the apparatus used recently, devised by Mason and Rivers, was described in the *Journal of the American Medical Association* in June, 1917, p. 1677. Kimpton's method consisted in the application of paraffin to the inner surface of the cylinder.

"COLLOSOL COCAINE."

THE SECRETARY, Medical Research Committee, writes as follows with reference to a letter published last week:

On page 710 of your issue of November 24th you publish a statement from the firm of Crookes Collosols, Ltd., with reference to the above preparation, in which it is said that they have "recently had the advantage of having collosol cocaine tested by Dr. Dale, of the Medical Research Committee." It is important that this statement should not be misunderstood as indicating that the Medical Research Committee, or any members of their staff, undertake the examination of proprietary remedies at the request of the makers.

Dr. Dale and his colleagues undertook an investigation of collosol cocaine on account of the scientific interest of the properties which earlier statements had attributed to the preparation, and the practical importance which the matter would have under present conditions if those statements had been correct. The manufacturers were asked to furnish samples for investigation, and complied with the request. At a later stage further samples were submitted to the Medical Research Committee by a Government department with a request for an opinion on the claims made for the preparation. These samples were examined with the others.

Having failed completely to substantiate the claims made for collosol cocaine, but having every reason to believe that the manufacturers had been simply mistaken in their statements, Dr. Dale gave them a general indication of his conclusions, and advised them in their own interest to withdraw this preparation from their list. This communication was of a verbal and confidential nature, and gave Crookes Collosols, Limited, no authority to use Dr. Dale's name or to publish their own statement in such a manner that any part of it could even mistakenly be attributed to him. Those who are interested in knowing the true nature of the findings concerning collosol cocaine by the Committee's Department of Biochemistry and Pharmacology may be referred to a short article by Drs. Barger and Dale and Miss Durham, which is appearing in the next issue of your contemporary the *Lancet* (December 1st).

CEREBRO-SPINAL FEVER AND ITS TREATMENT.

DR. C. ALWYN STEWART, A.A.M.C. (Weymouth), writes in answer to Captain A. M. Watts (October 13th, p. 502): The serum I used was a polyvalent antimeningococcal serum prepared by Dr. R. J. Bull at the Melbourne University. Captain Watts has evidently confused the dosage of the serum when used intravenously and subcutaneously with that when used intrathecally. Large doses are required in the two former—from 25 to 30 c.cm. is the dose I give in the last instance—the same as that of the Lister or Rockefeller Institute. The reason for excluding cases over 35 years of age and hopeless cases in the corrected column was to secure a uniform comparison, as one group of cases would contain a larger percentage of these and so obscure the value of the treatment. The mortality of the disease is, in my experience, exactly doubled in cases 35 years of age and over compared with cases between the ages of 12 and 35. I define a hopeless case as regards treatment as one that dies within two or three hours of admission to hospital, one that is obviously moribund, or a deeply unconscious patient with a marked purpuric rash—these last never recover, in my experience. I consider a mild case to be one in which there is little vomiting, no rash, no loss of consciousness, and no development of delirium. I may also add that I abandoned lumbar puncture only as a form of treatment very early in 1916, and only gave the figures for completeness and comparison. I consider a severe case to be one in which the initial vomiting is severe, repeated and of a marked toxic nature, in which there is a marked rash and in which there is not a high initial temperature. The foregoing remarks also answer most of the observations made by Dr. Pringle (*BRITISH MEDICAL JOURNAL*, November 17th, p. 671). My "ingenious" statistical method was devised after much thought to obtain a uniform comparison amongst my own cases, not to put to shame the figures of other observers. With regard to the apparent anomaly of mild cases resulting in death, may I explain that the term is intended to indicate the condition of the patient during the early stages of treatment, and the fact of death occurring in some of these cases is an argument for the inadequacy of the treatment indicated. I agree with Dr. Pringle that no "mild" case should die.

DELIVERY OBSTRUCTED BY PRESENCE OF HYMEN.

M.R.C.S., L.R.C.P., writes: A young woman, married just over nine months, was attended by me at her confinement. A cribriform hymen was present, occluding the whole outlet except in three places. Below the orifice of the urethra a small foramen was present, in the centre of hymen another foramen, and at a distance of half an inch from the posterior wall of the vagina a third. The upper two were not more than a quarter of an inch in diameter; the lowest orifice was big enough to admit the tip of the finger, but only then with difficulty. The hymen was thick, but not hard or fibrous. Before delivery I had to make extensive incisions in the membrane. A case like this makes one think that the value of judging the chastity of a woman by the presence of a hymen is small. In the same week I examined a highly neurotic childless woman who had been married seven years, and found a similar hymen present about one inch and a quarter in depth at its greatest measurement. The husband had never experienced any difficulty, but the woman had certainly got very much worse as regards her neurotic troubles since marriage. In the first case the cribriform hymen seems to have suggested to the husband that she should see a doctor, but she did not. The husband is a strong healthy young man and his wife exceptionally strong and healthy.

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A CONTRIBUTION TO THE STUDY OF WAR NEPHRITIS.

[With Special Plates.]

BY

CAPTAIN J. SHAW DUNN, M.A., M.D., R.A.M.C.,

AND

CAPTAIN J. W. MCNEE, M.D., R.A.M.C.

(A Report to the Medical Research Committee from a Mobile
Laboratory in France.)

INTRODUCTION.

A study of the cases of acute nephritis met with in our troops in France has been made, from different points of view, since the beginning of 1916. Since then, by the kindness of the authorities, we have been provided with all the returns and records relating to nephritis in one of the armies, and every facility has been given with regard to particular lines of investigation in units along the front.

The work having been carried out entirely in the zone of an army, it follows that all the cases seen in field ambulances and casualty clearing stations have been men from the trenches or from the area within a few miles behind them. The cases, moreover, have all been observed at an early stage, often within a day or two of the onset of symptoms. With nephritis as met with in men who have never been beyond the base and lines of communication we have had nothing to do.

For military reasons no figures can be given with regard to the extent of the records at our disposal, but the numbers are amply sufficient to enable us to bring forward various general conclusions of interest.

With reference to the types of men involved, infantrymen, who on the front are naturally much in the majority, have provided the bulk of the cases. Artillerymen have, however, suffered severely, and even the personnel of field ambulances, when considered in numerical relation to the other units of a division, have had a fair share. The cavalry, taking them as a whole, must be said to have suffered only slightly, and for reasons made obvious later it may simply be pointed out here that they, owing to the long period of trench warfare, have been much less on the actual front than the other troops mentioned. One point, already referred to by other observers, must be touched on again. This is the comparative immunity of officers, who form barely one-half per cent. of the cases in our records. In passing, the apparently absolute immunity of the native Indian troops in 1915 may be noted, whereas the British troops in these divisions suffered as in others.

Season and locality have, as far as we can judge from the figures, been entirely without influence. Some divisions reached the summit of their nephritis rate in summer, at a time when others close at hand showed a declining incidence of cases. With regard to locality, divisions in our area have shifted ground very freely during the period of observation, whether they still remained in the army or moved into another. These movements have strongly brought out the fact that a division already providing a fair number of cases continues to do so without apparent increase or decrease in the new location. Moreover, a division which up till then has had few cases of nephritis does not show any increase after taking over an area previously held by a division in which the disease was well established.

Severity of weather conditions has had no effect on the returns.

The records of individual battalions and units over a series of months have brought out many points of interest. As regards actual figures, the highest numbers of cases met with in single units are as follows:

Battalions:

- No. 1. Eleven cases in a period of five months.
- No. 2. Ten cases in a period of three and a half months.
- No. 3. Ten cases in a period of four months.

Artillery Brigade:

- No. 1. Eight cases in a period of three months.

In contradistinction to this, other battalions of the same divisions show perhaps only a single case, or even none, during the same period; others, again, have three or four cases of nephritis. In a whole brigade, holding the line

for a period of seven months, only one case occurred, three of the battalions reporting none at all. During the same time the remaining brigades of the division had a fair number of men who suffered from the disease. It has also emerged from the records that whereas a unit may have remained free from nephritis for several months, suddenly, within a very few days, three, four, or even five cases may occur together. A small outbreak of this kind is frequently followed again by a period of freedom from the disease. We consider that the admission to hospital of two or three cases of nephritis from the same unit on the same day has been met with much too often to be explained by coincidence alone.

It has been ascertained by careful inquiry that nephritis does not occur among the civilian population of the army area in any way analogous to its incidence in our troops. Reports from civilian doctors bear this out; and, moreover, in another army zone, where for more than a year a Red Cross unit has been visiting houses in an area full of civilian refugees, including many adult males, and with numerous troops billeted among them and around them, nephritis has not been met with. In this search, undertaken primarily for epidemic disease, many thousands of houses have been visited, right up to a mile or two from the firing line. It seems as if, for the development of the nephritis under discussion, some special circumstances are necessary to which soldiers alone are subjected, and this is in striking contrast to the close relationship commonly maintained as regards epidemic diseases between soldiers and civilians on the front.

CLINICAL OBSERVATIONS.

These will be alluded to only briefly, as accounts of the disease from the clinical side have already been given by Sir John Rose Bradford,¹ Langdon Brown,² and Abercrombie.³

A large number of cases of nephritis, however, have been seen and examined clinically in casualty clearing stations at an earlier stage than was possible for the observers named. It is important to note that a proportion of these, which are of course included in the army records as to numbers, are obviously not primary acute nephritis. For instance, a number of the older men show tortuosity of the brachial arteries at the elbows, and other men give a history of previous attacks of dropsy, etc. Abercrombie also refers to this, stating that in about 25 per cent. of the cases seen by him there was either thickening of the artery at the wrist, or a history of previous renal disease, or both. From a survey of all the cases observed by us, however, a large and very characteristic group can be picked out, and this includes a large proportion of young men previously in perfect health.

It is to this group alone we wish to attract particular attention, as a peculiar "war nephritis," using the term in the restricted sense, and not so as to include chronic cases which date their origin from before the war.

The diagnosis of acute nephritis in this group of men is based on such familiar symptoms as oedema, albuminuria, and breathlessness. These, however, form a peculiar combination which, qualitatively and quantitatively, seems to us to differ from the classical picture of acute nephritis seen in civil life. These symptoms, along with some others of lesser prominence, will be entered into in some detail.

Respiratory Symptoms.

Dyspnoea appears to be a quite unusually prominent symptom. It is, in the great majority of cases, the most outstanding complaint, and is almost always present on admission of the patient to hospital. Very often, as is shown in the accompanying table (Table I), it is the first and earliest symptom to appear, and in two cases only, out of the many examined, was no history or evidence of breathlessness obtained.

TABLE I.—Initial Symptom of the Disease.

Total cases examined, 51.	
Breathlessness	34
Swelling of the face or legs	7
Pain in the head, epigastrium, or back	6
Sore throat	3
Cough and hoarseness	1

In association with the dyspnoea, cough is frequently present, and in some instances this is accompanied by tenacious expectoration. Even although cough is absent

and always in its presence, auscultation of the chest reveals the presence of rales and rhonchi; the physical signs, however, are often slight in comparison with the degree of breathlessness. In only one case was considerable effusion into the chest discovered.

Hoarseness (from laryngitis) was the initial complaint of one man, and sore throat of three others. In the latter cases, apart from some faucial redness, nothing could be seen amiss.

At the time of writing (February, 1917), during a period of intensely cold weather, we have been much struck by the increased severity of respiratory complications. Frequently, indeed, cases are admitted with a diagnosis of bronchitis or bronchopneumonia, which only prove to be nephritis on closer examination. These serious pulmonary conditions, no doubt, account for an increased death-rate from the disease at the present time.

Oedema.

Oedema, while generally present, is frequently confined to the face alone. In many cases, however, it is also present in the legs, and a few examples of general anasarca have been met with. Definite ascites was seen only once. Unless the face is absolutely puffed out by oedema, the cheeks are often well coloured, and certainly in this group of acute cases pallor is not the rule. The general aspect of fair health in the presence of great breathlessness and high albuminuria is indeed often very remarkable.

Pain: Vomiting.

Pains in the limbs and back and headache are frequently complained of, and may be the initial symptoms which lead the man to report sick.

A history of vomiting is sometimes given, but this occurred always at a period antecedent to admission to hospital. In one case vomiting continued for three days, but as a rule ceased after one or two short attacks.

Fever.

Fever was present in six cases only. The temperatures of these on admission, with the approximate duration of symptoms, are shown in the table.

TABLE II.

	Day of Illness.	Temperature on Admission.
Private T.	7	102 F.
Private B.	5	103 F.
Private O.	42	102.4 F.
Private M.	2	104.1 F.
Private S.	7	103.4 F.
Private Mk.	9	■ F., rising to 102.2 F.

In relation to this it must be pointed out that numerous other cases, just as acute and seen at just as early stages of the disease, were completely afebrile. It thus seems as if, during the initial period of symptoms, pyrexia is not a common or essential feature in the clinical picture. Three of the cases shown in the table were noteworthy from the amount of blood passed in the urine, and this will be referred to again later on.

Uraemia.

Uraemia ensued in four of the cases under our direct observation. In one man this led to a fatal result, and a post-mortem examination was made by us. The other three cases recovered rapidly under appropriate treatment and were evacuated to the base.

The Urine.

The urine, when the patient is first seen, generally contains a large amount of albumin. The amount was estimated by the simple Esbach apparatus in thirty-eight cases, with the results shown in Table III. At the same time the amount of urine passed may be little, if at all,

TABLE III.—Amount of Albumin.
Cases examined, 38.

Parts per 1,000.	No. of Cases.
Over 8 ...	3
5 to 8 ...	12
1 to 4 ...	18
Below 1 ...	5

diminished; one case dying of uraemia passed 52 oz. of highly albuminous urine in twelve hours. An important point to draw attention to is that in the first few days after admission to hospital the amount of albumin frequently undergoes a rapid diminution, and may be almost absent at the end of a week. This is well shown in the accompanying table, which also illustrates how little the urinary output may be diminished. In some cases, how-

TABLE IV.

(Pte. B., aged 26 years; ill five days.)

Date.	Albumin in Parts per 1,000.	Quantity of Urine in 24 Hours.
May 15th, 1916 ...	7	28 oz. (in 12 hrs.)
" 16th ...	3	48 oz.
" 17th ...	1	45 oz.
" 18th ...	1	42 oz.
" 19th ...	1	45 oz.
" 20th ...	1	52 oz.
" 21st ...	Less than 1	57 oz.
" 22nd ...	Less than 1	57 oz.

ever, the amount of albumin remains consistently high during the few days before evacuation to the base. Even when the quantity of albumin is large, the presence of blood may not be recognizable to the naked eye. We have been much struck, in the course of our observations, with the number of samples of urine examined which, while loaded with albumin, were still pale and perfectly clear. In the centrifugalized sediment some blood corpuscles and leucocytes are to be found in every case. In a few instances copious haematuria has been met with, and these men have all presented certain features in common which are of interest. All had pyrexia on admission, and none had a very high percentage of albumin (often not more than might be accounted for by the bleeding alone). In one case bleeding was so copious that, from the appearance of the urine sent for examination, a suspicion of calculus or tubercle arose, until it was found that the patient had marked breathlessness, oedema of the face, and a systolic blood pressure of 150 mm.

Casts are always present in the centrifugalized sediment, but are often far from numerous. The chief varieties met with are:

1. Hyaline casts.
2. Hyaline casts each containing a few intact cells from the renal tubules.
3. Casts which may be described as partly granular, partly epithelial.

Of these the second type is so frequently seen as to attract rather special attention.

Careful bacteriological examination of catheter specimens of urine from thirty-five cases was made (Table V).

Streptococci were found fairly frequently, of a type growing luxuriantly on ordinary media, and never pathogenic to animals. Similar cocci were, however, also found in control catheter specimens from patients not suffering from nephritis. No importance can be attached to them, and the table of results only shows how difficult it is to attain complete asepsis in specimens of urine taken with the greatest care.

TABLE V.—Bacteriological Examination of Catheter Specimens of Urine.

	Total cases examined, 35.
Sterile ...	14
Streptococcus (pure) ...	12
Streptococcus (impure) ...	3
Various other contaminations (<i>B. coli</i> , <i>Staphylococcus aureus</i> , diphtheroids, etc.) ...	6

Forty acute cases have been examined by blood culture, ordinary media being used for half of these, and Thornley's special pea-extract broth for the remainder. All the cultures remained sterile, even after prolonged incubation.

CLINICAL SUMMARY.

In concluding the clinical account we would suggest that the high albuminuria, often without obvious blood, the absence of oliguria, the frequent rapid decrease in the amount of albumin, the predominant dyspnoea, and the

general healthy appearance of the patient while obvious signs of nephritis are present, give collectively a rather characteristic picture, differing from that of the average case of acute nephritis at home.

PATHOLOGICAL OBSERVATIONS.

The following account of the pathology of the condition is based on the examination of tissues from forty-two cases in which a diagnosis of acute nephritis had been made during life. As the death-rate is low we have been indebted to numerous officers with the armies and at base hospitals for the supply of such a large amount of material; in only two instances have we had the opportunity of performing the *post-mortem* examinations. The known duration of illness in these fatal cases is remarkably brief, the longest being about a fortnight, while the shortest is less than forty-eight hours.

Four of the cases need be referred to only briefly, as the changes present are obviously not those of primary acute nephritis. In two of these the kidneys are granular and atrophic, and in a third there is subacute nephritis with amyloid degeneration. The fourth is a febrile jaundice, with haemorrhagic nephritis, probably a case of Weil's disease. In three cases no definite evidence of nephritis is found in the kidneys, although the clinical histories point to that condition. The relation of such cases to others where there are obvious lesions is uncertain, and requires further investigation.

The remainder of the cases, thirty-five in number, exhibit striking uniformity in their important pathological features. The variations in detail which they present may depend on differences in the duration of the disease. Only two kidneys merit separate description, as they show subacute characters. In the remainder the appearances are quite in keeping with the diagnosis of acute nephritis, and the existence of an old-standing lesion can be excluded. In view of the large number of kidneys examined and the concordance of the results, it seems safe to regard the histological changes which will be described as representative of the renal condition in the war nephritis under discussion.

THE RENAL LESIONS.

The changes which can be observed by the naked eye are very slight. Some of the kidneys are slightly enlarged, but most are of normal size. The capsules are non-adherent, and the surfaces are smooth. The cortex is generally pale, and the medullary pyramids rather congested. Under a hand lens one feature can generally be recognized, which we have come to regard as characteristic: the glomeruli are seen to project from a cut surface as pale translucent globules, in contrast with their normal red appearance.

On histological examination the most prominent abnormality in all cases is found in the glomeruli. These appear, on low power examination, to be somewhat enlarged and more cellular than normal, while they contain little or no blood (Fig. I). In many instances a rounded projection extends from a swollen glomerulus into the opening of the convoluted tubule. The details of the glomerular changes can be made out only by the aid of special staining, and on close examination with an oil-immersion lens, but as they appear to be of cardinal importance they will be fully described.

Many of the capillary loops forming the tuft have their lumina dilated, and contain numerous nucleated cells, but few or no red blood corpuscles (Fig. II). These cells have oval or flattened nuclei, like those of endothelia, and fairly abundant protoplasm, which frequently shows a very indefinite margin. Where they are numerous and closely packed together they resemble a syncytium (Fig. VII). In several of the cases mitotic division is observed in a few of the nuclei, but long search for this feature in the others has yielded a negative result. Granules of fat are occasionally present in the protoplasm, and fatty change is sometimes very marked in the cells occupying loops of capillaries which project into the mouth of a tubule. Polymorphonuclear leucocytes and lymphocytes accompany the endothelial cells in the lumina of the capillaries in varying numbers, but they are never very abundant. Search has been made for hyaline thrombi in the same situation, but with negative result. In many of the kidneys, especially where the disease has been rapidly fatal, the accumulation of abnormal cells in the glomerular capillaries is very marked and widespread, so that in any

section of a tuft not more than one or two loops contain red corpuscles and have a normal lining. The degree of blockage is less pronounced on the whole in cases of older standing. In view of the considerable vascular disturbance which must ensue from occlusion of capillaries, it is remarkable that exudative phenomena are almost entirely absent, and degenerative changes are only slight. The epithelial cells covering the tufts generally show only slight catarrh; their protoplasm is thickened and of degenerate appearance, while discarded cells, which are sometimes caught around the projection in a tubule mouth, may exhibit fatty degeneration. Crescent-shaped accumulations of cells in the capsule are seen only in one case, and are there very scanty. There is no exudate of fibrin or leucocytes inside or around the capsules, and intracapsular haemorrhage is rarely seen. The tufts show no appearance of patchy fibrosis or of adhesion to the capsules, such as occur so commonly in glomerular nephritis. The greatest degree of degenerative change is limited, as a rule, to some hyaline thickening of capillary walls, and of the fibrous tissue of Bowman's capsule. The capillary blood vessels in the cortical labyrinth and in the medulla show no change comparable to that found in the glomeruli.

An additional form of lesion, which is probably of considerable significance, has been observed so far in only three cases, and in these only rarely. This is a condition of total infarction of certain glomeruli. The capillaries in these are dilated and engorged with red blood corpuscles, and excess of endothelium is present only in a few loops. These glomeruli exhibit catarrh and hernial protrusion like the others. In serial sections it is determined that the infarction is due to the presence of hyaline material in the afferent arteriole, and in some instances the wall of this vessel shows evidence of necrosis and slight leucocytic invasion. No micro-organisms are recognizable in the hyaline material, or in the glomeruli generally, by any staining method.

The conditions in the convoluted tubules show less uniformity, and in most cases are much less easy to estimate. The renal epithelium so quickly develops autolytic change that no absolute reliance can be placed on the appearance of breaking down of cell protoplasm, unless it is known that the tissue has been suitably fixed very soon after death. In some of the cases, however, there is certain evidence of catarrh; thus, in addition to fragmentation of protoplasm and loss of nuclei, some cells show well-marked fatty degeneration, while in others the nuclei exhibit various stages of karyokinetic division (Fig. III). Even where these phenomena are noted there is seldom much desquamation of whole cells, and never any loss of all the cells from one section of a tubule. The epithelial casts, which are rarely seen in lower segments of tubules, are evidently made up by agglomerations of cells which have desquamated separately.

Tubular haemorrhage is present to some extent in every case, but is not abundant, and is sometimes found only with difficulty. It is seen either in the first convoluted tubules, in which case the blood is fresh and the blood corpuscles are well preserved and lie free, or else in the ascending limb of Henle's loop in the form of a brown-coloured cast, with the corpuscles packed together, lysed, and misshapen.

In most of the kidneys there are some long hyaline casts in the upper part of the ascending limb of Henle's loop, and especially in the junctional tubules leading from these. In three of the cases, in which the known duration of the disease was from six to fourteen days, these hyaline casts are very numerous and elongated, and in a considerable number of them the upper or peripheral end contains calcified debris in the form of granules or small concretions. The calcified material occurs most frequently and characteristically in the junctional tubule, which winds round the arterioles of the glomerulus from which that tubule has originated (Fig. IV).

The interstitial connective tissue of these kidneys is, on the whole, of the delicate consistence seen in the normal organ. In all of them there are present some sclerosed glomeruli, with accompanying patches of slight fibrosis of the interstitial tissue of the cortex, but these are not more numerous than may be found in the kidneys of healthy men of military age who have died of wounds. They are evidently of no significance for the existing acute disease.

Brief reference may be made to an alteration which is

not infrequently observed in the medullary pyramids: this is a condition of oedema and hyaline swelling of the connective tissue fibres which surround and support the groups of straight arterioles. The descending limbs of Henle's loops, which are embedded in the same tissue, sometimes contain dense hyaline material, staining strongly with eosin; occasionally this is accompanied by leucocytes. The significance of these appearances is unknown, and they require further investigation.

In the two cases in which the lesion is described as sub-acute there is a general almost uniform overgrowth of the supporting connective tissue of the kidneys. The tubules show some lowering of type of the secretory cells, but there is not much atrophy of whole tubules. Fatty degeneration of epithelium is well marked. In one case the glomeruli present a rather slight degree of the changes described in the acute cases, and there is in addition very abundant tubular haemorrhage. In the other, which is more advanced, the glomeruli are much enlarged and exhibit, in addition to proliferation of capillary endothelium, much fibrosis in their substance and fibrous thickening of capillary walls. The afferent arterioles are here invariably much dilated and the efferent ones collapsed, indicating the prolonged existence of obstruction to the circulation of the tufts. The pathological condition is such as might be expected to arise in these structures as a sequel to the changes described in the acute disease.

LESIONS IN OTHER ORGANS.

The discussion of changes which have been met with in the other organs will best be introduced by a short account of an acute case ending fatally, in which we were enabled to carry out a complete *post-mortem* examination very soon after death.

CASE 11.

The patient, aged 33 years, died after an illness of nine days' duration, characterized by oedema, cough, dyspnoea, headache, and albuminuria, with gradual development of blindness and unconsciousness.

The kidneys, on naked eye examination, were large and firm. The capsules stripped easily and the surfaces were smooth. The cut surface showed pallor of the cortex and congestion of the pyramids. On histological examination the changes in the glomeruli were found to be the same as those described in the general statement, but not of extreme degree. Calcified casts were present in many of the junctional tubules, and tubular haemorrhage was not infrequent. Apart from these the tubular changes were slight.

The lungs presented very striking appearances on naked eye examination. They were very voluminous, heavy with oedema, and showed extensive acute emphysema. Much frothy fluid welled out from a cut surface, of neutral reaction to litmus. Some slight diffuse haemorrhages were visible beneath the pleurae, and also in the deeper substance of the lungs on section. On histological examination the conditions of oedema and acute emphysema were everywhere very marked, and in a few sections from the bases of the lungs lobular consolidation was present. The most remarkable feature, however, was observed in many of the terminal bronchioles and infundibula (Figs. V and VIII). The walls of these cavities were unduly prominent, being swollen by oedema, with some exudation of leucocytes in their substance. The lining epithelium was lost, and the exposed surfaces covered by layers of dense material resembling fibrin. This peculiar form of lesion was distributed abundantly throughout the lungs without special reference to the areas of consolidation. It did not correspond histologically to any usual type of pneumonia or bronchitis, but simulated rather the result of inhalation of an irritant gas. In the larger bronchi the epithelium was practically entirely desquamated, and the exposed basement membrane covered in places by adherent fibrin; leucocytic reaction was here remarkably slight. In addition to the damage of mucous surfaces, a less obvious but noteworthy feature was the presence in many of the alveolar capillaries of minute hyaline thrombi, occurring always in relation to damaged infundibula (Fig. IX).

The brain exhibited numerous minute haemorrhages in the white matter, particularly in the frontal and occipital lobes (Fig. X). These were found to present very striking histological characters, which could only be fully appreciated by the study of continuous serial sections. Each haemorrhage had the form of a small hollow sphere of effused blood corpuscles, with the centre filled by a rounded mass of apparently necrotic brain tissue free from blood. Crossing the centre of this apparently necrosed brain tissue there could be traced, in every instance, a capillary blood vessel filled with normal-looking red corpuscles (Fig. VI). The somewhat paradoxical character of these lesions, which indicated that the blood had become separated from the point at which it left the vessel by an intervening layer of tissue free from blood, presented a histological problem which cannot be fully dealt with at present. It is sufficient to say that it was surmised that military embolism had played a part in their occurrence, and this view received support by the finding of hyaline thrombi in the central vessel of several haemorrhages.

The spleen was enlarged, and weighed 12 oz. Its peritoneal surface presented numerous minute puckers, and tiny shreds of fibrin were adherent over it. On section numerous small haemorrhages were seen scattered throughout the pulp. The origin of these was not definitely ascertained by histological examination.

The liver, on microscopic examination, exhibited some necrosis of cells in the central parts of the lobules around the radicles of the hepatic vein.

It was possible in this case to make a fairly comprehensive bacteriological examination of the various organs. No organisms of any kind were observed in films made from the kidneys, spleen, or liver, nor from pleural, pericardial or peritoneal fluids. Aerobic cultures of these also gave entirely negative results. In films from the bronchial secretions and from the oedematous fluid in the lungs only a few Gram-positive diplococci were observed; on cultivation a limited number of colonies of organisms resembling pneumococci were obtained. The injection of 5 c.cm. of oedematous fluid from the lungs produced no pathological effects in a rabbit. Portions of the various organs were examined for spirochaetes by Levaditi's method, as well as by Giemsa staining, but with negative result. As no unequivocal significance could be attached to the presence of a few pneumococci in the pulmonary tissues, these bacteriological examinations were regarded as essentially negative; they certainly excluded the existence of any ordinary septicaemia.

In view of the condition of the lungs in this case, inquiry was made as to whether there had been any recent exposure to poisonous gas, but no history of this was obtainable. The action of a pulmonary irritant was, however, so strongly suggested by the pathological appearances, as to indicate the importance of searching for similar phenomena whenever opportunity presented. It is now possible to refer briefly to the conditions found in twenty-two other cases from which small portions of various organs have been obtained.

In eight cases the pulmonary tissue which was available for examination showed appearances almost identical with those described above. Thrombosis of capillaries in relation to damaged infundibula was recognized in every case, and in one instance was a very marked feature. In the brain of this particular case there were abundant haemorrhages in the white matter, of the type already referred to. In one case, where the brain contained no haemorrhages, the retina was examined microscopically; it exhibited two minute haemorrhages, one in the ganglionic layer, and the other in the outer vesicular layer.

In another group of cases, also eight in number, the lungs showed lesions, less pronounced, but noteworthy. They may be illustrated by the following example which was typical of the group:

CASE 29.

The glomerular lesion in the kidney was well marked and characteristic. The lungs showed some oedema and emphysema. Many of the infundibula had dilated lumina, and the radiating alveolar walls around them were slightly swollen by oedema; the swelling was most marked in the musculo-elastic tissue at the bulbous inner end of the alveolar partitions. Very frequently these extremities were covered by layers of dense adherent hyaline material, like fibrin. Occasionally the fibrin-like layers were more extensive, and entered the alveolar cavities. Thrombi could be recognized in a number of instances in the capillaries around damaged infundibula. These thrombi were often accompanied by phagocytic cells and appeared to be undergoing absorption. Many of the bronchioles showed evidence of catarrh, while others were practically normal. No haemorrhages were found in the brain.

In three other cases the lungs presented changes of bronchopneumonia, and infundibular lesions of the type described above could not be definitely recognized. In only two instances no definite lesions of any kind were found in the portions of lung examined.

The remaining case in which it was possible to examine the lungs presented some peculiar features.

CASE 4.

Admitted after uraemic convulsions; high fever developed soon afterwards, and a diagnosis of double pneumonia was made; death occurred fourteen days after admission to hospital. The glomerular lesion was similar to the typical one described, but was of older standing, and apparently tending towards recovery. Distinct interstitial proliferation of connective tissue was present in some areas of the kidney, but this did not extend to the organ as a whole. A few glomeruli exhibited a condition of complete infarction, due to closure of the afferent arterioles by hyaline material. The lungs in some

areas exhibited patches of bronchopneumonia, with fibrino-purulent exudate in the alveoli and pus in the bronchioles. The presence of the acute inflammatory lesion rendered it difficult to make an absolute pronouncement regarding the origin of certain additional phenomena, but it was certainly true that in all parts of lung examined, even where there was no consolidation, there was evidence of very extensive recent destruction of alveolar walls. The ends of the walls next the infundibular cavities were most frequently lost, so that these spaces appeared unduly large and rounded. The walls of the alveoli were definitely thickened, and more cellular than usual, and on close examination it was seen that their capillaries contained many detached endothelial cells and leucocytes, while in some areas minute hyaline thrombi were also visible. The condition of this lung in general resembled that which is found from seven to ten days after the inhalation of chlorine.

COMMENTARY.

In considering the pathological features which have been observed in the group of cases submitted to histological examination the lesions in the kidneys have first claim to attention. It has been shown that while both the tubules and the glomeruli exhibit morbid changes, it is those affecting the latter structures which are most constant and distinctive. The most noticeable feature is that the capillary blood vessels of the tufts have their lumina to a greater or less extent obstructed by abnormal cells, and the circulation of blood in them appears to be correspondingly restricted. As it is from these capillaries that the bulk of the urinary fluid is normally excreted, it might be expected that such a condition would inevitably be associated with marked diminution of urinary output. This, however, is not in agreement with our clinical observations, for in the majority of the milder cases which have been specially examined, and even in some which were moribund, there has been little diminution in the amount of urine excreted. Accordingly, the blockage of the capillaries can only be regarded as one indication of the whole extent of damage which they have suffered. The hyaline thickening of capillary walls which is present in some instances is another evidence of deterioration, but it has not always been a recognizable feature. Catarrh of the glomerular epithelium and fatty degeneration, when present, are no doubt dependent for their origin on the primary vascular flaw.

The convoluted tubules exhibit definite evidence of catarrh only in a few instances, so it is evident that gross damage of the highly specialized cortical cells is not an essential factor, even in fatal cases, of this form of nephritis. The tubular haemorrhages, which, though sometimes scanty, are always present, are a further indication of the implication of blood vessels. It is possible that the haemorrhages are derived from the glomeruli, the blood having been carried downwards in the urinary stream.

From the absence of any diffuse overgrowth of interstitial tissue in the acute cases, it is evident that the kidneys have been previously healthy. The stroma is also remarkably free from acute cellular exudation.

The type of glomerular lesion described above, with all its subsidiary details, has already received full recognition in the past, as being characteristic of an early stage of acute glomerular nephritis.⁶ In the present series of cases there is a remarkable absence of definite acute inflammatory changes in the tufts, such as develop so frequently in that disease. Even in the oldest of the acute cases, which must have lasted for more than a fortnight, there is little evidence of tissue destruction of an irretrievably permanent character. The nature of the lesions is, therefore, not suggestive of the local effects of bacteria, and so far no organisms have been observed in relation to them. Bacteriological examinations of the blood in living cases have also yielded negative results.

The etiology of acute glomerular nephritis in general remains to a great extent obscure. Sometimes the disease develops out of a septicaemic condition, such as may occur in pneumonia, or as a sequel to scarlet fever. Even in these cases the exact relation of organisms to the lesions in the glomeruli is not readily ascertainable. In the form of the disease which may accompany chronic ulcerative endocarditis the glomeruli apparently suffer primarily from the deposition of minute emboli, probably infected, in their capillaries. It is quite evident, however, that glomerular nephritis frequently develops in the first place without any condition of septicaemia being recognized or suspected, and regarding the mode of causation of such cases very little

is known. The pathological conditions which we have described in the kidneys afford grounds for some suggestions which, although probably not new, may be considered worthy of attention. The striking feature of the lesions is the almost uniform and universal implication of a particular set of capillary blood vessels—namely, those of the tufts—in both kidneys. This selective incidence might be accounted for theoretically either by the anatomical or by the physiological peculiarities of the glomeruli.

From the point of view of structure the glomerular capillaries are so situated as to receive first, by the afferent arterioles, the great bulk of the blood, which is ultimately, through the efferent vessels, distributed to the cortical labyrinth. Accordingly they are in a position to filter out from the blood stream any particles which are too large to pass through capillaries, and if such a process occurs a specifically glomerular lesion may be expected to result. As has been indicated, this is probably the explanation of the nephritis caused by ulcerative endocarditis, where the arrested particles are infected emboli. It is to be remarked that in this class of case the glomeruli tend to be unevenly affected and to exhibit lesions of markedly focal character. If, in the present diffuse intracapillary form of glomerulitis, the excess of endothelium is to be regarded as embolic in origin, it must presumably be derived from the walls of systemic or pulmonary vessels, damaged by a circulating irritant. From the nature of the problem, evidence in support of such a view is difficult to obtain.

From the point of view of function, the glomerular capillaries are specialized in that they excrete a high percentage of the water and of the saline constituents of the urine. In analogy with this a specific disturbance of their endothelial lining may depend on the presence in the blood of some noxious substance which, from its chemical characters, is suitable for excretion by the same channel. In the process of excretion it will come into more intimate relationship with the cells of the glomerular capillaries than of those in the vessels generally. The extremely uniform involvement of all the glomeruli is more in accord with the latter mode of causation than with that depending on the anatomical factor.

Apart from the conditions in the kidneys, the most striking organic lesions have been observed in the lungs and in the brain of certain cases. Inasmuch as these lesions are characterized by damage of minute blood vessels, they appear worthy of close consideration in relation to the nephritis.

Multiple haemorrhages of a distinctive type have been found in brain in two cases only,⁷ and there is no evidence available to explain why these two are thus distinguished from the others. In both instances there had been cerebral symptoms of coma or delirium, but there was no definite history of convulsions. On the other hand, in several instances where there had been uraemic convulsions no haemorrhage was found in the brain. The lesions are almost entirely confined to the white matter, while the more vascular grey matter remains practically free. This selective distribution, no less than the peculiar characters of the individual haemorrhages, is indicative of some more specific form of causation than would be provided by rise of arterial pressure or slowing of the venous return. Miliary embolism has seemed to us to offer one adequate explanation of the focal damage of capillaries and nervous matter, but it is only in a very few of the haemorrhages that the central vessels are blocked, so that this view lacks full confirmation. Another organ which has occasionally presented miliary haemorrhages is the spleen, but in that tissue the exact origin of the bleeding is impossible to define. Retinal haemorrhages have been observed in one acute case, but unassociated with haemorrhages in the brain.

In view of the predominance of dyspnoea in the clinical aspect of the disease, the pulmonary changes possess a special interest. It has been shown that, in addition to oedema and sometimes bronchopneumonia, there is very frequently injury of tissue around the cavities of pulmonary infundibula. The degree of damage varies, but it is invariably maximal towards the mucous surfaces, and especially on ridges which project inwards. The appearances are strongly indicative of the presence of a

* These have been found subsequently in four other cases.

deleterious agent in the lumina. The lesions are sometimes so strongly developed and so widely distributed that they cannot fail to be noted in any section; in such instances the pathological changes are obviously recent and acute in character. In other lungs the lesions are much less obvious, and appear to be residual and healing, but they are still quite definitely recognizable even in small portions of tissue not specially selected. Like the more acute ones, they may be accompanied by some thrombosis of pulmonary capillaries. The lesions are frequently unassociated with exudation of leucocytes in the alveolar spaces, and no organisms are then observed in relation to them. Where bronchopneumonia is present, organisms can be seen in the consolidated areas, and the infundibular changes in these are masked by the cellular exudate. They are, however, generally recognizable in uncomplicated form in other parts of the lung. Most frequently there is some similar damage of mucous membranes in bronchioles, and even in bronchi of larger sizes, unaccompanied by leucocytic reaction. On grounds which are almost purely anatomical we have assumed that these infundibular changes have been produced by a labile irritant, but as to the actual source of this we have at present no information. It is possible that the irritant in question has been excreted from the blood with the oedematous fluid. On this supposition the pulmonary lesions would be secondary in origin to the nephritis, or else parallel to it, and due to the same common cause. They would still possess considerable pathological significance, for in some instances they are so extensive and severe as to indicate a toxic action of considerable potency.

On the other hand, it has appeared to us possible that the pulmonary lesions may have been caused primarily by a noxious agent inhaled from the atmosphere. For this supposition, which, if correct, would possess great significance, we can find no support from the history of any of the cases. Still, the histological appearances are, in some instances, so suggestive of the effects of a pulmonary irritant, and so similar in many features to the lesions caused by irritant gases, that we have felt compelled to give full consideration to this view. There is, of course, no suggestion that the lesions under discussion are caused by chlorine or by any of the other gases used by the enemy, for it is recognized that clinical nephritis is not a common development after exposure to drift gas. The ascertained anatomical facts, however, in fatal gas poisoning offer a certain support to the view that a renal lesion may be produced as the result of inhalation of a gaseous irritant. Captain Herbert Henry has found that where death occurs late, seven to ten days, after chlorine poisoning, the renal glomeruli may exhibit extensive inflammatory changes, associated with the presence of thrombi in their capillaries. Similarly, three days after poisoning by shell gas (? phosgene) we have ourselves observed numerous thrombi in the renal glomeruli, but unaccompanied at that date by any evidence of inflammatory reaction. Another important point is that miliary brain haemorrhages are of frequent occurrence after

poisoning by phosgene, though apparently after the gas attacks in which chlorine was employed these lesions were not noted. On histological examination these cerebral haemorrhages exhibit the same distinctive characters as those we have observed in two cases of nephritis. The remote vascular lesions in kidney and brain in gas poisoning are associated with primary lesions in the lungs which are characterized by extensive thrombosis of capillaries. The whole forms an anatomical complex very similar in distribution to that which we have described in nephritis; the cerebral haemorrhages in particular are so identical in type as to suggest the existence of some common factor in the two classes of case. Even in gas poisoning the exact mode of production of the systemic lesions has not yet been definitely ascertained, and this point is worthy of further investigation on experimental lines. The information so obtained may by analogy throw light on the process on which nephritis is based.

DESCRIPTION OF SPECIAL PLATES.

CAPTAIN J. SHAW DUNN AND CAPTAIN J. W. MCNEE.

FIG. I.—A glomerulus in acute nephritis, exhibiting slight enlargement, and pointing into the opening of the convoluted tubule. The tuft is excessively cellular, and contains very few red blood corpuscles. Note the absence of inflammatory exudate or adhesions. $\times 125$.

FIG. II.—High-power view of a portion of a glomerulus in acute nephritis, showing accumulation of excess endothelial cells in the lumina of the capillaries. $\times 400$.

FIG. III.—Mitotic division of highly specialized secreting cells in convoluted tubules in a case of acute nephritis. Two karyokinetic figures are visible. $\times 400$.

FIG. IV.—Calcified cast, densely black, in the junctional tubule beside a glomerulus; from a case of acute nephritis. $\times 125$.

FIG. V.—Section of oedematous lung in a case of acute nephritis. Of the two large cavities, one, the more rounded, is a terminal bronchiole; the other, irregularly V-shaped, represents two infundibula. The former shows loss of epithelial lining and deposition of fibrin-like exudate on its walls. In the infundibula fibrin layers are present, especially on the ridges, and give the appearance of a thick wall, which is quite abnormal. $\times 60$.

FIG. VI.—Minute haemorrhage in cerebral white matter, in a case of acute nephritis. The pale area in the centre of the haemorrhage is necrosed nervous tissue. Near the centre of the necrotic focus there is seen the transverse section of a minute blood vessel filled with red corpuscles. $\times 125$.

FIG. VII.—A glomerulus in a case of acute nephritis. The capillary loops contain a great excess of nucleated cells; most of these appear to be swollen endothelial cells, with oval nuclei, and many of them lie free in the lumina. A few endothelial cells are seen in their normal situation, with narrow, darkly-stained nuclei. A few leucocytes are visible, and red corpuscles are very scanty. The afferent arteriole is filled by a syncytial mass of loose protoplasm. Note catarrhal desquamation of epithelium from the portion of the tuft which protrudes into the opening of the convoluted tubule.

FIG. VIII.—An infundibular lesion in the lung in a case of acute nephritis. The walls of the cavity are coated by a thick layer of fibrin-like material, stained dull blue. There is evidence of oedema in the adjacent alveoli.

FIG. IX.—Thrombosis of a pulmonary capillary in a case of acute nephritis. The drawing shows part of an alveolar partition with its bulbous inner end. The thrombus appears as a mass of homogeneous material, stained pink, in contrast with the more orange-coloured red corpuscles.

FIG. X.—Multiple miliary haemorrhages in the brain in a case of acute nephritis. The haemorrhages are scattered throughout the white matter, but are more numerous in some areas than in others. The grey matter of the cortex is practically free. In some of the larger haemorrhages a minute white centre is visible.

CONCLUSIONS.

1. One of the most characteristic clinical features of war nephritis is the early occurrence of dyspnoea, which, though often pronounced, may not be adequately accounted for by any pulmonary condition recognizable from physical signs.

2. The rapidity with which the initial symptoms of the nephritis may subside, after admission of patients to hospital, is remarkable. It is frequently so striking as to suggest that the mere transfer of the patient has brought about discontinuance of the circumstances which caused the disease.

3. From a consideration of the pathological conditions no direct conclusion has been drawn regarding etiology; but some important facts have been ascertained. The visible alteration in the kidneys which is most constant and distinctive is limited to the capillary blood vessels of the glomeruli. The absence of definitely inflammatory reaction in these structures, and the uniformity and selective distribution of the lesions, suggest that they are due to the presence, in the

blood stream, of a mildly irritant agent with a special effect on the smaller blood vessels. The oedema of subcutaneous tissue, and the vascular lesions in the lungs and the brain are probably due to the same factor. The renal glomeruli may suffer especially by virtue of their specific function in excretion. So far no positive evidence has been obtained which would point to organisms as the primary source of the damage of vessels.

4. The minute cerebral haemorrhages which are occasionally present in nephritis are of exactly similar character to those which frequently occur after poisoning by phosgene. They suggest the existence in the two classes of case of a common form of alteration in the circulating blood, which may thus be accessible to experimental investigation.

5. In fatal cases of the nephritis the pulmonary air passages are frequently the seat of lesions which bear some resemblance to those produced by irritant gases. While this comparison may be fallacious as regards the source of the irritant agent in nephritis, it affords a measure of the damage which is found in the lungs in

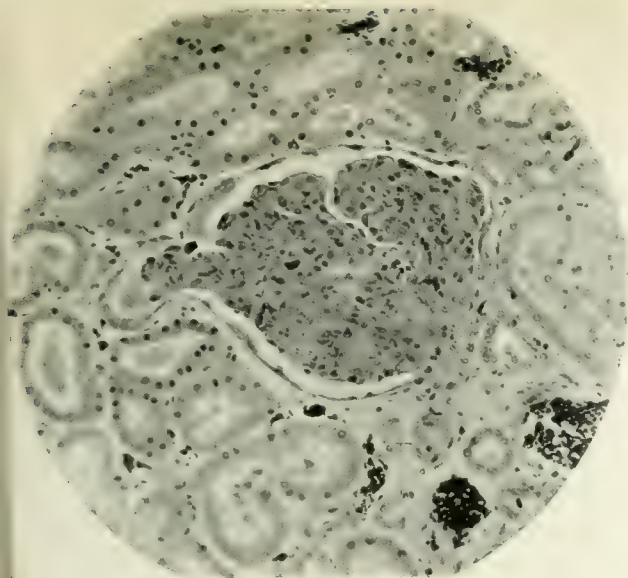


FIG. I.

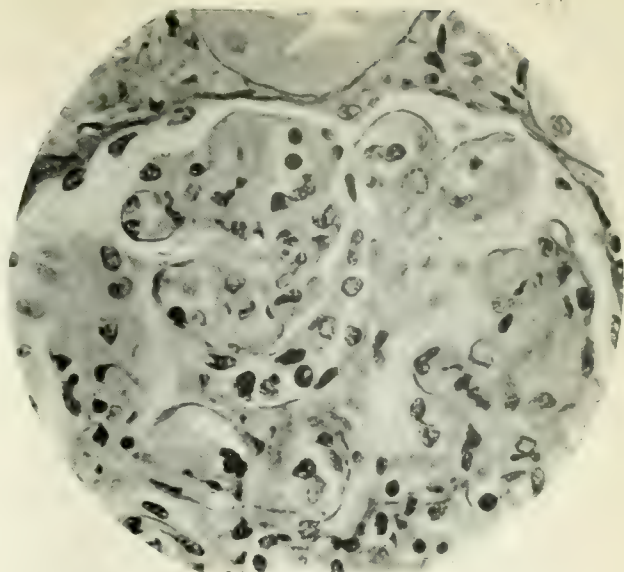


FIG. II.

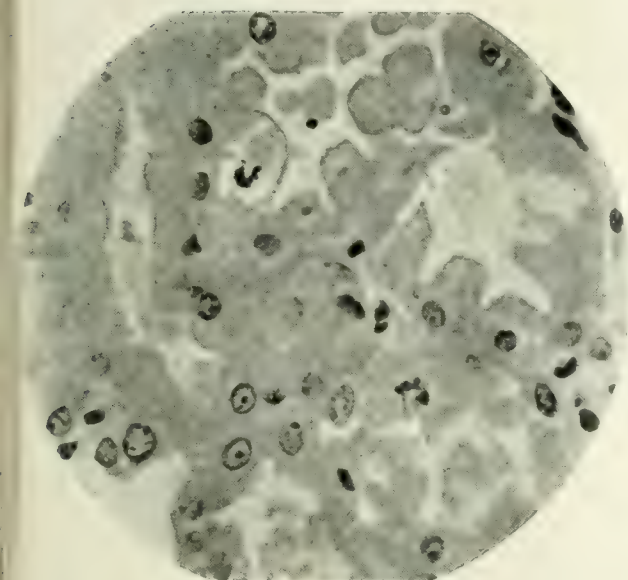


FIG. III.

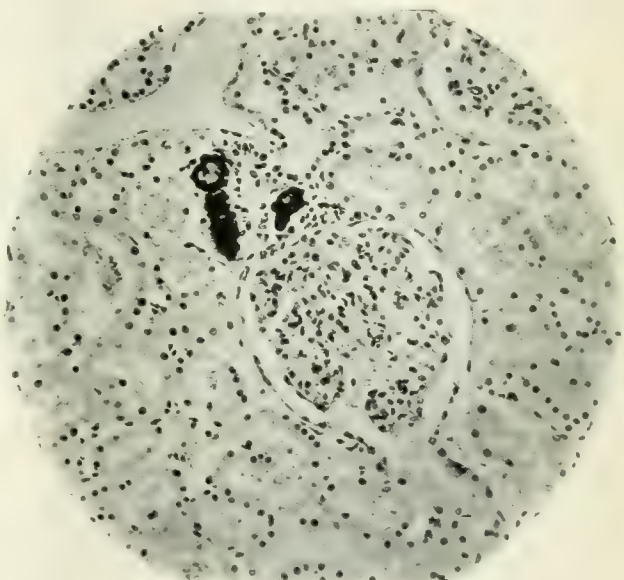


FIG. IV.

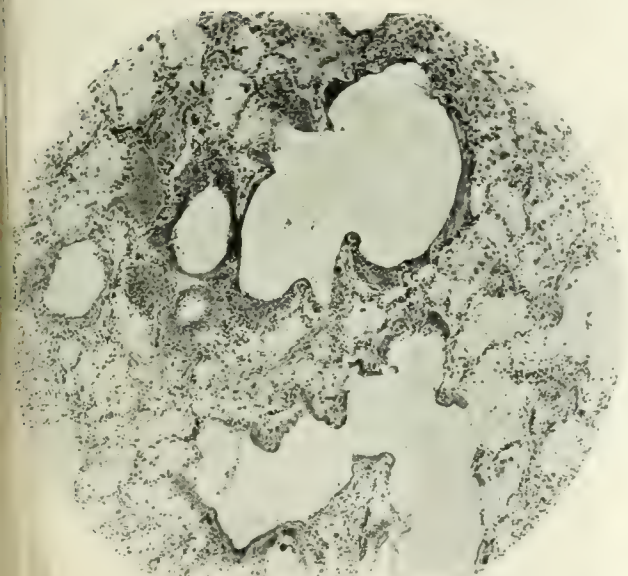


FIG. V.

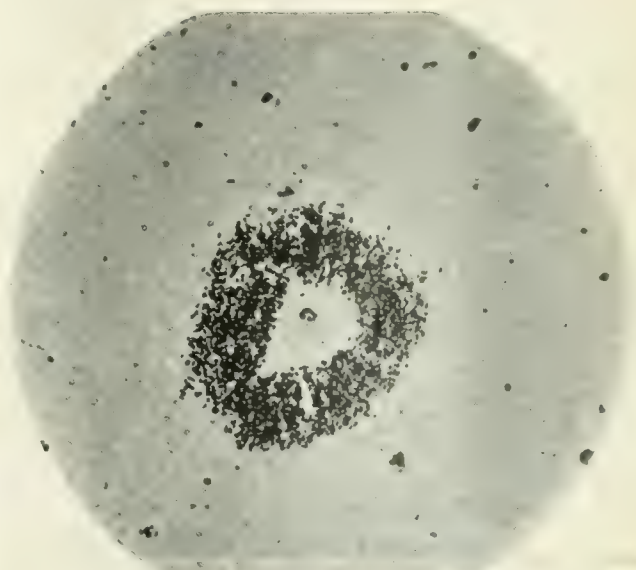


FIG. VI.

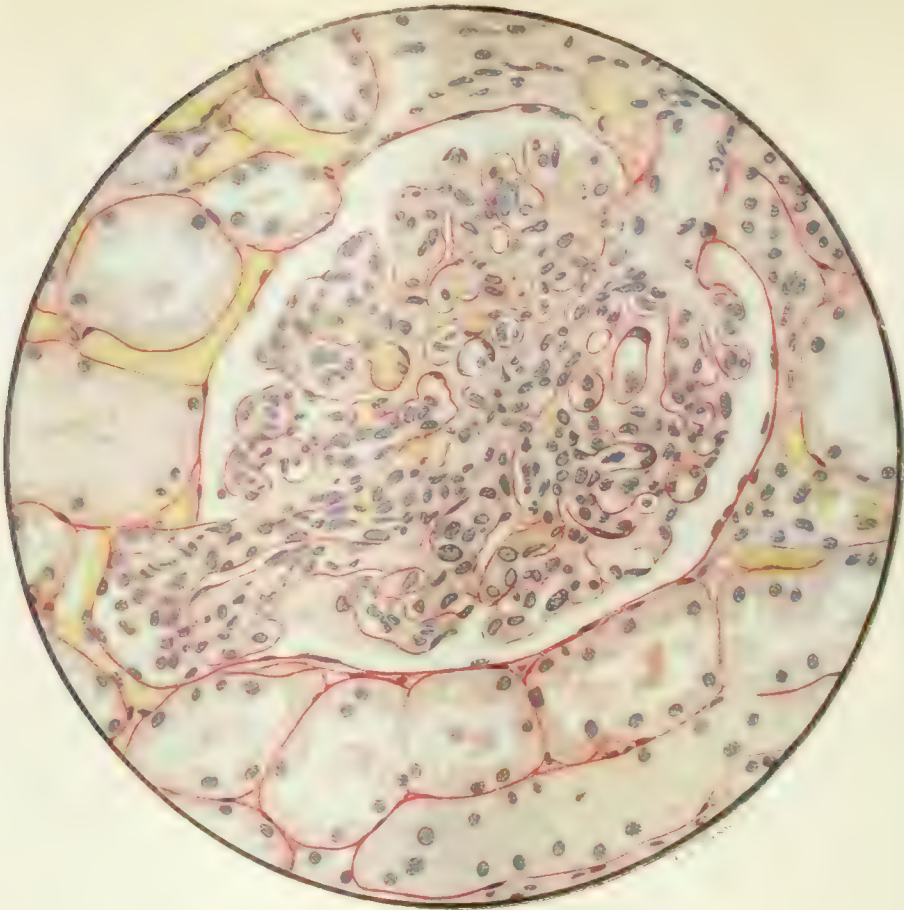


FIG. VII.

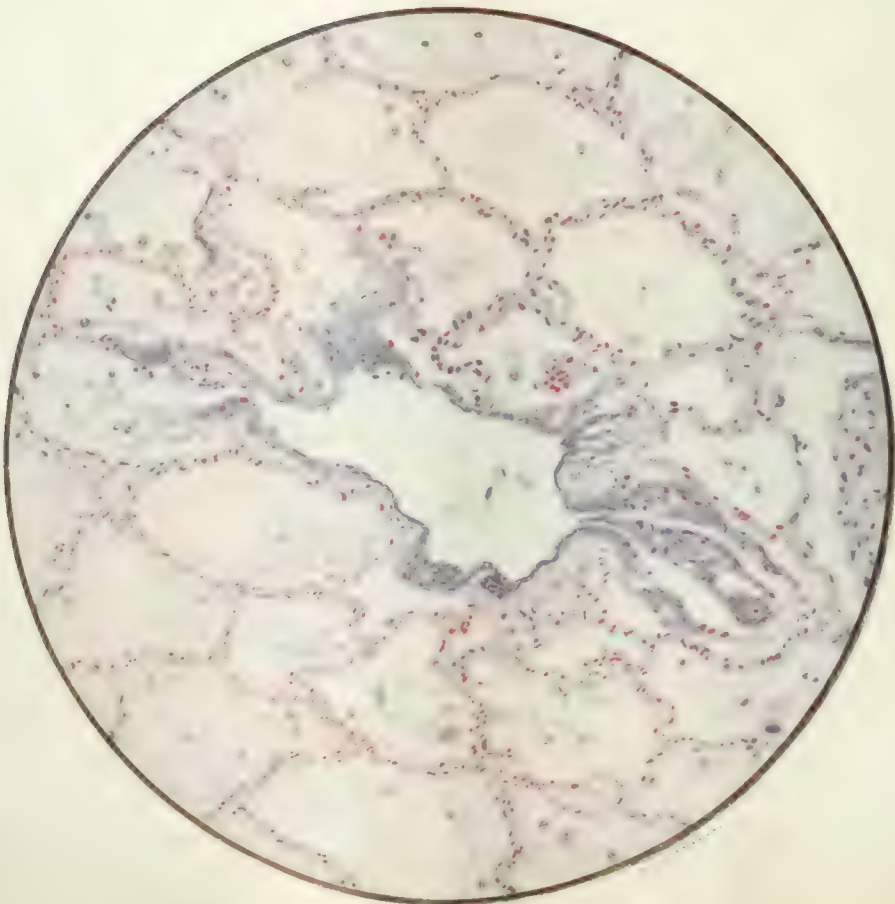


FIG. VIII.

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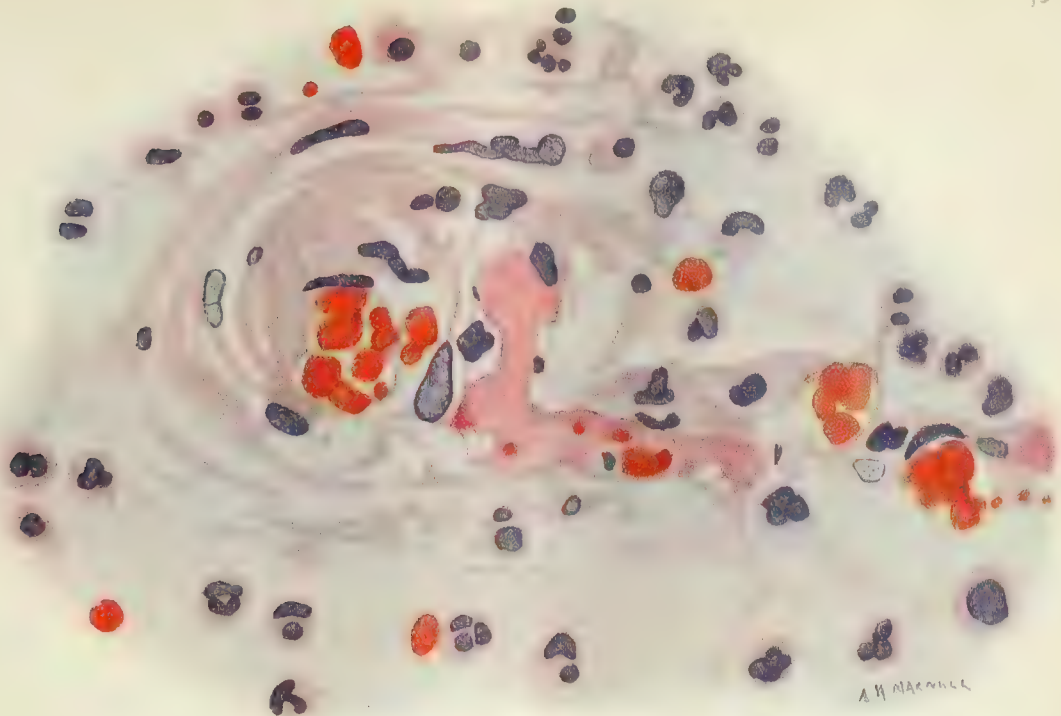


FIG. IX.



FIG. X.

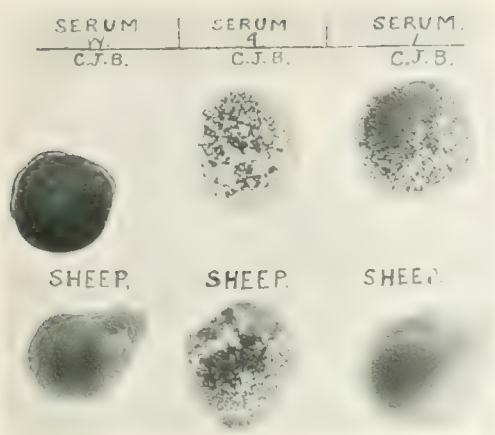


FIG. I.

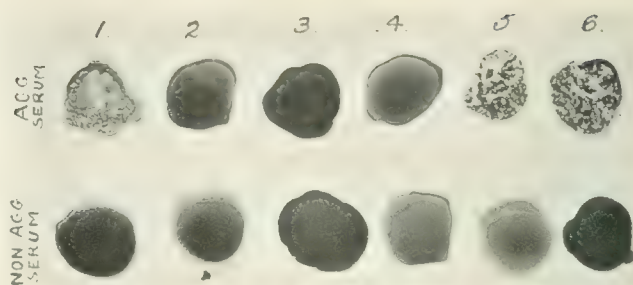


FIG. II.



FIG. III.

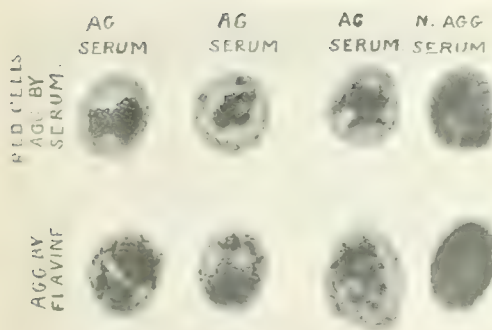


FIG. IV.

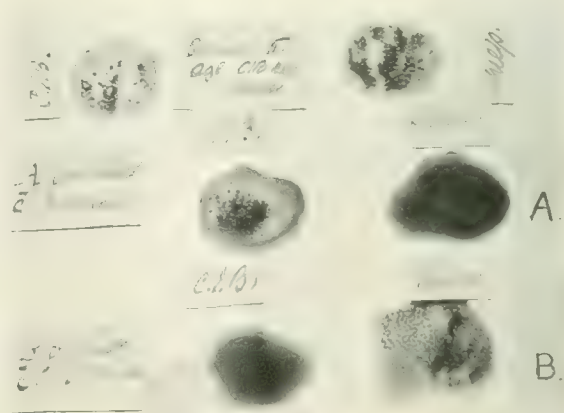


FIG. V.

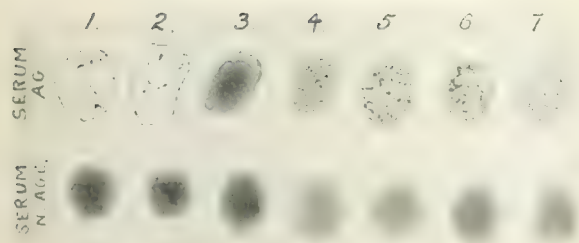


FIG. VI.

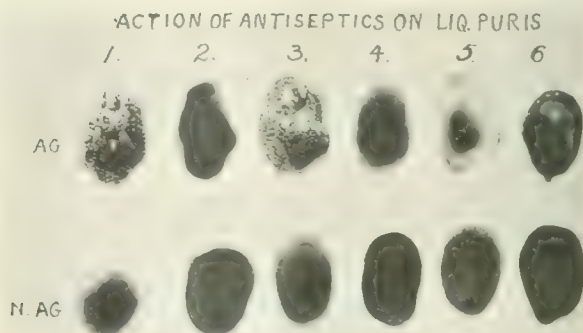


FIG. VII.

some instances. These pulmonary lesions probably possess some significance in relation to the frequent occurrence of dyspnoea.

For the supply of clinical records and pathological material we must thank collectively a very large number of officers throughout the armies in France.

We are especially grateful to Surgeon-General W. W. Pike, who placed all the records of cases of neplritis in his army at our disposal, and to Colonel Sir Wilnot Herringham, who has all along taken the greatest interest in the work and given us much valuable assistance and advice.

ON THE HAEMAGGLUTININ REACTION AS A TEST OF THE TOXICITY OF VARIOUS ANTISEPTIC REAGENTS.

AND ON THE ASSOCIATION (IF ANY) BETWEEN THE HAEM-
AGGLUTININ CONTENT OF THE BLOOD SERUM AND
PUS, AND CAPACITY TO RESIST INFECTION.

(With Special Plate.)

BY

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It is known that different individuals vary in the capacity of their blood serum to agglutinate the red blood cells of other individuals and of animals of different species. It is supposed that somewhere about 80 to 90 per cent., possibly more, of all individuals possess blood serums containing one or other of the different haemagglutinins. The following inquiry was undertaken to test (by utilizing the agglutination reaction) the toxicity of various antiseptic reagents to the blood serum and the red corpuscles, and to ascertain whether patients whose blood serum contained any of these haemagglutinins resist infection better than patients with non-agglutinating serums.

During a previous investigation into the influence of antiseptics on the activities of leucocytes and the healing of wounds¹ it became necessary to examine the blood serum in order to test the toxicity of different serums to my own leucocytes during incubation. This examination, while revealing facts of interest concerning the action of different serums on the white blood cells, also confirmed the previously known fact of the existence of iso agglutinins in the serums of a considerable number of patients taken from a hospital population. Fortunately several different patients were found possessing blood serums of four distinct haemagglutinative types (Fig. I), namely:

1. A serum agglutinative to human (C. J. B.) red cells but non-agglutinative to sheep's red corpuscles.
2. A serum agglutinative to human (C. J. B.) red cells and also to sheep's red cells.
3. A serum non-agglutinative to human (C. J. B.) and to sheep's red cells.
4. A serum agglutinative to human (C. J. B.), sheep's and guinea-pig's red cells.

Without entering into the wide problem of the relative

The Medical Research Committee have provided us with some of the apparatus necessary for histological work, and we are indebted to them also for permission to use the drawings made by Sergeant A. K. Maxwell, R.A.M.C.

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- ¹ Sir John Rose Bradford, *Quarterly Journal of Medicine*, vol. ix, No. 34, January, 1916, and *Journal of the Royal Army Medical Corps*, October, 1916.
- ² Langdon Brown, *Lancet*, February 19th, 1916.
- ³ Abercrombie, *Journal of the Royal Army Medical Corps*, August, 1916.
- ⁴ Thornley, *BRITISH MEDICAL JOURNAL*, December 16th, 1916.
- ⁵ Cf. Aschoff, *Pathologische Anatomie*, Jena, 1913, and McCallum, *Textbook of Pathology*, Philadelphia, 1916.

incidence of these different kinds of agglutinative serums in man and in the animal species it is evident that such a sharply defined divergence in agglutinative capacity affords a means (when employed under controlled conditions) of investigating (a) the relative effect of different antiseptic reagents on agglutination, and (b) the value, if any, of the iso-agglutinative factor in the production of acquired immunity against infection.

The Iso-agglutinative Reaction as a Test of Antiseptic Toxicity.

While the bactericidal capacity of an antiseptic reagent is of the greatest significance, it is becoming increasingly evident that the relative toxicity of different reagents to the blood and tissue cells is also a matter of equal importance.

From the theoretical point of view it is desirable to test this toxicity in regard to (a) the white corpuscles, (b) the red corpuscles, (c) the tissue cells, (d) the plasma and the blood serum. I propose, however, in this communication to refer only to the effect of different antiseptics on the capacity of any given blood serum or pus to clump human (my own) washed red corpuscles and those of the sheep and guinea-pig, and to refer to the power of my own leucocytes and the living phagocytes in different samples of pus to ingest red corpuscles, so agglutinated or opsonized.

Experiment 1.—Six separate drops of a serum agglutinative to C. J. B. red cells were placed on a glass plate in horizontal series (see upper row, Fig. II). Six corresponding drops from a non-agglutinating serum form the lower row. To each separate drop of serum in both rows one drop of an antiseptic reagent was added in the following order:

- (1) 1 drop 0.9 per cent. saline.
- (2) 1 drop 5 per cent. hypertonic saline.
- (3) 1 drop 4 per cent. chloramine-T solution.
- (4) 1 drop 2.5 per cent. carbolic acid solution.
- (5) 1 drop 0.1 per cent. mercury biniodide solution.
- (6) 1 drop 0.1 per cent. acriflavine solution.

The reagent was first mixed with the serum, and then to each drop was also added a measured quantity of human (C. J. B.) red corpuscles previously washed in normal saline.

The corpuscles were then thoroughly mixed with the antisepticized serum in each drop.

This experiment shows that when certain antiseptics are added to blood serum the agglutinative effect on the red cells varies according as the serum is or is not an agglutinating serum. Thus in the upper row (an agglutinating serum) the addition of normal saline shows the normal agglutination and serves as a control. The hypertonic saline, chloramine, and carbolic acid give no

DESCRIPTION OF SPECIAL PLATE.

COLONEL C. J. BOND.

FIG. I.—Showing types of haemagglutinating serums. *Blood Serum W*: Non-agglutinative to human (C. J. B.) and sheep's cells. *Blood Serum 4*: Agglutinative to human (C. J. B.) and sheep's red cells. *Blood Serum 1*: Agglutinative to human (C. J. B.), non-agglutinative to sheep's red cells.

FIG. II.—Showing the action of antiseptics on an agglutinating serum (upper row), and on a non-agglutinating serum (lower row). 1, Normal saline; 2, 5 per cent. saline; 3, chloramine-T 4 per cent.; 4, carbolic acid 2.5 per cent.; 5, mercury biniodide 0.1 per cent.; 6, acriflavine 0.1 per cent.

FIG. III.—Showing the action of antiseptics on human red corpuscles (C. J. B.) without blood serum. 1, Normal saline; 2, 5 per cent. saline; 3, chloramine-T 4 per cent.; 4, carbolic acid 2.5 per cent.; 5, mercury biniodide 0.1 per cent.; 6, acriflavine 0.1 per cent.; 7, iodine 0.1 per cent.

FIG. IV.—Showing the reagglutination of red cells by agglutinating and non-agglutinating serum (upper row), after previous treatment by an agglutinating serum and the removal of the agglutinins by washing in saline. In the lower row the first agglutination was produced by acriflavine.

FIG. V.—Showing the effect of removal (by saturation) of the specific haemagglutinin, for human and sheep's red cells respectively, from a serum (5) agglutinative to both human (C. J. B.) and sheep's red cells. Upper row: A, after saturation with sheep's cells. Lower row: B, after saturation with human cells.

FIG. VI.—Showing the effect of different antiseptics on a heated agglutinating serum (upper row), and on a heated non-agglutinating serum (lower row). 1, Normal saline; 2, 5 per cent. saline; 3, chloramine-T 4 per cent.; 4, carbolic acid 2.5 per cent.; 5, mercury biniodide 0.1 per cent.; 6, acriflavine 0.1 per cent.; 7, iodine 0.1 per cent.

FIG. VII.—Showing the action of different antiseptics on an agglutinating liquor puris (upper row), and on a non-agglutinating liquor puris (lower row). 1, Normal saline; 2, 5 per cent. saline; 3, mercury biniodide 0.1 per cent.; 4, chloramine-T 2 per cent.; 5, iodine 0.1 per cent.; 6, acriflavine 0.1 per cent.

agglutination: mercury biniodide, acriflavine, and iodine (in a less degree) all give a well-marked agglutination.

In the case of the non-agglutinating serum in the lower row treated with the same reagents none of the drops show any agglutinative change.

This shows that it is essential to ascertain the agglutinative capacity of any serum before using it as a test of the action of antiseptic reagents. In the case of the hypertonic saline a transient initial agglutination occurs with an agglutinating serum, but this soon disappears. Chloramine, carbolic acid (in the strengths used) both cause destruction of the red cells and laking of the haemoglobin. This also occurs with all the other antiseptics after a lapse of time with the exception of the hypertonic saline.

Before drawing any inference it is necessary to check this observation with a similar series showing the effect of the same antiseptics on washed red cells without the addition of any blood serum. Fig. III shows the result. To each drop of different antiseptic solution a measured quantity of washed and sedimented (C. J. B.) red cells was added in the following order:

- (1) Normal saline.
- (2) 5 per cent. saline.
- (3) Chloramine 4 per cent.
- (4) Carbolic acid 2½ per cent.
- (5) Mercury biniodide 0.1 per cent.
- (6) Acriflavine 0.1 per cent.
- (7) Iodine 0.1 per cent.

None of the reagents in the strengths used, except acriflavine, cause agglutination. Iodine 0.2 per cent. also does so; but it must not be inferred from this that acriflavine and iodine are more toxic to red cells than the other antiseptics. As a matter of fact they are less toxic, and the absence of agglutination in the case of chloramine and carbolic acid is due to the destructive action of these reagents on the red cells.

The Capacity for Reagglutination shown by Red Cells which have been Previously Agglutinated by Serum or by Antiseptic Reagents.

There is also another way in which we can test the action of antiseptics on red corpuscles. A measured quantity of washed human (C. J. B.) red cells was added to known volumes of the different antiseptic solutions to be tested. Corpuscles and solution were thoroughly mixed and allowed to stand together for half an hour. The mixture was then centrifugalized and the sedimented corpuscles washed free of all antiseptic admixture in several changes of normal saline. The result of submitting red cells previously so treated to the action of an agglutinating and a non-agglutinating serum respectively seems to vary somewhat according to the antiseptic used, and whether it does, like flavine, or does not, like chloramine, itself produce an initial agglutination, and whether it does or does not destroy the red cells. In general terms we find that red cells which have been treated with antiseptic reagents (which do not destroy the corpuscles or lako the solution) do, after washing in saline, reagglutinate when mixed with an agglutinating serum. This is true of normal saline, hypertonic saline, acriflavine, and hydrogen peroxide. In some cases the effect of the antiseptic seems to be to sensitize the corpuscles and render them more susceptible to reagglutination. Thus red cells agglutinated by acriflavine in some specimens reagglutinate when mixed with a non-agglutinating serum. It is of great interest to find (see Fig. IV) that this is also true of red cells previously agglutinated by contact with an agglutinating serum without any antiseptic. The experiment also shows that (as far as haemagglutinins are concerned) it is possible to wash away the agglutinating substances from the surfaces of the corpuscles, leaving them again susceptible, and in some cases more susceptible, to the influence of a second dose of agglutinating serum. Bearing in mind the very close analogy between the haemagglutinins and the bacterial agglutinins it is probable therefore that this is true also of the latter bodies. The serum used to agglutinate and sensitize the red cells was also tested after centrifugalization and was found to have lost all its agglutinative content.²

The Effect of Antiseptics on Heated Serums.

We have seen that the effect of an antiseptic on the agglutinative capacity of a blood serum depends on the

inherent capacity of that serum to agglutinate red cells. But it also depends on whether the serum is in the normal condition or whether it has been heated. We know that the haemagglutinins are thermostable at a temperature of 56° C., so that the difference in result cannot be simply due to destruction of haemagglutinins. Fig. VI shows the effect of different antiseptics on a heated agglutinating serum (top row) and on a heated non-agglutinating serum (lower row).

The effect of heating for half an hour at a temperature of 56° C. on an agglutinating serum is to increase agglutination. It now occurs with carbolic acid and hypertonic saline when red cells are added, and even with chloramine an initial slight clumping takes place. In the case of the non-agglutinating serum (lower row) agglutination is absent in all the drops.

In order further to analyse the effect of heating an agglutinating serum, the influence of acriflavine and iodine, when added to the serum in different degrees of dilution, was examined in detail. Dilutions in normal saline of a non-agglutinating serum in strengths of 1 in 10, 1 in 15, 1 in 20, 1 in 40, 1 in 80, 1 in 100, 1 in 200, 1 in 300, 1 in 400 were made. The point was then found at which the addition of an equal volume of this diluted non-agglutinating serum neutralized the agglutinative effect of a drop of acriflavine 0.1 per cent. and iodine 0.1 per cent. respectively when mixed with the serum. This point was found to lie just below 1 in 300 in the case of the iodine solution, and 1 in 400 in the acriflavine solution. Evidently it only requires an extremely small quantity of a non-agglutinating serum to prevent the agglutinating action of these antiseptics.

It is interesting to consider for a moment how this inhibition may be brought about. Unlike serum, which acts specifically on the red cells, the antiseptic acts non-specifically both on the serum and on the red cells, combining with protein elements in both. If there are available proteins in the serum, other than agglutinins, capable of combining with the unsatisfied element in the antiseptic, then the corpuscles may escape injury. If, on the other hand, there are no available proteins in the serum, or if they have been destroyed by heat, then the full effect of the antiseptic will fall upon the red cells. Antiseptic reagents vary in the avidity with which they combine with serum proteins, and thus in their toxicity to the red cells.

An attempt was also made to ascertain the amount of non-agglutinating serum that must be added to an agglutinating serum in order to neutralize or inhibit its agglutinative power. An agglutinating serum was diluted four times with a non-agglutinating serum. At this stage of dilution, although it agglutinated red cells, the reaction was incomplete. Clumping occurred on gentle movement, but on standing the agglutination disappeared, to reappear again on movement, just as a freshly formed precipitate may redissolve in excess of the reagent used.

The Specific Character of the Different Haemagglutinins.

It is known that an agglutinating serum may contain different haemagglutinins, each separately capable of clumping the red cells of another individual or those of a certain species of animal. The following experiment shows that it is possible to remove one kind of haemagglutinin from a serum without removing the others. Two separate measured volumes were taken of a serum agglutinative to human and sheep's red cells; one volume (a) was shaken up with washed sheep's red cells, and the other volume (b) with washed human (C. J. B.) red cells. Both were centrifuged, and the clear serum tested for agglutinative capacity. Volume (a) was found to have entirely lost the power of agglutinating sheep's red cells while still clumping human corpuscles, while volume (b) had retained its capacity to agglutinate sheep's cells but had lost the power to agglutinate human cells. As in the case of the bacterial agglutinins, therefore, the haemagglutinins are specific for different varieties of red cells, and the same serum may contain a number of haemagglutinins. Fig. V shows the result of this experiment.

The Action of Haemagglutinating Serums on "Whole" Foreign Blood—"Drop and Pool" Method.

So far we have only dealt with the influence of different antiseptics in favouring or inhibiting the tendency of red

blood corpuscles to clump together under suitable conditions. Before we draw any inferences as to the toxic action of these reagents on the serum, the red corpuscles or the leucocytes, it is necessary to ascertain what action different serums of different agglutinative capacity exercise on the whole blood of another individual (C. J. B.) without the addition of any antiseptic (Fig. VIII).

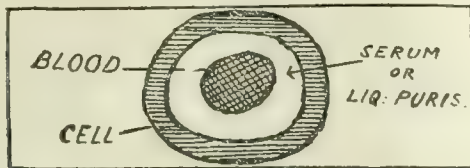


FIG. VIII.

One or more drops of the serum to be tested are placed within a vaseline or plasticine cell. Into the centre of the little pool of serum so enclosed a small drop of blood from the finger is allowed to fall; the cell is closed by a cover-slip. After incubation the cover-slip and cell wall of this emigrating chamber are removed, the blood clot and serum are gently washed away with normal saline, and the film of emigrated leucocytes fixed and stained with 1 per cent. iodine solution. The extent to which the toxic or agglutinative action of the serum affects the activities of the leucocytes from the periphery towards the centre of the drop of blood affords a rough quantitative test of the toxic capacity of the serum by which the drop of blood is bathed, and the extent to which the foreign serum has neutralized the normal serum of the blood tested.

If the foreign serum used be an iso-haemagglutinating serum then the (C. J. B.) red blood cells clump, but a further change also takes place. The white blood cells which have emigrated from the clot on to the slide will not only be covered with attached clumps of red cells, but some of the leucocytes will contain ingested red corpuscles. The agglutination of the (C. J. B.) red cells occurs in relation to their own (C. J. B.) leucocytes, and the adhesiveness is mutual, not only between individual red cells, but also between red cells and the surface of the leucocytes. This clumping and ingestion of red cells by native leucocytes in the presence of a foreign iso-haemagglutinating serum throws light on an important biological problem, namely, the relation of the agglutinins to the opsonins, and will be referred to later. Meanwhile, another fact of importance must be mentioned. A given serum may exercise a powerful agglutinative effect on the red cells and yet be relatively innocuous to the white blood cells. These, when incubated with such a serum, may emigrate and adhere to the slide in large numbers, and exhibit a considerable capacity for elaborating iodophil substances. On the other hand, a non-agglutinating serum may prevent emigration and the formation of iodophil substance. It may poison the leucocytes and yet fail to agglutinate the red cells. In fact, the leucotoxic effect and the haemagglutinative effect of a serum may vary independently.

Haemagglutinins in Pus.

Samples of pus have been collected from a considerable number of wounds dressed with normal saline in order to avoid the complicating effect of antiseptics. The pus has been centrifuged, and a drop of the liquor puris placed on a glass slide and a given volume of washed red cells, human, sheep's, or guinea-pig's added. The result has been to show that in most cases the liquor puris agrees in agglutinative content with the blood serum of the patient. If this is haemagglutinating, then the liquor puris is haemagglutinative also. Not only is this true of the effect of the liquor puris on human red cells, but it is true also of the red cells of different species of animals.

The Effect of Heat on Liquor Puris.

The effect of heating liquor puris for half an hour at 56° C. is, to a certain extent, the same as in the case of the corresponding blood serum. An agglutinative liquor puris retains its agglutinative capacity, while a non-agglutinating liquor puris remains non-agglutinative.

The Action of Antiseptics on Liquor Puris.

Not only does the purulent discharge from a wound faithfully reproduce the agglutinative characteristics of the blood serum of the patient, but it continues to do this, within limits, independently of the kind of infection present in the wound, or the kind of antiseptic reagent with which

the wound is dressed. It is evident that this retention of agglutinative capacity in a fluid like pus affords a means of ascertaining the degree of decomposition going on in the discharge and the extent to which its vitality has been affected by the growth of micro-organisms in the wound or by antiseptic dressings. I have been surprised at the tenacity with which an agglutinating pus from a heavily infected wound will retain its power of agglutinating human red cells. Even pus recovered from a piece of gauze dressing soaked in normal saline which had lain on a granulating wound for twelve hours yielded a liquor puris agglutinative to human red cells; but this will not be the case, of course, unless the patient's serum is also haemagglutinative. These observations are of interest as confirming the fact, not only that the purulent discharge from most wounds contains many living pus cells, but also that, from the humoral point of view, pus may be sufficiently living to contain agglutinins.

Fig. VII shows the action of different antiseptics on an agglutinative liquor puris (upper row) and on a non-agglutinative liquor puris (lower row). The reagents added to the liquor puris are the same as those used in the case of the blood serum, and there is a striking similarity in the reaction in both cases. In the upper row agglutination occurs with normal saline, mercury, and acriflavine, and slightly with iodine, but no agglutination is seen in any of the drops similarly treated in the lower row in which the liquor puris is itself non-agglutinative.

Summary of the Action of Antiseptics on the Cellular and Humoral Elements of Blood and Pus.

1. On the red blood corpuscles. It is, I think, clear that we may divide antiseptic reagents into two groups: (a) Those which agglutinate red blood cells without destruction of the corpuscles; (b) those which haemolyze the red cells without producing agglutination. Acriflavine and 5 per cent. saline are examples of the first group, and to a less degree mercury biniiodide and iodine, though these produce a certain amount of laking. Chloramine and carbolic acid belong to the second group. The test of the absence of haemolysis is the capacity of previously agglutinated red cells to re-agglutinate, after thorough washing, when again mixed with an agglutinating serum. Acriflavine and hydrogen peroxide seem to favour this result.

2. On the leucocytes and pus cells. It is useful to distinguish between those reagents which inhibit emigration of leucocytes from the blood clot when incubated with the whole blood in a closed cell and those which allow of free emigration and the elaboration of iodophil substances by the phagocytes. Judged by this test, acriflavine in strengths below 1 in 2,000 in normal saline seems to be only slightly injurious to the leucocytes when incubated with whole blood. An interesting fact has been observed when serum or liquor puris has been incubated with acriflavine in 1 in 2,000 concentration in normal saline. Any leucocytes or pus cells or organisms present in the serum seem to become, when incubated with acriflavine in serum, peculiarly sensitive to iodine when this reagent is subsequently added in 1 per cent. solution. The combination of serum, or liquor puris, acriflavine, and iodine together brings about a blue-black staining of the leucocyte granules. The organisms also show up as black bodies when ingested by the leucocytes, and the blue-black colour of the granules suggests the colour reaction formed when iodine is added to certain carbohydrate substances. With regard to pus cells, capacity to ingest pigment granules and to elaborate iodophil substances in the presence of antiseptic reagents affords a working test of vitality, and this has been used as the test of leuco-toxicity in the antiseptics used. The test has been applied in two ways: (1) *In vivo*, by the addition of sterilized starch grains or pigment granules to the antiseptic used for dressing the wound. The number of pus cells which contain starch grains or pigment affords evidence of phagocytic activity in the presence of the antiseptic in the wound. (2) *In vitro*, pus cells from the wound have been incubated with the antiseptic and the starch grains in a closed cell. Judged by this test acriflavine compares favourably with mercury, carbolic acid, chloramine, and hypertonic saline.

3. The action of antiseptics on the blood serum. The inhibition of the capacity of an agglutinating serum to agglutinate washed red cells provides a test of disintegrative action on the serum by the antiseptic employed. Here

also reagents can be divided into two groups—(a) those which destroy the haemagglutinins in the blood serum, and (b) those which do not. Chloramine, carbolic acid, and hypertonic saline belong to the former, and acriflavine, hydrogen peroxide (in certain concentrations), and iodine to a less degree, to the latter.

The Relation of the Haemagglutinins to the Bacterial Agglutinins.

There does not appear to be any essential connexion between these two constituents of the blood serum. From a small number of observations kindly made for me at the 5th Northern Base Hospital by Dr. Agnes Porter we find that a serum of high haemagglutinative capacity may have very little power of agglutinating certain varieties of bacteria and cocci, and vice versa.

The Relation (if any) between Haemagglutinin Content and Leuco-toxicity of a Blood Serum.

Reference has already been made to the fact that different serums (from healthy persons) vary greatly in their action on the white blood corpuscles of another individual when these are incubated with such a foreign serum, and the question arose whether any association could be traced between high haemagglutinative content and marked leuco-toxicity, or vice versa. As far as my observations go, I have not been able to trace any such association. It is probable, therefore, that leuco-toxicity is associated with the presence of other bodies in the serum and not the haemagglutinins.

The Relation of the Haemagglutinins to the Opsonins.

I have already spoken of the mutual reaction which takes place between leucocytes (or pus cells) and red corpuscles when the latter agglutinate in the presence of the former. Many samples of pus from infected wounds have been centrifuged. If the liquor puris proved to be agglutinative to my own or to sheep's red cells, some of the pus cells after thorough washing in saline have been incubated in a closed cell with human (C. J. B.) or sheep's washed red cells. As a general rule, ingestion of red cells does not take place under these conditions by thoroughly washed pus cells or by washed leucocytes; but if a drop of the agglutinating liquor puris be added before incubation the pus cells will take up the red cells. If ingestion is about to take place the red cells clump and adhere to the leucocytes as well as to each other. I have, however, found that thoroughly washed pus cells from an agglutinative pus will sometimes ingest sheep's red cells in the absence of any liquor puris. This suggests that sheep's cells may require less opsonizing than human cells, or that the pus cells elaborate fresh haemagglutinins.

A further point also requires notice. When red cells are added to healthy pus from a patient whose blood serum contains haemagglutinins, not only do the red cells clump together and adhere to the pus cells, but the pus cells also agglutinate in masses. This can be seen by mixing a drop of such pus on a slide with normal saline. Washed red cells are then mixed with the thinned pus. After a short incubation period a gentle rocking movement of the slide will bring about not only a clumping of the red cells but also a massing of the leucocytes in groups.

The effect of agglutinative liquor puris has also been tested on whole blood by the "drop and pool" method. Liquor puris obtained by centrifuging pus from a wound in a patient with a haemagglutinating blood serum is placed in a closed cell. Into the centre of the pool of liquor puris a drop of blood (C. J. B.) from the finger is allowed to fall and the cell closed and incubated. On removing the cell walls and gently washing away the central blood clot the opsonizing effect of the liquor puris on the red cells can be observed. If highly toxic, no emigration of leucocytes takes place, but if the liquor puris is healthy (that is, from a well drained, healthy wound), numbers of cells will emigrate on to the slide, some will show the iodophil reaction, and some, generally in the peripheral zone, will be covered with clumped red cells, while a certain number will have ingested some of the red cells which adhere to them (Fig. IX).

Thus, by the addition of a haemagglutinin to a liquor puris or a serum, we can induce the leucocytes to phagocytose native red cells—that is, red cells from the same blood—when incubated together. Iso-phagocytosis of red

cells by pus cells may also be observed in pus from wounds in patients whose blood serum is haemagglutinative.

Thus we arrive at this position. Pus cells from "whole" pus (if it contains haemagglutinins of the right kind) will ingest washed human red cells more freely than washed



FIG. IX.—Showing the phagocytosis of (C. J. B.) red cells by C. J. B. leucocytes in a drop of C. J. B. blood incubated in agglutinating liquor puris: "drop and pool" method. (Drawing from microscope slide.) 1, Agglutinated red cells; 2, red cells in phagocyte.

pus cells from the same pus will digest them, although the washing in saline actually increases the activity of the cells by removing the bacterial toxins and tryptic content of the liquor puris. The difference in the two cases depends on the fact that haemagglutinins are present in the "whole" pus and absent in the washed cells. Moreover, no ingestion of red cells occurs if the "whole" pus is non-agglutinative.

Putting all these facts together, we must, I think, conclude that, as far as the phagocytosis of red cells by leucocytes is concerned, haemagglutinins also act as opsonins and prepare the red cells for ingestion.³

The question remains as to the origin of the haemagglutinins in the blood serum. The fact that washed agglutinative pus cells may clump and ingest sheep's red cells in the absence of liquor puris suggests that in some cases the phagocytes can elaborate their own agglutinins and opsonins, but further work on these lines is required in this difficult field.

The Relation (if any) between the Presence of Haemagglutinins in the Blood Serum and Pus and Capacity to Resist Infection.

It is a matter of great interest to ascertain whether patients whose blood serum contains any of the various haemagglutinins for human or animal red cells show a greater or a less power of resisting infection than patients whose blood serum and pus are not agglutinative.

The subject is a difficult one. I have examined the pus, after confirmatory examination of the blood serum, from a considerable number of patients from this point of view, together with, in some cases, a bacteriological examination of the wound discharges. In the absence of recorded facts about the blood serum before the injury, I cannot satisfy myself that any constant association exists between haemagglutinin content of serum or pus and resistance to infection in any given case. At the same time there can be little doubt that a detailed examination of the blood serum and pus from a large series of cases, checked by bacteriological data concerning the nature of the infection and clinical findings bearing on recovery, would not only solve this question, but would throw valuable light on fundamental problems connected with the production of the immune state.

There is, however, some evidence that the blood serum of a patient previously known to be non-agglutinative to human (C. J. B.) red cells may, under the influence of a heavy systemic infection, become agglutinative to the same red cells. This fact, if confirmed in other cases,⁴ is important, because it is possible that the increase in

³ This has now been confirmed in quite a number of patients.

haemagglutinin content may serve as an indication that other collateral changes—that is, increase in antibodies and opsonins—are also occurring in the same blood serum.

Further, pus cells from a wound in a patient whose blood serum contains haemagglutinins frequently contain ingested red corpuscles. The pus cells in the presence of the iso-haemagglutinins (or the opsonins if these are separate bodies) tend to become auto-haemagglutinative and ingest their own red cells. Pus cells from wounds in patients whose blood serum contains no haemagglutinin do not phagocytose their own red cells.

It is probable that the red cell destruction and anaemia which accompany systemic infection in certain cases are associated with a blood serum and liquor puris of a haemagglutinative character.

In connexion with this inquiry, I wish to acknowledge kind help from my colleagues in military hospitals and from Dr. Mackarell, pathologist to the Leicester Royal Infirmary. The figures in the special plate are reproduced from photographs.

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ON WAR NEPHRITIS AND SOME CIRCUMSTANCES INCIDENTAL THERETO.

BY

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It was not until fully eight months after the commencement of the war that nephritis loomed large in the sickness returns of soldiers. In the case of the German army the outbreak occurred a few months later. The fact that the winter campaign had been got over and the spring and early summer months had come was advanced by some physicians as a reason why exposure to cold could not have been the cause of the disease. The malady has fallen upon our troops in France and Flanders with unequal incidence and with unequal severity. Occasionally the number of men from one convoy admitted for nephritis under the care of my colleague Dr. Dagger and myself has equalled 40 per cent. of the total, while on other occasions there would be only 10 per cent. or less. It is sometimes said that the number of cases of nephritis among our soldiers at the front has not been larger than that occurring among the civil population. I can hardly subscribe to this opinion, and I base my dissent upon experience of admissions into the Royal Victoria Infirmary, Newcastle, extending over three decades. In the summer of 1915 few of the cases of nephritis admitted into the Northumberland War Hospital presented acute symptoms. This might be explained partly by the fact that the severer and more acute cases had been retained in hospitals on the Continent. Beyond albuminuria and complaints of headache and backache, there were few physical signs and symptoms. Oedema, with us, has been an infrequent physical sign compared with the experience of Colonel J. Michell Clarke,¹ who found it in fifty-seven out of seventy-four patients. It was during my first visit to France in September, 1915, that I saw in the stationary hospitals there cases of nephritis with acute symptoms, including dropsy and uraemia.

War nephritis, to give it the name by which it is generally known, differs from ordinary nephritis in that there is a greater tendency for blood, and blood in fairly large quantity, to appear in the urine, for the specific gravity in many cases to be well maintained, for the urine to be not so scanty, the blood pressure to be lower, also for the malady to be attended by fewer cardio-vascular changes, and to be followed by fewer complications than are found in ordinary nephritis.

We have had no deaths from war nephritis in the Northumberland War Hospital. Hurst² states that death in this malady is extremely rare, not more than 3 or 4 per 1,000 patients, and that when death takes place it is usually through uraemia. A low death-rate has also been noted in the Italian army. On the other hand, and as illustrating the absence of uniform experience, three of Colonel Michell

Clarke's 68 patients died. A fair percentage of our patients at the Northumberland War Hospital have recovered, but in men over 30 years of age albuminuria has frequently persisted, the urine has become pale and watery, and its specific gravity has decreased. Many of these men have become the subjects of chronic kidney disease. In a considerable number of the younger men recovery has only been apparent, for albuminuria after having been absent for days or weeks has returned, without any exaggeration of the symptoms, other than fresh complaint of backache and the presence of blood in the urine. The length of time required for the disappearance of the albuminuria varies—it may be three weeks or it may be as many months, but the longer it persists the more likely are the kidneys to become the seat of chronic and permanent structural changes. While error in diet is a cause of recrudescence of symptoms, muscular exercise—for example, tennis playing and too long walks—may also conduce to their return.

I have alluded to the fact that in war nephritis there are fewer symptoms and cardio-vascular signs than in the usual forms of nephritis with which we are familiar, hence the comparative absence of well-marked hypertrophy of the left ventricle of the heart and of loud accentuation of the second sound over the aorta. The short duration of the illness may partly, but it cannot altogether, explain the comparative infrequency of cardiac hypertrophy, and of thickened arteries.

I have not been able to ascertain how far the previous occupation of the soldier plays any part in the development and course of the malady. On the Italian front it has been observed that men whose previous occupations exposed them to hardships and who were intemperate have suffered from nephritis in larger numbers than men engaged in more protected occupations and who are of temperate habits.

Some of the soldiers were slightly anaemic, but they seldom exhibited the well known features of patients suffering from Bright's disease. I have not found any well marked reduction in the number of red blood corpuscles, nor any increase or decrease of leucocytes, nor has basophilia been a feature of the blood examinations. Of the presence of eosinophile corpuscles in the urine and their excess in the blood as described by Bernhard I have no experience. A positive Wassermann reaction was not obtained in a series of 13 of my cases. McKenzie Wallis obtained a positive reaction in 18 out of 56 patients. Since other physicians have secured the reaction, and seen relief follow antisyphilitic treatment, it is possible that syphilis is more than an incident in some forms of war nephritis. The blood pressure has varied from 70 to 130 mm. Hg; in only a small percentage did it rise to or over 180. Some of the soldiers were admitted into the hospital not for kidney trouble at all, but for trench fever, P.U.O., or on account of having been gassed.

SYMPTOMS.

The disease usually commences with a feeling of malaise, pains, especially in the limbs and back, headache, and occasionally sickness with oedema of face and feet. Among German soldiers the disease is said to be ushered in with cough, worst at night, and with shortness of breath, attended by oedema of face, and by thirst and scanty secretion of urine. Our own men, too, suffer at the onset from bronchitis and dyspnoea. By the time the patients have reached the North of England dropsy, if ever present, has usually disappeared. Anasarca we never see. In none of our patients has vision been affected, nor have there been uraemic convulsions. One patient developed acute pulmonary oedema, and, after a serious illness, made a good recovery from the lung trouble, but albuminuria still persisted. It would be interesting to know what the experience of the R.A.M.D. is in regard to the future of the men who have been treated for nephritis, who recovered and were, in the early months of the war, again sent back to the front. Since in a fairly large percentage of patients who have been suffering from nephritis relapses occur, no case should be regarded as cured until, after several months have passed, it is found that, on full diet and after muscular exercise, albumin does not reappear in the urine.

ETIOLOGY.

The causation of war nephritis is obscure. Although the urine and the blood of my patients have on several occasions been examined bacteriologically, in none of them

was a specific micro-organism found to explain the illness. The *Bacillus coli* was found in several of the urines; and while the presence therein of this organism would suggest an intestinal origin of the nephritis, I can hardly regard this as the cause, especially as the patients did not give a history of diarrhoea or of intestinal disturbance.

M. Saequepée³ draws attention to the fact that cultures from the blood and from emulsions of kidney and spleen in nephritis contained a polymorphous bacterium and cocci bacilli of two kinds, one short and the other long. These organisms, when injected into guinea-pigs and mice, caused oedema and haemorrhagic lesions in the internal organs similar to those found in the patient who had died from nephritis, and from whose blood the cultures were obtained. The fact that until now no specific micro-organism has been found in the blood and urine of our soldiers suffering from nephritis is no proof, of course, that the malady is not of an infectious origin, for after all—so far, at any rate, as the urine is concerned—micro-organisms may fail to pass through the renal barrier, and yet their toxins be capable of doing a considerable amount of damage.

Exposure.

Most of the men attribute their illness to exposure to wet and cold in the trenches and dug-outs. It is difficult for any one who has visited the trenches, as on three occasions I have, and seen the soldiers in cold, damp, and snowy weather lying in their wet clothes, to exclude altogether exposure to wet and cold as a direct or indirect cause of the malady. It is an interesting point, therefore, as to how far we are to regard the nephritis we are discussing as an incident of trench warfare and of campaigning in the open. As a consequence of the routine four days spent in the trenches and of exposure to wet and cold we can readily understand the rheumatism and muscular pains the soldiers complain of. Is there any reason why the conditions which give rise to the joint and muscular pains should not in some instances operate upon a larger area of the body so as to include the kidneys as well? The vessels of these organs are extremely sensitive to external changes of temperature. Nephritis is apt to follow chilling and wetting of the lower extremities; hence its frequent occurrence in men employed in making drains. It occurred, too, with great frequency in the German soldiers when they slept on the bare pavement without a covering of straw, and it ceased when they slept on wood. Nephritis also occurred in the Italian army when, during the month of May, one blanket was withdrawn, and it disappeared on the blanket being restored and warmer clothing supplied.

Colonel Manella, sanitary director of one of the Italian army corps, has drawn attention to the fact that in his area there are nephrogenous zones where nephritis is met with in greater proportion than in other areas. A fact equally interesting is that in these Alpine regions few cases of nephritis occur at high altitudes where the air is cold and dry compared with lower altitudes where the air is damp and cold.

Professor Luigi Devoto of Milan, in an article on acute nephritis among troops at the front,⁴ attaches considerable importance to the influence of damp and cold. In one sector of the front, at an altitude of 1,250–2,600 metres, out of 1,200 soldiers the following cases of nephritis occurred:

1916.		1916.	
June ...	5	December ...	7
July ...	10		
August ...	11	1917.	
September ...	13	January ...	7
October ...	19	February ...	9
November ...	5	March ...	1

The largest number of cases occurred in the autumn.

Antecedent Nephritis.

In many of the men affected there may have been a latent nephritis, ready to be lit up on slight provocation; but in a large number of my patients, especially the younger men, interrogation failed to reveal the existence of previous kidney trouble as evidenced by oedema, headache, backache, vomiting, and scanty urine. On the other hand, it is a possibility which should not be ignored, although the absence of hypertrophy of the left ventricle and high blood pressure point in a negative direction.

Postural albuminuria also must not be lost sight of. Reher and Lauer, who examined the urine of Swiss

soldiers who belonged to the 34th Battalion Mounted Infantry, found albumin in the urine of a large percentage of the soldiers who had remained many hours in an erect position during extremely cold weather.

Haematuria.

Haematuria is a frequent sign. It may disappear and return on the slightest provocation. Its return has in some of my cases been associated with large quantities of oxalates in the urine. Nonnenbruch of Wurzburg⁵ states that 50 per cent. of the patients admitted into his hospital had haematuria. My experience is that it is only about 20 per cent., but this varies. It may be that the haematuria is simply the bleeding which occurs in chronic interstitial nephritis, also that in many instances the kidney disease of the soldiers is the result of an old infection, such as scarlet fever or diphtheria. It is impossible to say to what extent the patient in every instance was in good health previous to joining the colours. In the case of some of the men over 40 years of age there was probably latent kidney disease or renal inadequacy. Taking twenty-eight of my patients at random, I find that there were nine cases of nephritis in men between the ages of 30 and 35, seven between 35 and 40, six between 20 and 25, three between 25 and 30, and two between 40 and 45. There is no unanimity of pathological opinion as to the nature of the nephritis. The character of the urine suggests that it is parenchymatous, while the pain in the loins and the recurring haematuria, the blood being frequently in large quantity, indicate an enlarged and swollen kidney, the pain in the back being due to stretching of the capsule.

Professor H. Ziemann and Dr. Oehring of Saarburg⁶ found that of 2,011 patients admitted into their hospital 2.93 per cent. were suffering from war nephritis, and that of these 1.4 per cent. were the subjects of nephritis in an acute form, 0.145 per cent. of chronic nephritis, 0.78 per cent. of temporary albuminuria, and 0.34 per cent. of albuminuria of greater persistence; 0.24 per cent. suffered from albuminuria with complications.

Lead in the Urine.

Setting aside the influence of exposure to wet and cold as a possible cause of the type of nephritis we are discussing, other causes may be in operation—for example, infection and the influence of poisons, organic and inorganic. C. Powell White found lead in the urine of four soldiers suffering from kidney disease, and tin also in the urine of one of the men. Mackenzie Wallis did not find any trace of lead in the urine of his patients. Mr. T. M. Clague, analytical chemist, Newcastle-upon-Tyne, has made for me analyses of the urine of several of the sick soldiers under my care in the Northumberland War Hospital. The urines were those of men of different convoys, and the results are as follow:

Of five samples of urine of different patients two contained lead; of eight samples five contained lead; of five samples of urine one contained lead, and of three samples one contained lead.

Several single samples were, in addition, examined and found to be free from lead—others showed mere traces of the metal.

In twenty-nine samples of urine of soldiers in the Northumberland War Hospital lead was found nine times, or in something like 43 per cent.

This is a large percentage of cases with lead in the urine. Care was taken to eliminate the possibility of drugs having been taken, such as bismuth for example.

These observations raise the question, How did lead get into the system? Powell White found that a salt solution boiled in a meat tin extracted both lead and tin. At my request, Mr. Clague submitted the meat which the soldiers are receiving at the front—namely, bully beef and Maconachie—to analysis; he found traces of lead in the meat, but the amount was so infinitesimal that it raised doubts as to whether this could be the source of the metal in the urine of nephritic soldiers. I then had metallic scrapings of the interior of the pans in which the food is cooked at the front tested, but no lead was found therein; the metal present was mostly calcium. One possible source still remained, and that was the drinking water, and as this was frequently delivered to the soldier in cleansed petrol tins, we tried the effect of various kinds of water, sterilized and non-sterilized, chlorinated and not, upon the tins, but without obtaining lead.

The etiology of war nephritis is still obscure. I have not dealt with such a possible cause as the combined

influence of overwork, fatigue, and the physical discomfort of life at the front.

Recent findings have led me to give some attention to the possible effects of bullet and shrapnel retained in the body. In the urine of a young corporal with a bullet in his right thigh we found lead; in that of a sergeant shot through the arm and chest, and with the metal retained in the chest, lead was also found; in the urine of a soldier with pieces of shrapnel in knee and shoulder a small quantity of lead was found; while in the urine of a young lieutenant, mortally wounded, with shrapnel in his pelvis, lead was found. It is only right to add that in the urine of other soldiers with shrapnel retained in the body no lead was found, and that in the urine of one patient similarly circumstanced lead was on one occasion absent, while a fortnight after it was present. Although in cases where lead was found in the urine albumin was not present in every instance, yet in other instances there seemed to be a distinct connexion between the albuminuria and the retained shrapnel, as the following indicates:

I was asked by one of my surgical colleagues to see a young soldier with a piece of shrapnel in the front of the uppermost part of the left thigh. The patient was extremely ill. He had albuminuria, with recurring haematuria; the wound in the thigh kept closing and opening every now and then, attended by rises of temperature. The surgeon took the view that the wound would not heal on account of the condition of the patient's kidneys, which he thought antedated the receipt of the wound. My opinion was that the presence of the shrapnel in the body was the cause of the kidney trouble, and that if the shrapnel was removed the kidney trouble would cease. The patient was transferred to my own ward, where, by external applications aided by natural processes, the shrapnel gradually came nearer the surface, and could be readily felt under the skin. As the patient was too ill to be given a general anaesthetic, local anaesthesia was employed and the shrapnel removed by the surgeon. From the date upon which the shrapnel was removed the temperature gradually fell to the normal, the wound closed, the albuminuria entirely and permanently disappeared, and the patient made a good recovery.

It has been the practice of surgeons during this war where pieces of projectile have become embedded in the tissues, are not readily accessible, are not pressing upon nerves or upon important organs, and where there is neither haemorrhage nor excessive suppuration, to leave the metal in the body undisturbed. There is always the possibility of the piece of shrapnel or bullet becoming encysted and remaining as an inoffensive foreign body. Yet, now and again, it has happened that some of these metal carriers whose wounds have healed have been observed to become anaemic, to be suffering from disorders of the intestinal and nervous system and to have become the subjects of albuminuria. Since in their urine lead is frequently found, it is clear that resorption of the metal must be taking place. It goes without saying that pieces of shrapnel are more likely to cause plumbism than portions of shell. All depends upon the type of metal, the organ or tissues in which it is embedded, and whether there is or is not suppuration. In all cases, therefore, where pieces of shrapnel are retained in the body it would be well to have the patient's urine examined for lead.

As lending support to this, Loeper and Verpy⁷ may be quoted. They found lead in the urine of six out of sixteen soldiers in whose body pieces of projectile had been retained. They found it only with shrapnel and not with the debris of shell, also never when the bullet was intact. They found lead to the extent of $\frac{1}{2}$ to 1 mg. per litre of urine; in other words, that more than 1 mg. of lead was being eliminated in twenty-four hours. This is a smaller quantity than is occasionally found in the urine of lead workers, but it is equal in quantity to, or slightly more than, that found in the urine of persons poisoned by food or by drinking water contaminated by lead. When a wounded soldier with shrapnel retained in his body is passing from $\frac{1}{2}$ to 1 mg. of lead daily the kidneys in course of time are almost sure to become affected, for secondary lead compounds are being formed; these are absorbed, and pass on into the circulation. The extent to which this takes place will depend upon the leucocytes and the chemical activity of the tissues. Absorption of shrapnel is slow; lead does not appear in the urine until three to four weeks after a soldier has been wounded. When resorption of the metal is taking place there is a tendency in some instances for the blood pressure to rise, for albumin to appear in the urine, for the red blood cells to decrease in number, and for colic and constipation to be complained of. Since

in one of my own patients albuminuria and suppuration gradually ceased after removal of the shrapnel it would seem as if there had been a causal relation between the condition of the kidneys and retention of the metal in the body. I am not in a position to say whether the presence of shrapnel in the lung is more provocative of plumbism than when the piece of projectile is retained in the body elsewhere.

With the object of testing the solubility of lead bullets generally, and of throwing light upon the fate of shrapnel retained in the body and exposed to the influence of the fluids of the tissues, also to the influence of fat upon metallic lead, I secured the co-operation of Messrs. T. M. Clague and A. J. Watson, analytical chemists of this city, to whose report I invite attention.

EXPERIMENTS ON THE SOLUBILITY OF PLAIN LEAD AND ANTIMONIAL LEAD.

BY

T. MALTBY CLAGUE, Ph.C., and A. J. WATSON, Ph.C.

"CERTAIN clinical observations made by Sir Thomas Oliver suggested the desirability of an examination into the comparative solubilities in the fluids of the human body and in analogous liquids of the modern hardened bullet and the old bullet of pure lead.

"The uncoated shrapnel bullets used by the enemy and allied forces of to-day contain antimony in large amount (10 per cent. and upwards).

"Bullets were placed by us in the blood serum of sheep and macerated for seven days. After burning off, the residue was found to contain lead equivalent to 10 parts per million of the blood serum, but the analytical difficulties of dealing with the blood were great, and for convenience a solution was prepared containing 0.9 per cent. of NaCl and 0.13 per cent. NaHCO₃ to represent blood serum. Shrapnel bullets macerated for four days (heated each day to 35° C. (95° F.) for six hours) yielded in the case of pure lead 260 parts per million, and in the case of antimonial lead 300 parts per million.

"With a view to a more complete conformity to the conditions found in the human body an automatic circulating system was arranged in which an alkaline saline solution circulated through a U tube containing six bullets.

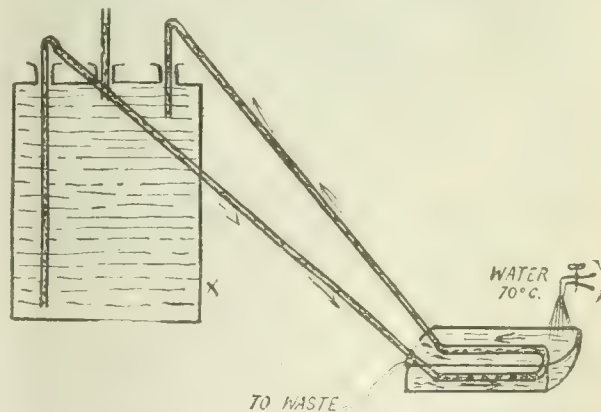


FIG. 1.—Water at 70° C. surrounded the limb of U tube containing the bullets; this caused the solution to circulate; the temperature did not rise above 25° C. to 30° C. After six hours' circulation, 20 c.cm. removed from Wolff bottle at position of least contact (x) contained 5 parts of lead per million of water; after fourteen hours' circulation it contained 7 parts per million. The liquid in the U tube was allowed to digest thirty-six hours in the cold and then removed. Pb content was found equal to 14 per million.

Antimonial Lead Bullet.

Oily Solvents.	Acidity.	Lead Yielded in Parts per Million of Solvent.
Lard	1.0	10
Neatsfoot oil	3.2	200
Suet	0.7	5
Olive oil	1.6	100
Liquid paraffin	0.0	Nil.

Bullets in solvent for six days heated to 35° C. (95° F.) each day for six hours.

Solubility of Bullets, Pure Lead, and Antimonial Lead.

Time.	Solvent.	Pure Lead.	Antimonial Lead.
		Per Million.	Per Million.
6 days (heated) ...	Neatsfoot oil (acidity 3.2)	200	200
	Olive oil (acidity 1.6)	300	200
4 days (cold) ...	Neatsfoot oil (acidity 3.2)	30	15
1½ days (heated) ...	Olive oil (acidity 1.6)	300	100

A piece of a lead bullet was placed in pus removed from a case of empyema. It was allowed to remain therein for forty-eight hours at a temperature of 40° C. On examination the pus was found to contain 12 parts of lead per million.

"The result of our experimental work shows that present-day hardened lead is soluble in the proportion of approximately three parts as against two and a half of pure lead in aqueous liquid, and that in fatty liquids or semi-liquids the pure lead is much the more soluble."

In addition to lead, shrapnel contains antimony and arsenic, and this raises the interesting question whether antimony and arsenic may not be absorbed as well as lead. It was common practice years ago in Germany, when horses were taken to market to be sold, for horse dealers to give to broken-winded animals a few ounces of small shot. This was followed by good effects which lasted for several days. The improved condition of the animals was attributed to the arsenic in the shot. We cannot, of course, compare the presence of shot in the alimentary canal of a horse with the retention of pieces of shrapnel in the lungs, the muscles, connective and adipose tissues of a wounded soldier. Apart from animal differences the metal in one instance is first exposed to an acid medium in the stomach, while in the other it is exposed to the alkaline juices of the tissues of the body, even allowing for the slightly acid reaction developed in actively contracting muscle. Experiments have been made in regard to this subject in Germany. Professor L. Lewin of Berlin, in a paper* on the toxic effects of arsenic in bullets, states that 10 grams of shrapnel containing 8 per cent. of antimony and 14 mg. of arsenic were broken up into numerous small pieces, placed in the undermentioned solvents in an Erlenmeyer's flask and kept at a temperature of 38° C. The results were as follows:

Experiment.	Solvent.	Duration in Days.	Solution in Percentage.		
			Lead.	Antimony.	Arsenic.
1	HCl 0.25 %	5	0.033	trace	trace
2	HCl 0.25 %	14	1.1	0.02	trace
3	Olive oil	6	0.628	trace	trace
4	Olive oil	14	2.0	0.57	trace

From these experiments we learn that more antimony than arsenic was dissolved, and that the amount of antimony dissolved was proportional to the length of exposure; also that, high as a solvent dilute hydrochloric acid may be for lead, olive oil is even higher. Lewin submitted similar pieces of shrapnel to the action of weak alkaline solutions—for example, 0.05 per cent. to 0.2 per cent. of soda—but, even after fourteen days' exposure, the amounts of antimony varied from 0.007 to 0.013 mg., while the amount of arsenic remained at 0.0002. From these experiments we may take it that, so far as the retention of shrapnel in the body is concerned, no damage is to be apprehended from arsenic and antimony. The one danger is lead.

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NOTES ON PAINLESS CHILDBIRTH.

(HYOSCINE (SCOPOLAMINE) AND MORPHINE.)

BY

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ALTHOUGH several papers have been published in this country on the satisfactory and safe use of scopolamine and morphine in labour, further records appear desirable. An account of those cases in a consecutive series which illustrate the chief points will be more useful than an abstract treatise. I will therefore state the facts and give illustrations from a first series of 60 consecutive cases, 30 conducted in hospital, and 30 in private practice, most of the latter being in a nursing home. If the series were extended and the first cases excluded, I could show better results, but my chief object is to point out the pitfalls and possible dangers. The technique was modelled on that of Gauss of Freiburg.

Illustrative Cases.

The two following cases indicate the possibilities and technique:

CASE I.

Primipara, with a small round pelvis. In consultation it was decided that a normal delivery at term was possible.

The patient was awakened at 2 a.m. the day before term by sharp pains; although unable to sleep she did not send till 9 a.m. as subsequent pains were slight and at long intervals; there was not much suffering during the day, but at 9 p.m. the pains became severe. At 10 p.m. morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{16}$ gr. were injected, the os then being the size of a two-shilling piece. The ears were plugged with cotton-wool soaked in oil, the room darkened, and the patient put on her side in bed. In twenty minutes she was sleeping quietly, and continued to do so till 1.35 a.m.; the fetal heart being satisfactory, at 1.45 a.m. hyoscine $\frac{1}{16}$ gr. was given, and a drink of water. At 5.30 a.m. the patient was again rousing; the membranes ruptured and the os was found to be fully dilated, so a third dose of hyoscine $\frac{1}{16}$ gr. was injected. At 8 a.m. a little chloroform was given by a colleague and the child delivered with forceps at 8.20 a.m. The patient did not wake till 10 a.m., when she found by feeling her abdomen that the baby was born. She said she felt no pain after the first injection.

CASE II.

Multipara. The patient was brought by her husband: she was not enthusiastic, looking on the treatment as an unnecessary fuss and expense.

Labour began at 2.30 p.m., when the os admitted two fingers; at 2.40 p.m. morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{16}$ gr. were given; accessory treatment as usual. The patient lay on her side and went to sleep almost immediately; at 5.30 p.m. she moved for the first time, sat up in bed, and asked for a drink of water; she at once went to sleep again; at 6.45 p.m. the second dose (hyoscine $\frac{1}{16}$ gr.) was given; she was soon asleep, and the nurse thought all pains stopped; she woke up once and had another drink of water. The third dose (hyoscine $\frac{1}{16}$ gr.) was given at 11 p.m. She again went to sleep; fifty minutes later the nurse noticed her moving; she looked and found the head crowning, the baby being born before any one else could be summoned, the nurse describing it as being born with only one pain.

This patient (Case II) was subsequently most enthusiastic about the treatment. The case shows that the effect is not due to any psychological impression on the patient.

It must not be assumed that all cases will be so simple and satisfactory; occasionally the patient is restless; slight degrees can be dealt with by a few whiffs of chloroform; when severe the condition is due to faulty technique, either not giving the patient water to drink or excessive doses of hyoscine, as the following record shows.

CASE III.

Primipara. Pelvis contracted, the external measurements being: Interspinous, 9 in.; intercrystal, 10 in.; external conjugate, 7 in.

Severe pains began at 4 a.m.; at 4.15 a.m. morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{16}$ gr. were given. The patient was soon asleep. Doses of hyoscine $\frac{1}{16}$ gr. were given at 5.30 a.m., 9.30 a.m., and 12.15 p.m. At 4 p.m., as the patient was becoming conscious and there was no prospect of delivery for some hours, another dose of morphine $\frac{1}{2}$ gr. was given with hyoscine $\frac{1}{16}$ gr.; at 7.30, and again at 10.15 p.m., hyoscine $\frac{1}{16}$ gr. was given. I was then obliged to leave, so left a further dose of hyoscine $\frac{1}{16}$ gr. to be given if necessary. Shortly after the patient woke and became very restless. The nurse, thinking this was due to an insufficient dose, injected another hyoscine $\frac{1}{16}$ gr. at 11 p.m., the eighth dose, without applying the memory test. The restlessness increased, and in a short time the patient was so noisy and unmanageable that I was summoned. I found her delirious;

three nurses were struggling to keep her in bed. With more rational treatment she became quieter, but was uneasy and restless for a couple of hours; she refused to drink any water; her pulse and general condition were satisfactory. Chloroform was given at intervals, but large quantities were necessary to produce any effect. At 1.30 a.m. she asked for a drink, and took three-quarters of a pint of water; this greatly improved her condition. At 2.30 a.m., in a lucid interval, she was persuaded to drink three-quarters of a pint of weak tea. This caused further improvement, and there was little trouble afterwards, though the pains continued to be very strong. During some of the time it was impossible to keep the patient in bed when pains occurred, yet she was so much under the influence of the drug that the instant a pain was over she would go to sleep standing up with one hand on the bed-post and snore loudly. By 4 a.m. she was quiet. The baby was born naturally at 7.30 a.m., the head being tremendously moulded. Morphine $\frac{1}{2}$ gr. was given, and the patient slept till 11 a.m.

When she awoke she had no idea the baby was born, did not know what day it was, said she had felt no pain, and remembered nothing of her labour. She was exhausted for several hours, being the only patient in the whole series who was so. On the second day she was quite well, and made an uninterrupted recovery.

The baby was not asphyxiated, chiefly because all the difficulty had been at the brim, and there had been little if any compression in the cavity of the pelvis. Such compression is a far more potent factor for asphyxia than repeated doses of the drug, provided proper precautions are taken.

In this case two mistakes were made, one being too early repetition of a dose of hyoscine, and the other not giving the patient water to drink.

It is unusual for the mother's pulse to be affected by the drug; the following case, however, caused some anxiety.

CASE IV.

Multipara. Abnormally susceptible to drugs. Five minutes after the first injection at 7.45 p.m. (morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{100}$ gr.) she became excited, and said she felt as if she was having gas, and was choking. Three minutes later she was quiet, but said the room was swinging round and she was sinking. Her pulse was feeble and only 40. She kept asking if her heart would stop, because she felt as if it would. There was no alternative but to turn up the light and examine her. As her colour and general condition were good, and she had behaved in much the same way during her first labour, when given chloroform, for which she had begged, I turned the light down and let matters proceed. She soon became quiet, but never appeared to be much under the influence of the drug; hyoscine $\frac{1}{100}$ gr. was given at 10.30 p.m., at 11.40 p.m., and at 1 a.m.; the third dose seemed ineffective, though the fourth produced more result. The patient was apparently conscious when the child was born at 1.45 a.m., but was kept quiet and almost in the dark; she went to sleep while being washed, and slept for six hours.

I was afraid this was not a satisfactory case, but the patient's account put a different complexion on it. She said she had read about twilight sleep and thought the description too good to be true, but in her opinion it was even better.

The following case shows the chief cause of failure, starting too late, and also shows that the drugs do not necessarily diminish the uterine contractions.

CASE V.

Multipara. Pains began at 3.15 p.m. when the waters broke, but the patient did not come to the nursing home till 6 p.m. Pains were then frequent and severe; at 6.20 p.m. the os was only one-third dilated and hard; morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{100}$ gr. were injected at 6.30 p.m.; the pains were fast and furious; half an hour later hyoscine $\frac{1}{100}$ gr. was given and the pains became even more frequent and stronger. The child was born at 7.20 p.m.; the placenta quickly followed, and there was some continuous haemorrhage; this clearly came from a lacerated cervix, as the uterus was almost in a state of tonic contraction, so I plugged the uterus with iodoform gauze. The patient made an uninterrupted recovery, and went home on the twelfth day.

This patient's consciousness was but little affected, so this was classified as an unsuccessful case. The child was not asphyxiated.

The following case also shows that labour is not necessarily slowed.

CASE VI.

Multipara. Pains began at 2.30 a.m. At 4 a.m. the os was two-thirds dilated, but the head high up; morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{100}$ gr. were injected. The patient went to sleep immediately, but awoke at 4.35 a.m. when the pains were strong and frequent. Chloroform was given and the baby, not asphyxiated, was born at 4.50 a.m. There was no haemorrhage; the patient slept for five hours afterwards and said her labour had been painless.

In both these cases only a minimum dose of morphine ($\frac{1}{2}$ gr.) was given; possibly this was a reason why the hyoscine intensified the uterine contractions.

I have already quoted one case (Case III) illustrating the value of the drugs in the minor degrees of pelvic contraction. Another is worth recording:

CASE VII.

Primipara. Pelvis contracted, the external measurements being: Interspinal, 9 in.; intercrural, 10 in.; external conjugate, 7 $\frac{1}{2}$ in. On previous examination I thought labour at term possible; when she came into the nursing home three days before term the position was transverse, and it looked as if Caesarean section would be necessary. In consultation arrangements were made for a further examination the next morning and for proceeding to Caesarean section if necessary.

Labour began at 6 p.m. the same evening; at 9.50 p.m. morphine $\frac{1}{2}$ gr. was given and hyoscine $\frac{1}{100}$ gr., and another dose of hyoscine $\frac{1}{100}$ gr. at 2 a.m. The patient slept till 10 a.m. At 10.30 a.m. chloroform was given and the opinion formed that labour could be finished naturally. After the examination the patient was allowed to become conscious; she sat up and had dinner. At 2.30 p.m. the pains became severe, so morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{100}$ gr. were given; subsequent doses of hyoscine $\frac{1}{100}$ gr. were given at 6.30 p.m., at 11 p.m., at 1 a.m., at 3.45 a.m., and at 5.45 a.m. Altogether eight injections were given, morphine being in two of them. The pains were strong and frequent, but the patient was never conscious. At 7.30 a.m. the patient was rousing; the head had passed through the brim and the os was fully dilated; a little chloroform was given at intervals; at 8.55 a.m. 1 c.c.m. of pituitrin was injected. The child was born fifteen minutes later with strong pains, the vagina and perineum being lacerated. After suturing, morphine $\frac{1}{2}$ gr. was given. The patient slept for four hours; when she awoke she had no idea the child was born, nor what time it was, nor what day it was.

The patient said that she had felt no pain after the first injection, except for a short time after dinner on the second day of labour. She was surprised to hear she had had a long and difficult labour. She had a morbid temperature subsequently owing to slight endometritis, but went home quite well on the twelfth day. The baby was not asphyxiated at birth; it weighed 8 lb. The fact that the baby was not asphyxiated in either this case or Case III, in both of which eight injections were given, shows that the risk does not depend on the length of labour nor the number of doses, but on other factors, including faulty technique.

The next case illustrates how small the dose should be in some cases, and the danger of a routine method of treatment.

CASE VIII.

Primipara. Premature rupture of membranes.

At 9 a.m. I found the membranes had ruptured, but the os was only slightly dilated. Pains were not severe during the day, but at night there was a good deal of suffering and no tendency to sleep, so morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{100}$ gr. were injected at 10 p.m. The patient soon went to sleep, and slept heavily for nine hours. The next day the pains were never severe, so no treatment was necessary, the patient sleeping a little at night. On the morning of the third day pains were severe, so morphine $\frac{1}{2}$ gr. and hyoscine $\frac{1}{100}$ gr. were given at 9 a.m. Subsequent doses of hyoscine $\frac{1}{100}$ gr. were given at 12.30 p.m., 3.20 p.m., 6 p.m., 8.20 p.m., and at 10.30 p.m.; altogether six doses were given in the third day of labour. The child was delivered with forceps at midnight; it was not asphyxiated. The patient remained asleep an hour longer; when she woke up she thought it was 9 a.m., and said she had felt no pain that day.

Amnesia: The Memory Test.

The object of treatment is to produce, not analgesia, but amnesia (loss of memory for recent events). It should begin as soon after labour has started as there is real suffering. It is not advisable to administer a dose within two hours of delivery, so a little chloroform, or chloroform and ether, may be required in the final stages. Absolute quiet in a darkened room is essential, no one but the necessary attendants being admitted; the patient must not be encouraged to talk, but reasonable questions should be answered. The patient must be treated as if under a general anaesthetic, the catheter being used if necessary. The medical attendant ought not to leave; under no circumstances should he go, unless he can be quickly recalled by telephone. Close supervision is required. The fetal heart must be examined before each dose, but frequent examinations are not desirable. On two occasions immediate delivery was indicated by slowing of the fetal heart, but in both the child was saved.

Till considerable experience has been obtained, no dose after the second must be given without the use of Gauss's memory test; the patient is shown some well-known object, such as a feeding bottle or a stethoscope, and half an hour later shown the same object and asked if she has seen it before; if she cannot remember she is still so far

under that a further dose is dangerous. With experience, however, I found like several others that I can gauge whether the patient is under or not by noticing her demeanour and attitude and conversation. This is easy if a few minutes after one has conversed with the patient she turns to the nurse and asks if the doctor has come yet this morning. The patient never required a second dose who, when asked if she had had any pains since I left the room, said, "Oh, I don't know; have I, nurse?" Another patient who had been under treatment for twenty hours and had repeated injections, settled the question of an additional dose by saying, "Oh, doctor, the pains are beginning to get a little sharp; you will begin the twilight sleep soon, won't you, and not make the mistake of leaving it till it is too late."

At first some failures in relieving pain are all but inevitable; with increased experience success may be assured. Time, however, is essential; many go under in twenty minutes or less and never require another dose; others require two or three doses, or even a little whiff of chloroform after the third dose. More than three hours, therefore, may elapse before the patient is under. Partly for this reason, and partly because the worst cases of asphyxia occur if the child is born within a few hours of the administration of morphine, it is not wise to carry out the treatment unless the patient presents herself not less than four hours before delivery may be expected.

In illustration of my contention that failure to relieve suffering is due to faulty technique, I may state that of the thirty hospital cases only three were unsuccessful, and two of those occurred in the first three of the series; the first was due to too small an initial dose, which was not repeated; another was due to beginning too late. In the thirty private cases, which I did not begin till after I had had several in hospital, four were unsuccessful in that they got but little relief; three of these occurred in the first four; two of them might be called partial successes, especially as one was so satisfied that she returned for the same treatment. As illustrating the value of improved technique I may say that although her second labour was as long as the first, and she only had the same quantities of the drugs, yet she said she never felt any pain from the time of the first injection. The two complete failures were due to beginning too late, the patient having been in labour several hours and being nearer delivery than I estimated.

It is sometimes said that the use of scopolamine-morphine necessitates more frequent employment of forceps; in the thirty private cases forceps were applied ten times—not a big percentage—as it is my custom to terminate labour with as little delay as possible, and several patients came because they had contracted pelvis, and had had difficult labours previously. In the thirty hospital cases forceps were applied six times.

In the hospital cases labour was very long—twenty-four and a half hours on the average; this is not the effect of the drugs, as most were primiparae, and many had already been many hours in labour before they came under treatment. It is to be explained by the fact that in a hospital where patients are admitted only after labour has begun, few, if any, cases of easy labour are available for treatment. In the private cases, where treatment could be started at the beginning of labour, the average time was 22.6 hours for primiparae and 7.2 for multiparae; this does not differ much from the average, especially if allowance is made for the fact that rapid cases of labour are necessarily excluded.

Summary and Conclusions.

The great bugbear is an asphyxiated or stillborn baby; in the absence of an obstetric abnormality which would with any treatment have produced the condition, faulty technique is to blame. In the series of thirty private cases seven babies showed some degree of asphyxia; four of those occurred in the first seven; the three others presented only a mild degree (oligopnoea) and two of these occurred with contracted pelvis. In the first of the asphyxiated cases forceps were required; the next was a small child more than two months premature, while the mother of the third had had phthisis and a previous miscarriage, and in this pregnancy had suffered from severe tachycardia. In the series of thirty hospital cases there were six cases of asphyxia; three of them occurred in

the first eight. In addition to the thirteen cases of asphyxia in the whole sixty, four were stillborn; only one of these occurred in the private cases; as the fetus was macerated and only one dose had been given four hours before birth, the drugs were not to blame. The three others were hospital cases of contracted pelvis who ought to have been treated by induction or Caesarean section, but only came into hospital after being examined outside and after being in labour for many hours. In one, forceps having been applied unsuccessfully both before and after admission to hospital, version was performed, but the aftercoming head had to be perforated. In the second, a primipara, the child was born after more than seventy hours of labour; only one dose was given, and this was not responsible for the delay, but the facts that the child weighed 8 lb. and the diagonal conjugate measured only 3½ in. The third was a breech case in a multipara; labour lasted for thirty-four hours, there being great delay in the extraction of the aftercoming head. These facts, and the further facts that several cases had pelvic contraction, while one was a face case, one an occipito-posterior persistent lasting twenty-one hours and delivered by forceps, one a twin labour lasting sixty-three hours, both babies being born alive and not asphyxiated, one a rigid cervix treated by version forty hours after labour began, and another a rigid cervix treated by dilatation and the introduction of a Champetier de Ribes bag, labour lasting seventy-seven and a half hours, show that the fetal mortality is not increased. In two cases forceps had to be used owing to slowing of the fetal heart; both babies were saved.

Some patients had only one dose, but most a larger number; three had eight injections and one nine, the average number being 2.8 in hospital cases and 3.13 in private practice. Several patients slept continuously, others slept in the intervals, waking when pains occurred, but remembering nothing afterwards. One patient said the baby was not hers, as hers was still unborn, the house-surgeon having given her an injection which had stopped everything! In the thirty hospital cases three had morbid temperatures, but two of these had been examined before admission. In the thirty private cases only one (Case vii) had a morbid temperature. Two patients, one in hospital and one in private, had some *post-partum* haemorrhage, for which the uterus was plugged. One hospital patient was peculiar for two days after treatment; her husband said she was of a very excitable nature. All the patients did well afterwards, and all were able to go home in fourteen days. All the babies were satisfactory.

The drugs are powerful and treatment must not be lightly undertaken, but with experience, care, and close supervision the treatment does not involve any risk other than those inherent in labour itself. The relief of suffering is an enormous gain, but an even greater advantage is that, owing to the elimination of all nervous shock and exhaustion, patients are well when they wake, and present a marked contrast to those women who have gone through in the ordinary way. The close supervision and control of the patient in bed reduces the risk of infection, and enables all emergencies to be promptly dealt with. The diminished fetal mortality and morbidity of the mother shown in all statistics of cases treated on Gauss's lines follow as a matter of course.

OBSERVATIONS ON PAINLESS CHILDBIRTH.

WITH NOTES OF FIFTY CONSECUTIVE CASES TREATED
BY THE HYOSCINE (SCOPOLAMINE) AND
MORPHINE METHOD.

BY

MARGARET VIVIAN, L.M.S.S.A.,
BOURNEMOUTH.

So much has been written both for and against the use of the hyoscine (scopolamine) and morphine method in labour that a brief account of fifty consecutive cases in which the treatment was successfully administered may be of interest.

Dosage.—When the scopolamine-morphine method first came into prominence in this country we were told that, in order to ensure success, it was essential for the practitioner to remain in attendance throughout the labour.

Careful observation was said to be necessary to determine the dosage, and numerous elaborate tests were given for ascertaining whether the patient were in the required state of semi-narcosis. If it were true that the practitioner could not safely leave the bedside, this fact would in itself constitute an insuperable objection to the employment of the method in a very large number of cases. There are very few practitioners, especially in war time, who could devote so much time to each maternity case, and, even if they could do so, the fee would necessarily be prohibitive in the great majority of cases. Moreover, a method that demands such close observation suggests an undesirable element of danger.

In my first cases I strictly obeyed this rule, never leaving the bedside after the administration of the first injection. By keeping a careful record of the dosage, I soon came to the conclusion, however, that as good results could be obtained by adhering to a fixed dose, which need be varied only under abnormal conditions such as individual idiosyncrasy, or unduly prolonged labour due to uterine inertia, or any other cause.

My experience has taught me that the best results are obtained by means of a large initial dose administered as soon as the pains are strong and regular, followed by a small dose at intervals of two hours. One must use one's judgement as to the right moment for beginning the treatment, the size of the dose not being a reliable criterion.

My first injection consists of omnopon $\frac{1}{2}$ gr., with scopolamine $\frac{1}{100}$ gr., and within ten minutes of its administration the patient is almost invariably sound asleep, her mind remaining a blank until the confinement is over. The exceptions, which in my experience amount to about 6 per cent. of the cases, are those women who, probably owing to some personal idiosyncrasy, are apparently not susceptible to the drug. Though their faces are flushed and their pupils enlarged, they remain wide awake, and will subsequently state that they felt the pains with undiminished severity.

The second and subsequent injections consist of scopolamine $\frac{1}{100}$ gr., administered at two-hourly intervals, provided the pains continue to be strong and regular. If the pains cease, the injections are suspended until the pains resume their proper course. In primiparae, if the os is dilating very slowly and the pains occur only at long intervals, say every half or three-quarters of an hour, the scopolamine injections should be given every three or four hours only. In many cases I have given ten injections in all. In one case I gave fifteen, and in another sixteen, without any injurious results either to the mother or baby. The largest total amount of scopolamine was one-tenth of a grain, and the baby was not even sleepy when it came into the world.

It is, of course, undeniable that some babies are affected by the drug, and a few of them have caused me some anxiety, owing to their "blueness" and reluctance to breathe. In no single case, however, has a baby failed to respond to artificial respiration, hot and cold baths, etc., and I am of opinion that this condition of oligopnoea, though alarming to the uninitiated, is not really dangerous. I have entirely failed to find any connexion between oligopnoea in the infant and the amount of the drug administered to the mother: the worst cases occurred when only four or five injections had been given, while in the prolonged cases I have mentioned, in which fifteen and sixteen injections were given, the infants showed no signs of poisoning. It has been stated that if the opium or morphine is repeated after the first injection, the baby will be born "blue," and this would no doubt be the case if opium were given with each injection. In some prolonged cases, when a patient has become very restless, I have, however, added morphine $\frac{1}{4}$ gr. to one of the intermediate injections without in any way adversely affecting the baby.

By adopting the above-mentioned routine for the injections, the latter can safely be left to a trained nurse in an ordinary straightforward case, and the doctor, having given the first injection, will not be required until the head is showing. The confinement need not, therefore, occupy any more of the doctor's time than an ordinary case, and one of the chief objections to the method thus falls to the ground.

Duration of Labour.

It has been stated that labour is greatly prolonged, but I have found this to be the case only in a very minor

degree. The patient, being semiconscious, cannot of course help herself by bearing down, as a fully conscious patient can, and for this reason the labour is perhaps slightly prolonged. This disadvantage is, however, more than balanced by the advantage arising to the patient from the absence of shock.

One doctor told me that in every case in which he had attempted the method the labour pains had ceased immediately after the first injection, and he had consequently been forced to discontinue the treatment. I cannot, however, believe that he was correct in thinking that the cessation of the pains was due to the injection. How often has one not observed a temporary cessation of the pains in an ordinary labour where no injections have been given!

Of the fifty cases in which I have used the method, thirty have been perfectly successful; the patient has slept quietly throughout the labour, a slight change in the breathing being the only outward manifestation of the uterine contractions. Fourteen patients were restless and noisy, complaining loudly of each pain, and struggling violently during the actual birth. The next day, however, they remembered nothing, and showed no signs of exhaustion. Three cases were a complete failure, and the remaining three were multiparae, whose confinements were so rapid that there was time for only one injection in each case.

The Patient's Surroundings.

It is often stated that the method can be properly administered only in a nursing home or hospital and should never be attempted in the patient's own home. This is true to some extent, although in a private house, where perfect quiet can be obtained, together with the services of a competent nurse, there is no reason why the treatment should not be as successful as in a nursing home. It is of course absolutely essential that the patient should be kept perfectly quiet; the room should be darkened and the nurse should wear soft slippers and be careful to avoid all unnecessary disturbance of the patient. If the house is in a noisy street it is advisable to deaden the sounds by putting a little cotton-wool in the patient's ears. After the confinement, the nurse must wash the infant in another room and discourage conversation on the mother's part. If allowed to talk she will possibly recall isolated incidents, and may even fancy that she remembers the whole process of labour. Provided the baby is removed at once, and the mother kept perfectly quiet in a darkened room, the latter usually sleeps for several hours and remembers nothing on waking. If the patient seems restless and excited, I sometimes give an injection of morphine hydrochloride gr. $\frac{1}{4}$ after the conclusion of labour.

Of the fifty babies, forty-nine are alive and well, the exception being premature and stillborn. Nine were born "blue," but of these only three caused me any anxiety. In four cases forceps were necessary, and these were the only patients to whom a little chloroform was administered, more as a measure of precaution than from any real necessity.

The effects of the drugs pass off rapidly; in a few cases the patients' pupils were dilated the next day, and some of the mothers complained of being very thirsty. There is one precaution which must never be neglected—that of passing a catheter at regular intervals if the labour lasts more than eight hours. If this is not done the labour is likely to be considerably retarded.

The drugs used for the injections were Hoffmann-La Roche's omnopon ampoules and Parke Davis's scopolamine tablets.

AN illustrated pamphlet, entitled, "Britain's greatest need," has been issued by Dr. Barnardo's homes pointing out the importance to the empire of securing that, so far as possible, every child born within its limits shall be brought to man's estate. For fifty years Dr. Barnardo's homes have been doing the work which has been so urged upon us during the war. In that time the homes have taken charge of 84,000 children, and 10,264 Barnardo boys are now serving in defence of their country. Since war broke out Dr. Barnardo's homes have admitted 5,033 boys and girls, and with increased support many more could be taken. Gifts of all kinds—money, food, clothing, blankets, etc.—will be welcomed by the honorary director, Mr. William Baker, M.A., LL.B., at head quarters, 18 to 26, Stepney Causeway, London, E.1.

Memoranda:

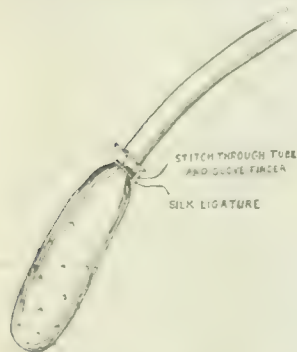
MEDICAL, SURGICAL, OBSTETRICAL.

A MODIFICATION OF CARREL'S TUBE FOR USE ESPECIALLY WHERE THERE IS DANGER OF PRESSURE ON TISSUES.

War surgery, more than any other surgery, has demonstrated the amount of damage that drainage tubes cause to tissues owing to the devitalizing effect of continuous pressure; and the larger, thicker, and more closely fitting the tube, the greater is the superficial pressure necrosis. The detrimental effect on tissues, together with the small advantage gained over other methods of drainage, has resulted in their disuse to a great extent.

There is one condition, however, in which some form of tube is necessary for the conducting and distributing of fluids to parts of a wound—that is, in the "Carrel-Dakin" treatment. Even the small and moderately thin-walled Carrel's tube is not infrequently instrumental in causing some superficial pressure necrosis.

A small perforated tube of rubber, like a diminutive colotomy tube, would not be liable to cause such damage. Such a tube not being available I used, with satisfactory results, a finger, or part of a finger, of a rubber glove, perforated freely with small holes, tied on to a small tube, and made secure by a stitch through both finger and tube. When such a tube was placed in a wound by the side of a Carrel's tube, the bed where the glove finger had lain showed little or no tissue damage, while the Carrel's tube frequently caused a gutter with a grey surface.



Modification of Carrel's tube. The holes in the glove finger may be made either with the points of fine scissors or with a fine punch.

The finger part of such a tube can be placed against an exposed vessel, nerve, or brain substance with the minimum amount of damage to these tissues.

One advantage of some considerable importance is that the tube rarely becomes blocked with exudation from the wound surface, a disadvantage which is fairly common when Carrel's tubes are used.

Some months ago I first made use of this arrangement, which has proved very satisfactory, both in my own unit and in other casualty clearing stations.

H. DRIFFIELD LEVICK, B.S., F.R.C.S.,
Captain R.A.M.C.(T.F.).

A CASE OF MELÆNA NEONATORUM SUCCESSFULLY TREATED BY THE INJECTION OF BLOOD SERUM.

THE following notes may prove interesting as adding another successful case to the series of three recorded by Dr. Robert Hutchison in the *BRITISH MEDICAL JOURNAL* of November 10th, 1917:

A male child was born at 3 p.m. on March 19th, 1913. The mother was a primipara, and delivery was by forceps. At 8 a.m., on March 22nd, it was noticed that there had been a large hæmorrhage from the bowel. The blood was liquid and very dark. Treatment was by calcium chloride and gelatin, but the hæmorrhage continued all day. At 9 p.m., as the child was evidently sinking, the father was bled from the arm, and 10 c.cm. of blood serum were injected under the skin of the child's abdomen. The hæmorrhage never recurred. Unfortunately the child suffered from a congenital heart affection, from which he died at the age of twelve months.

Dr. Hutchison suggests that normal horse serum or antidiphtheritic serum would probably prove as efficacious as human serum. In the only case of hæmorrhage in which I have tried it—that of a hæmophilic boy with a small wound of the tongue—the former proved inefficacious, and the patient bled to death.

London, S.E.

ALEX. ROSE, M.D.

Reports of Societies.

SERUM DISEASE FOLLOWING INTRATHECAL INJECTIONS.

At a meeting of the Section of Medicine of the Royal Society of Medicine held on November 27th, the Vice-President, Surgeon-General H. D. ROLLESTON, R.N., who was in the chair, read a paper comparing the manifestations of serum disease after the intrathecal and after the hypodermic method of injection. Speaking of meningism due to serum disease, he said that injection of serum into a healthy intrathecal space set up an aseptic chemical meningitis, whereas injection of antineurococcic serum in cerebro spinal fever reduced the inflammatory process, presumably by destroying the meningococci. It had been pointed out by Neal, Abramson, and others, that injection of serum into slightly inflamed meninges set up in most cases an acute aseptic meningitis shown clinically by fever, rigidity of the neck, and other signs of meningeal irritation. It was desirable to have some means of determining whether there was a genuine relapse which would be benefited by serum, or whether the condition was one of meningeal irritation or meningism and a manifestation of serum disease which might be intensified by a further injection of serum. The diagnosis could be made by examination of the cerebro-spinal fluid for the presence of meningococci, and also for the normal reducing agent (glucose) which was absent in relapses of meningitis and present in the meningism due to serum disease. This meningeal manifestation of serum disease was peculiar to intrathecal injections of serum. It did not appear to result from large quantities of serum given, nor could it be explained as due to an intrathecal injection within a very few days of the appearance of the serum rash, but was probably connected with some hypersensitiveness of the meninges. It did not appear to be proved that the incidence of serum disease was higher after intrathecal than after the hypodermic method of injection. Intrathecal injection of serum necessarily involved risk of inducing increased intracranial pressure and might introduce a secondary infection; but it was not proved that the volume of serum injection favoured a secondary infection of the meninges from the blood stream.

Dr. CLAUDE B. KER gave an account of a series of 60 cases treated with Flexner's serum. Of 48 patients who lived nine days or over, 36, or 76 per cent., suffered from serum sickness. The outstanding feature was the rash; arthritis was noted in 6 cases only, and in these was very severe. Adenitis of the cervical glands was present in 2 cases. An interesting point was the occurrence in 9 cases of prodromal fever for twelve or twenty-four hours before any other symptoms. More than a third of the total reactions commenced on the ninth day. In 19 cases the rash was troublesome for four days or over, and in 3 it lasted for fully eight days. It was now well understood that the introduction of horse serum into the spinal canal was liable to set up a local reaction, which might be described as an aseptic meningitis, so that the possibility of a fluid becoming more turbid from this cause must be remembered, and in the absence of germs it was probably wise not to take an increase of turbidity too seriously. The great number of rashes might suggest that intrathecal injection was more liable to cause them than the subcutaneous method, but he did not believe that this was the case. It was not unusual to find that the use of certain consignments of horse serum was followed by the appearance of an unusually large number of rashes, and it was generally admitted that the blood of some horses was more irritating than that of others. He thought that this might be the explanation of the large number of reactions following the use of this particular serum of Flexner's. His records did not show that the occurrence of the rash was much influenced by the dosage. He thought these attacks of serum sickness were of advantage rather than otherwise, many cerebro-spinal patients being much improved by these reactions. The benefit was probably due to some stimulation of metabolism and the processes of repair. The Fehling test was a useful means of determining whether a rise of temperature, with an exacerbation of meningeal symptoms, was caused by a reaction or by a recrudescence of the disease.

Lieut.-Colonel E. W. GOODALL said that prodromal fever had been noticed after the subcutaneous injection of serum. Fever might occur without a rash. The proportion of rashes varied with the serum used. No doubt, if the patients who died during the latent period were excluded, 40 per cent. of the remainder would have had rashes. The severity of serum sickness was not nearly as bad as when serum was first introduced.

Dr. J. D. ROLLESTON thought that the severity of the rashes was determined by the size of the dose and varied indirectly to the severity of the attack.

Major C. R. Box drew attention to the absence of rashes when precipitated antitoxin was used. Numbers of men in the army had been injected with tetanus antitoxin and might get cerebro-spinal fever later. What was the likelihood of anaphylaxis occurring in such men? He thought that the percentage of rashes might be linked up with the amount of foreign protein given. Figures from two general hospitals showed that the rashes only amounted to 2 to 5 per cent. of the cases injected, and might be due to the small amount of protein administered as the unitage was high.

Lieut.-Colonel GOODALL said that the strength of unitage had gone up, but the volume to be injected had gone up also. Many soldiers had frequent injections of antitoxin, but the number who got anaphylaxis was very small.

Dr. R. A. O'BRIEN also spoke, and Surgeon-General ROLLESTON briefly replied.

Reviews.

CLINICAL TUBERCULOSIS.

THE world-wide campaign against the ravages of tuberculosis has now been in progress for many years. The results that have hitherto been obtained can be examined by the light of experience, and a comprehensive treatise on the whole subject, written by one who has had the fullest opportunities for observation and study, must be welcomed. Such a treatise, contained in two portly volumes, has recently been presented, under the title *Clinical Tuberculosis*,¹ by Dr. F. MARION POTTENGER, the Director of the Sanatorium in Southern California which bears his name.

A very large number of patients, suffering from tuberculosis in many forms and stages, have of necessity passed through his hands, and in his work he has had able assistance from highly qualified colleagues who have added to the value of the book by their own contributions upon special departments. With the feeling that in times past there has been too great a tendency to rely upon laboratory findings and pathological theories founded upon them, Dr. Pottenger has endeavoured to approach the subject from the clinical side, to study to understand the symptomatology, and to correlate it with pathological findings. His practice has brought him into contact with tuberculosis of the lungs more than with the disease as affecting other organs, but he emphasizes the fact all through his work that local disease in any part of the body must of necessity have some effect upon the function, if not the structure, of other parts and organs, and that these effects are part of the malady that has to be treated.

Although every aspect of a very wide subject comes in for review, the author disclaims any pretensions to the production of a general textbook. He has brought together a series of essays and monographs in which each subject is critically examined. This arrangement of necessity leads to a good deal of overlapping and repetition, but such repetition applies mainly to essential points, and serves to emphasize cardinal facts upon which special stress should be laid. Among these may be instanced the infection of lymphatic structures at early periods of attack. The actual point of entry of the bacillus into the human system in any individual case can never be determined. The first indications are almost always observed in lymphatic tissues. In young persons this is especially manifest, as in them the bacillus has a virgin soil for development, not yet protected in any way

by previous infections. The detention of the bacillus in the lymphatic structure is immediately followed by the formation of protective substances, and the fact is well known to all who have had experience of tuberculosis as a life-long disease, that early glandular infection appears to exercise prophylactic effects, even in cases where it has advanced to suppuration. Hence Dr. Pottenger is averse to the removal of lymphatic glands or of tonsils when affected by tubercle, unless they are causing obstruction.

In reviewing so comprehensive a book as this, it is only possible to refer to a few of the main points. Amongst these we may instance the discussion on the relative frequency of bovine tuberculosis, which he considers to be negligible after the age of 10 and only present in young children in a comparatively small proportion. Clinically the two types are indistinguishable and the diagnosis must always be made in the laboratory. Infection by way of the tonsils or through the mucous lining of the intestines is first delayed in its passage through the lymphatic glands or channels. In such organs as the liver, the kidneys, or the spleen the secondary metastases, which may occur if the infection passes the glandular filter, are not at first indicated by symptoms, and in the lung such infection must have produced a good deal of local disturbance before any physical evidence of its presence can be obtained. In the meninges, on the other hand, the disease is very quickly indicated. The proclivity of the apex of the lung in young adults to tuberculosis is explained by the fact that during the years of growth the gradual change of shape in the thoracic cage leads to stagnation of circulation through the upper parts of the lungs. Hence the bacilli passing through them become arrested, whereas in children, where the circulation is much the same through all parts of the pulmonary area, there is no such tendency to apical disease. Diagnosis of present disease by all the usual methods is adequately described, but the value of the x-ray evidence is not estimated quite so highly as by many of its advocates in this country.

The effects produced by the tuberculous poison upon the nervous system are so various and complicated that no definite scheme of cause and effect can be formulated. The author is led to the conclusion that the disturbance of the normal balance between the vagus and the sympathetic is the most obvious phenomenon, and this in turn opens up an endless vista of speculation. The organic and mental results of such disturbance, and the formation of auto-genous toxæmic substances and their effects, are dealt with at considerable length. Due regard is paid to Head's observations on the relation between local tenderness and visceral disease.

The second of the two large volumes is devoted to the subjects of treatment and of complications. In many respects Dr. Pottenger's views and consequent practice differ from those of many other clinicians, but he states very clearly the grounds upon which such difference is founded and fully recognizes that there may be several roads to success. To aid natural processes, rather than to attempt to neutralize the effects of the tuberculous poison by outside means, is the main idea that he inculcates. Hence he considers that tuberculin, in common with other remedies, should only be used with that object and not with the view of direct attack. Of climatic treatment, as such, he speaks with considerable reserve, and deprecates over-confidence in its powers.

Throughout the many chapters in which he describes the numerous aspects of his subject, Dr. Pottenger keeps an open mind and makes it clear that successful results are best to be obtained by careful and continuous study of the individual, coupled with experience of the disease as occurring in like cases. His own experience is recorded within the covers of a work that deserves cordial recognition, not only as a full and comprehensive account of the disease as it appears to the clinician, but as embodying the mature thoughts and opinions of an accomplished clinical observer.

RADIOGRAPHY.

THE second edition of ROBERT KNOX's book on *Radiography and Radio-Therapeutics*² has followed in less than two years after the first. In reviewing the first edition we

¹ *Clinical Tuberculosis*. By Francis Marion Pottenger, A.M., M.D., LL.D., Medical Director Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, California, etc. London: Henry Kimpton, 1917. (Med. 8vo; 2 vols.; pp. 707 and 713; illustrated. £3 3s. net.)

² *Radiography and Radio-Therapeutics*. By Robert Knox, M.D. Second edition; first volume, Radiography. London: A. and C. Black, Ltd. 1917. (Sup. roy. 8vo, pp. xxv + 384; 490 illustrations. 30s. net.)

expressed the opinion that it was by far the best book on the subjects in the English language; we see no reason to alter this opinion. The present edition has been so much enlarged that the book is now in two volumes: the first—the one now under review—dealing with radiography; the second—which will appear later—with radio-therapeutics. The present first volume is now as large as the original book, some 150 pages having been added, with a number of new illustrations. The general construction has been adhered to, the first 130 pages dealing with the instrumentation of radiography and a full description of various types of tubes, including the Coolidge and hydrogen tubes. A short account of the installations necessary and suitable for military service has been added to this section. An interesting account is given of the apparatus for the production of single-impulse radiographs, and two very fine examples of the stomach and bowel after an opaque meal show the possibilities of this method of plate production.

The chapter on photographic technique is clear and concise and does not enter into unnecessary detail of what, after all, is a very simple process. Following this is a chapter on stereoscopic radiography, and then a comprehensive account of the localization of foreign bodies, in which all the principal useful methods are fully dealt with. This is a valuable addition to the book, as this subject was not treated of in full in the first edition. There is a short account of radiography as an aid to the surgeon and physician in war time, with special reference to gas gangrene. An important, and sometimes overlooked, part of radiography follows—namely, the radiography of normal bones and joints, the feature of this chapter being the description of the skull and accessory sinuses, with special reference to the technique. Very remarkable negative and positive pictures of the antero-posterior view of the living human skull are striking evidence of what is possible in this direction. Chapters on the injuries of bones and joints, diseases of bone, differential x-ray diagnosis in diseases of bones and joints, follow in sequence, and then very full accounts are given of the examination of the thorax and its contents, the examination of the alimentary system, and the radiography of the urinary tract.

The illustrations are a valuable feature of the whole book. They are all of superfine excellence and are well chosen to visualize the letterpress description. Side by side are reproduced the negative and the print from the negative, and the contrast between the two is distinctly educational from the point of view of the reading of radiographs. Although many of these reproductions are quite small, it is remarkable how the various points are brought out, and we congratulate the author on the care which has evidently been exercised in making the blocks and in printing from the same.

The general arrangement of the contents is admirable, and the simplicity of the writing renders it an easy matter to follow the descriptions of the author. When one considers the scope of radiography at the present time, and the enormous number of conditions in which it can render diagnostic aid, it is remarkable that so much concise and clear information can be given in one volume; it does not appear that a single point has been overlooked.

Whilst this volume should appeal to every one even remotely interested in radiography and its possibilities, it is especially adapted for the use of the student. It should be read not only by the student and qualified man who is seriously taking up the study of radiography from a professional point of view, but also by every medical student before he or she qualifies. Radiography has now become of great importance from a diagnostic point of view in both medicine and surgery, and a book of this kind emphasizes this in an unmistakable manner.

NOTES ON BOOKS.

THE four large volumes of Dr. H. M. HURD's *Institutional Care of the Insane in the United States and Canada*,^{*} a monumental work, give a detailed historical account of what has been done for the mentally afflicted in North America from the earliest days. The history of each of

^{*}The *Institutional Care of the Insane in the United States and Canada*. By Henry M. Hurd, William F. Drewry, Richard Dewey, Charles W. Pilgrim, G. Alder Blumer, and T. J. W. Burgess. Edited by Henry M. Hurd. Baltimore, Md.: The Johns Hopkins Press. 1917. (Med. 8vo. Four volumes; illustrated.)

the many institutions and asylums is given, and photographs of the present buildings are in many cases added. Lists of the past officers are included, and there are many biographies, often with portraits, of eminent North American alienists. Dr. Hurd is to be congratulated upon the success with which he has carried out the collection and colligation of the numerous interesting records contained in these volumes. Naturally they will appeal most strongly to readers across the Atlantic; but in their record and analysis of success and failure in attacking a problem of great importance in all civilized communities—namely, the care of the insane—they should find many readers throughout the world.

VOLUNTARY FOOD RATIONS FOR CHILDREN.

THE Food Ministry, when issuing the new voluntary rations three weeks ago (November 17th, p. 656), laid stress on the fact that children were not rationed. It has now considered it advisable to issue the following suggestions for average weekly rations for children. It recognizes that the needs of individual children differ greatly, and that some children may require a more liberal provision, while others may need less. It is strongly advised that boys and girls whose food is rationed should be weighed every fourteen days at the same period of the day before a meal, and a record kept of their weight without clothes; if the weights are stationary or decline after two consecutive weighings, the allowance of food should be increased.

Voluntary Rations for Children and Young People.

Ages.	Bread.	Other Cereals.	Meat.	Butter, Margarine, etc.	Sugar.
	lb. oz.	oz.	lb. oz.	oz.	oz.
Boys and girls: 0-5	3 0	6	1 0	6	8
6-8	3 8	8	1 8	8	8
9-12	4 8	10	2 0	10	8
Boys: 13-18	6 0	12	2 0	10	8
Girls: 13-18	5 0	10	2 0	10	8

The explanations as to the meaning attached to the various terms, "bread," "other cereals," "meat," etc., are the same as those which apply to adult rations printed in the JOURNAL at the page mentioned.

The Food Controller is also issuing the following suggestions with regard to the quantities of other foods which should, on the average, be supplied weekly to boys and girls whose consumption of bread, cereals, meat, and sugar is rationed in accordance with the above table:

Ages.	Potatoes.	Other Vegetables.	Milk.	Cheese.	Eggs or Equivalent.	Fish.	Jam and Syrup.	Cocoa Equivalent.
	lb.	lb. oz.	pts.	oz.		oz.	oz.	oz.
Boys and girls: 0-5	3	0 8	2	—	2 only	—	12	—
6-8	4	1 0	2	1	2 ..	—	12	1
9-12	5	1 0	2	1	2 ..	8	12	1
Boys: 13-18	7	2 0	2	2	3 ..	12	12	1
Girls: 13-18	5	1 0	2	1	2 ..	12	12	1

If any article of food should not be procurable, an equivalent in some other form should be supplied, and the following list of the quantities of different foods approximately equal in food value is given:

Milk	1 pint	Potatoes	1 lb.
Eggs	5 only	Other vegetables	2½ ..
Fish	1½ lb.	Jam	6 oz.
Cereals	2 ..	Cocoa	3 ..
Meat	4½ oz.	Bread	5 ..
Cheese	3½ ..		

We propose next week to publish a short study of the value of these rations with reference to the special conditions of nutrition in growing children.

British Medical Journal.

SATURDAY, DECEMBER 8TH, 1917.

THE FOOD POSITION.

THE responsibility of the medical profession is second only to that of the Government with respect to the formation of correct opinions upon the food problem, and we therefore make no apology for returning to this very serious subject. We said last week that the relation between work performance and energy requisite in the food was not a subject for rhetoric, but was capable of precise evaluation. It seems desirable to illustrate this by concrete examples. Unfortunately, the value of medical and physiological research in industry has only been recognized within a very recent period, so that data directly relevant to the problem are not numerous; sufficient, however, exist for the immediate purpose.

Concordant and relatively numerous observations show that for subjects who are neither very thin nor excessively obese the heat production while at rest in the recumbent posture is approximately 1 calorie per kilo of body weight and hour. In Benedict and Cathcart's series¹ their subject (a track cyclist) produced on the average 1.17 calories a minute when at rest on a couch; as the subject weighed 65.9 kilos, this works out at 1.06 calories per kilo and hour. Some unpublished observations we have seen upon a lighter man physically untrained give a slightly higher rate—namely, 1.18 calories per kilo and hour, but the experiments were less numerous and accurate; we may fairly take 1 calorie as a reasonable minimum, allowing for diminished metabolism during sleep. When the subject is not recumbent, but sitting up, although not performing measurable external work, the heat production increases. In Benedict and Cathcart's observations the increase was about 15 per cent.; with the untrained subject to whom we referred, the increase on passing from bed to sitting at a desk was as much as 30 per cent. We may provisionally assume an increase of 25 per cent. for sitting as compared with lying in bed.

The energy transformation during industrial work has been studied by Amar² using the Zuntz and Schumburg technique. His subject was a metal-filer working at the rate of 70 strokes of the file a minute. The man was a skilled operative, 38 years old, weighing 74 kilos; it was found that he did work equivalent to 20.8 calories (that is, nearly 8,840 kilogram-metres of work) per hour and liberated 290.5 calories per hour (inclusive of the thermal equivalent of the work). Hence, if he worked eight hours at this rate, slept eight hours, and rested or lounged the remaining eight hours, we should reach a total heat liberation of 3,656 calories. In an earlier monograph³ Amar reported some observations on twenty-seven Algerian labourers working moderately hard for four to six hours daily on a stationary bicycle. We have analysed these data, and the deduced formula connecting heat, work, and body weight gives for a man doing the same amount of work and of the

same weight as the metal-filer 3,327 calories daily. As the work of the Algerians was simpler and more easily measurable the concordance of the two results is as close as can be expected. From an estimate of the work performed by ordinary metal-filers, which Amar put at about 61,500 kilogram-metres in a day of eight and a half hours, the above calculation, which allows 70,720 kilogram-metres, surpasses the average. Hence it would not be unfair to assume that the 3,656 calories actually liberated or transformed by the body might be replaced by the calories in food *as eaten* when we take an average medium worker. Thus we reach a necessary ration for the moderate muscular worker of not less than 3,500 calories. Amar reckons the performance of severe work, such as that of a smith, at double the metal-filer's output. This is determined not from statistics of diets, which might, in theory, go beyond real energy needs owing to personal or national predilections; but from direct measurement of the physiological facts: It is further to be noted that our estimate is a minimum, since we assumed for the whole eight hours of the resting period of the day a rate of output which is in strictness only applicable to persons quietly sitting down. Owing to poor transport facilities industrial workers often have to walk quite long distances to and from the factory, and this exercise evidently demands more than $1\frac{1}{2}$ calories per kilo and hour. Benedict and Cathcart have provided ample and accurate data for very severe work on a bicycle ergometer, but it is evident that much more research is desirable to establish the precise quantitative relations of energy intake and work production for light work. If the medical profession instil into the public mind even the facts just recited they will have accomplished a salutary task.

In the current number of the *National Food Journal*, the official organ of the Ministry of Food, what is described as a stirring letter to Mr. Hoover from Lord Rhondda is reproduced. This letter contains the following passage: "To my own fellow countrymen I say quite frankly that what we ask of them in food economy is scarcely worthy the name of sacrifice. If those who continue to live and stay in comparative comfort at home (air raids do not really disturb the daily routine) are not willing to deprive themselves of quite unessential foods, then our bravest men have died in vain." This is finely phrased, but what is the real position from the scientific standpoint, that is to say, in the light of cold facts? It is demonstrable, and demonstrated, that the moderate worker needs 3,500 calories in the food to be able to perform his task. It is demonstrated in Dr. Hill's memorandum that our munition workers have on the average not much exceeded this ration but have, by rhetorical appeals and gaudy advertisements, been encouraged to change their normal habits of consumption from a mainly cereal to a largely animal diet. During the last weeks the Food Ministry has proposed to all workers, strenuous and sedentary alike, a way of living which leaves them to cover a heavy deficit of necessary energy from various articles, chiefly bulky vegetables, which are not evenly distributed through the country. Some of the officers of the Food Ministry may even have seen the long queues of shabbily dressed women and children waiting outside provision shops, shops which speedily set out the now familiar notice, "No butter, no margarine, no tea." We submit that these conditions cannot appropriately be termed "scarcely worthy the name of sacrifice," and that the phrase will become still less applicable before many months are over.

¹ *Muscular Work: a Metabolic Study*. Carnegie Institute, Washington, 1913.

² *Le moteur humain*. Paris, 1914, p. 527.

³ *Le rendement de la machine humaine*. Paris, 1910.

When such statements as these appear in official journals, it is not strange that the lay press has sometimes failed to grasp the real bearings of the situation. In the course of an article urging immediate resort to compulsory rations, the *Evening News* (December 1st) remarked: "The people want to feel that they are all sharing alike, and till they do the bulk of them will refuse to economize in order that a certain number may eat more than their share." The writer of these lines ingenuously supposes first that "the people" will be satisfied if food is equally divided among the population; and secondly, that a proportion of "the people," sufficiently large to diminish sensibly the available supply of foodstuffs, habitually overeat. But this is not true.

The scientific basis of the whole matter, that food if apportioned at all must be apportioned in strict accordance with the energy transformations demanded by different kinds of muscular work, is ignored in such utterances. It is not hard to forecast the danger which confronts this nation.

Bearing in mind the many precedents which this war has created, we may safely assume that the problem of compulsorily rationing a nation is now engaging the attention of a committee, and may consider it highly probable that this committee consists of some permanent civil servants, some more or less successful men of affairs who are civil servants *pro hac vice*, and a small minority of unofficial medical men. A classification will be made on paper, the public will be assured that it conforms to the requirements of scientific knowledge, there will be angry protests, recriminations, modifications, and muddle, with steadily increasing exasperation and superficially inexplicable strikes. We have no panacea for these evils, and believe that any compulsory system of rationing must, as pointed out by Mr. Underhill in his excellent letter in the *Times* of November 30th, lead to injustices and inequalities, but we think that the evils might be mitigated by an appropriate choice of expedients.

In our judgement the rationing authority should consist, not of professional or amateur civil servants with a small leaven of medical men, but of representative members of the medical profession, including physiologists, with a small number of persons familiar with the conditions of our great industries as assessors. Such a committee would have the inestimable advantage of perceiving what points needed fresh investigation, and of knowing where to obtain any needed assistance; with the help of factory experts it would be able to decide how far the conclusions deducible from existing data might be applied to particular classes of labour, and, in doubtful cases, could arrange for the carrying out of special tests. The technique of metabolism experiments on the lines of Zuntz, Benedict and Cathcart, and others, is less difficult than might be supposed, and it is perfectly practicable even in these times to extend such observations as those of Amar to important but so far unstudied classes of labour. A strong medical committee would not only secure the services of the right men but would know where these are to be found, which a lay body cannot be expected to do. The Royal Society's Food Committee, with the addition of representatives of clinical medicine, would fulfil many of the requirements we deem essential, but in that event it must no longer be an advisory body which the officials of the various Government departments concerned may ignore if they choose, but the paramount rationing authority, with full powers to engage such a staff and carry out such inquiries as are found necessary.

We are under no illusions in this matter, and have little doubt that nothing short of great public pressure will induce the Ministry of Food to deviate from the course followed by nearly all Government departments—namely, to pay eloquent tribute to the importance of science in words and to ignore it in deeds. No such pressure of public opinion at present exists; there is merely widespread discontent and uneasiness, which may be diverted into attacks upon "profiteers" or "food hogs" by one section of the press or demands for some unspecified form of "drastic action" by another. The medical profession must educate the public so that the essential elements of the problem are grasped, and we shall endeavour to furnish them with such aid in this great work as it is in our power to provide.

WAR NEPHRITIS.

THERE is room for discussion whether some of the diseases brought prominently into notice by war conditions are absolutely new, or are only affections which, rare in ordinary times, have become common in the altered circumstances of camps and exposure to unaccustomed conditions. Some, such as spirochaetal jaundice, are old, though our knowledge of them has been perfected since 1914, and their increased frequency has now made them matters of common knowledge. In other instances the question cannot really be settled until their causation is established. This applies to war nephritis, which Sir John Rose Bradford¹ cautiously remarked belongs to a type "at any rate not common in civil life," while Dr. Mackenzie Wallis² spoke of it as much commoner in war than in peace, as shown by the records of the American Civil War. The clinical manifestations are remarkable, and may be said to constitute a new syndrome. Intense dyspnoea is a special feature, and the question arises as to its relation to acidosis, for in renal disease dyspnoea may be caused by acidosis due to phosphate retention and not to accumulation of acetone bodies. For this inquiry, which should be made in the acute stage seen abroad, there have so far been few opportunities in this country; out of five cases investigated, three by Dr. Langdon Brown³ did not show acidosis. From the minute study made by Captains Shaw Dunn and J. W. McNee (p. 745), it appears that the morbid changes also present special features, clearly shown in the beautiful coloured drawings by Sergeant A. K. Maxwell reproduced to illustrate their paper. Various factors have been suggested, such as severe climatic conditions, mineral poisons, chlorinization of the drinking water, excessive protein dietary, intestinal toxæmia, direct bacterial infection (pyelonephritis), bacteria in the blood or urine, and septic foci elsewhere in the body; but all these factors seem to have been excluded, and until the causal factor has been determined it will be wise to suspend judgement before finally deciding that war nephritis is a new disease.

Dr. Mackenzie Wallis, from experiments on animals, arrived at the conclusion that in the early stage the urine contained an ultra-microscopic organism which he considered might be the cause of the ill effects produced in animals by injection of the urine. Captains Shaw Dunn and McNee obtained negative results from examination of the organs for bacterial and spirochaetal infection; streptococci found in the urine of some cases were also present in control catheter

¹ J. Rose Bradford: *Quart. Journ. Med.*, Oxford, 1916, ix, 125-137.

² Mackenzie Wallis: *Journ. Roy. Army Corps*, London, 1916, xxv, 259.

³ W. Langdon Brown, *ibid.*, 1915, xxv, 75.

specimens from men not suffering from nephritis, and so could not be regarded as of any importance, and blood cultures from forty acute cases remained sterile, even after prolonged incubation. There is therefore no evidence in favour of the view, rather widely expressed but resting on vague reasons, that the condition is infective.

Some points in the etiology of the disease are worth consideration. Officers very seldom suffer, the Indian troops in 1915 and civilians living in the war zone escaped, and no influence can be attributed to season, weather, or locality. It accordingly appears that war nephritis is connected with some special circumstance of the active soldier's life, and this deduction is to some extent supported by the incidence of the cases in small groups. A fresh point is that the dyspnoea is associated with a morbid change in the lung not corresponding histologically with any usual form of pneumonia or bronchopneumonia, but resembling the lesion due to inhalation of an irritant gas. The epithelium of the bronchi is desquamated, there is much leucocytic infiltration, the terminal bronchioles and infundibula show oedematous swelling and loss of epithelium, and many of the capillaries contain hyaline thrombi. These changes appear to resemble those described in a rather fatal form of purulent bronchitis in soldiers at the front and also in the Aldershot Command, characterized by intense dyspnoea (Abrahams, Hallows, Eyre, and French⁴). The renal changes, however, were quite different, namely, toxic degeneration in the tubular epithelium (Hammond, Rolland, and Shore⁵). Cases of war nephritis terminating fatally do so within two weeks from the onset, and in thirty-five out of the forty-two necropsies there was a striking uniformity in the morbid changes. In the kidneys the only gross change is a characteristic projection of the glomeruli, as pale transparent globules on the cut surface when seen through a hand lens. Microscopically there is a universal change in the glomerular capillaries due to obstruction by endothelial cells, which, when packed together, resemble syncytium. The circulation of the blood through the capillaries is so impeded that diminution in the urinary output might naturally be expected, but this does not hold good. Though spoken of as a diffuse intracapillary form of glomerulitis, there is a remarkable absence of the definite acute inflammatory changes so common in acute glomerular nephritis. The renal tubules contain blood which may be derived from the glomeruli. This diffuse change in the glomeruli forms a contrast to the patchy glomerular changes due to minute emboli in subacute bacterial endocarditis, and suggests that the capillary changes are due not to gross material emboli, but to some poison which from its chemical characters is suitable, like water, for excretion by the glomerular tufts, and the ingenious view is propounded that the glomeruli are picked out because they are specialized for the excretion of water. The changes in the lungs, as already mentioned, are compatible with the view of inhalation of irritant gases, and, in cases of chlorine gassing, extensive inflammation of the renal glomeruli has been described. Further, in both gassing and war nephritis miliary haemorrhages may occur in the brain. But as there is no evidence of gassing in any of the cases, it is possible that a blood-borne irritant has been excreted with the oedematous fluid into the bronchioles and infundibula. On this supposition the lung lesions might be secondary to those in the kidney, or the changes in both organs might be due to the same poison.

Thus, although the cause has not yet been determined, Captains Shaw Dunn, and McNea have, by a process of inductive reasoning based on the data amassed by their careful research, arrived at the conclusion that war nephritis is due to the selective action of an unknown poison on the glomerular capillaries. In connexion with the possibility of metallic poisoning, Sir Thomas Oliver (p. 755) instituted a careful investigation. Analyses by Mr. T. M. Clague showed the absence of lead from the cooking pans and drinking water conveyed in cleansed petrol tins at the front, and the presence of infinitesimal traces of lead in the bully beef and Maconachie ration. On the other hand, lead was found in the urine nine times in twenty-nine samples of urine from soldiers in the Northumberland War Hospital, and it was shown that bullets or shrapnel retained in the body may give rise to lead and albumin in the urine. The last observation is of considerable interest, but it is not of course suggested that this explains war nephritis. Irresponsible speculation is perhaps gratuitous in the face of such careful work, which, however, by limiting the cause to some circumstance special to the soldier's life, tempts the reader to wonder if from the shell-riven and corpse-saturated soil of the Western front some complex organic poison may in certain conditions contaminate the food or drink of those who are attacked by war nephritis.

EXPERT OPINION ON THE SANATORIUM TREATMENT OF TUBERCULOSIS.

THE recent discussion at the Medical Society of London has served to indicate the considered opinions of a large number of physicians and others who have had long practical experience in dealing with tuberculosis. That sanatorium treatment has not as yet fulfilled the expectations entertained when it was instituted has long since been obvious to every one. Neither the general case incidence nor the death-rate have been materially affected.

Reports from all sanatoriums contain records of a large number of early cases in which the disease has been arrested, but they also show that a great many persons have been under treatment without receiving anything more than temporary benefit, and that although life has been prolonged for a while, it has not been rendered useful to the community, the end being at the best postponed for a very few years.

It would thus appear that sanatorium treatment, if it is to fulfil the claims originally set up for it, must be utilized in accordance with the experience gained. If it be indeed the best means that we possess for restoring the consumptive to economic usefulness, why should it still be used for temporary repair of the economically useless? Other means for such repair are available, and the continued use of sanatorium treatment for other than incipient cases is hardly to be justified. It has been fully demonstrated that the available accommodation falls very far short of requirement and that under the present system only a very small proportion of such accommodation as there is can be said to be yielding the results for which it was provided. Greater discrimination is manifestly called for to distinguish between the curable case, needing long residence, the incipient case for which instruction only is necessary, during a short stay, and the cases which show no tendency to improvement and which should give place to the other classes when the nature of the malady is recognized.

⁴ Abrahams, Hallows, Eyre, and French, *Lancet*, 1917, ii, 377.

⁵ Hammond, Rolland, and Shore, *ibid.*, 1917, ii, 41.

Apart from the sanatorium question, upon which most speakers appear to have been agreed, the larger problem of environment was discussed, and although the part played by infectivity was fully recognized, its relative importance was not as uniformly accepted. While accepting the so-called massive infection as an ever-present danger, many authorities would appear to regard the more diluted forms of infection, to which so large a proportion of healthy persons are liable, as of minor importance unless specially favoured by unhealthy environment. As a general outcome of the discussion it would seem that sanatorium treatment from the public point of view has proved to be a failure, although it has rendered very material service to individuals.

Notification in like manner has not as yet provided the means for stemming the flowing tide of tuberculosis, but in the case of both these agents, the fault would appear to lie in the method by which they are applied. Neglect of notification is a serious fault, but neglect by public authorities to make proper use of the information it affords is another serious fault. The sanatorium should no longer be used for the patching-up of damaged lives, but should be strictly reserved for early and curable cases. For the diminution of the case incidence and the lowering of the death-rate other means must be found, since the sanatorium can no longer be regarded as efficient for these purposes.

AMERICAN HOSPITALS AND SURGEONS IN FRANCE.

The reference to the American medical units made by Sir Donald MacAlister in his presidential address to the General Medical Council calls to mind that it is not this year that members of the medical profession in the United States of America began to play a part in the war so far as the important section of it conducted by the British Expeditionary Force in France is concerned. The American Hospital outside the Neuilly gate of Paris, which at one time worked for the British as well as for the French forces, opened its doors within the first few weeks of the war; about the same time also an American motor ambulance team, which included a certain number of American medical men, also began to work, and not very many months had passed before more than one medical man of American extraction and education had successfully volunteered for service in the commissioned ranks of the Royal Army Medical Corps itself. It was also well before the first year of the war was over that a plan was working under which two university centres in the United States undertook to supply the medical staffs of not less than two base hospitals. The teams engaged to serve for not less than six months, a portion of them then returning home and being replaced by new arrivals. They were American units in the sense that the ward medical officers, surgical experts, and officers in charge of divisions, as also the officers in charge of special departments and the nurses, were drawn from the United States, while their administrative officers and the other ranks were supplied by the Royal Army Medical Corps. One of these hospitals is still at work alongside similar base hospitals more purely American in character which got to work this year. Of these there are about half a dozen, and though they bear the numbers of the British General Hospital units which they replace and whose habitations they inherited, they are all complete American units in the sense that each of them was formed in the United States as part of the general arrangements made by the American Red Cross Society in anticipation of the possible extension of the American army. At first there were only two of them, but now they are about fifty in

different parts of the United States, all raised to represent different localities or institutions. The first two units, representative of Harvard and the Western Reserve Universities, sailed for Europe within about five days of the time they actually received word from the Balfour Commission that their services would be valuable. These two first units were respectively organized by Professors Harvey Cushing and Crile, both of whom had previously in turn played a part in the affairs of the American hospital at Neuilly. The latter was for long worked on the principle that some distinguished surgeon formed his own team and brought it over ready to take charge of a section of the work for a period of three months; and the existing hospitals, to which reference has been made, seem to be constituted on the same principle, but without the time limit. All of them have been formed with the idea that when the moment comes they will step into their places as units of the medical departments of the American army, and each has at its administrative head an officer belonging to the medical corps of the standing army of the United States. The other officers, who take complete charge of the professional work, are medical officers of the Reserve Corps (M.O.R.C.), and do their work under an officer who is always a more or less well known medical man in America, and bears the title of Director. He also holds rank as a major in the American army, the other officers being commonly lieutenants and sometimes captains. In the American army, as in the French, the nominal rank of officers is commonly a grade or two lower than in our own. There are also usually attached to each of these American units in France two officers of the Royal Army Medical Corps, one of whom acts as registrar, and assists the administrative commanding officer in respect of the returns required by the British authorities, and the other as quartermaster. There are at present American registrars and quartermasters also. There are also a few R.A.M.C. of other ranks at some of these units. With these exceptions, the whole of the personnel is drawn from the United States. They work under the orders of the D.D.M.S. of the area in which they happen to be placed (they are distributed over the principal British bases in France) and enjoy the advantage of the assistance of the consulting surgeons and physicians attached to the bases concerned. Most of them seem to fly the Stars and Stripes, but otherwise there is nothing to differentiate them from the other hospital units—British, Australian, New Zealand, Canadian, and South African—serving with the British Expeditionary Force, except in respect of the uniforms of their officers, nurses, and other ranks. Nor do they differ in their internal arrangements as a whole, though they do differ materially in one important factor. They are strongly staffed on paper as compared with British hospitals of the same nominal size, and extremely strongly staffed in practice, since British hospitals in France seldom have more than about two-thirds of their official establishment strength. The United States officers in military hospitals are by no means the only American medical officers now in France. A large number of others not attached to hospitals have arrived in France during the past few months, and have been distributed among the armies at field ambulances, casualty clearing stations, and elsewhere. Whether the base units mentioned as well as the unattached medical officers will be withdrawn when the time comes for the American army to take its place in the line does not appear yet to be settled. Meantime the hospital units in particular are playing an exceedingly useful part, and the American medical officers as a whole are gaining an experience which will prove invaluable when the war for the American army really begins. Several of the American base hospitals are understood to have contributed surgical teams to the casualty clearing stations during the recent heavy fighting, and one American medical officer attached to a field ambulance is rumoured to have been recommended for the Victoria Cross.

MEDICAL STUDENTS IN THE RANKS.

THE Army Council has issued an Instruction (1751) providing that students who at the time of their enlistment (whether they enlisted voluntarily or were called up under the Military Service Acts) were actively engaged in medical studies and had completed the second year of their professional course, are, if eligible, and they so desire, to be transferred (regardless of their medical category) to Class W, or W (T) of the Reserve, or discharged if ineligible for transfer to the Reserve, for the purpose of resuming their studies with a view to obtaining a medical qualification. For the purpose of this instruction a man who had on or before enlistment completed two years of medical study, and who can within thirty-six months complete his professional curriculum and obtain his medical degree or licence, is to be regarded as a third year medical student. Students who do not pass the professional examination in anatomy and physiology within six months of resuming study will be recalled to the colours, and a student transferred to the Reserve, unless he resumes his medical studies and enrolls in an Officers' Training Corps, will be recalled. Any third year medical student who is desirous of being released from the colours under this instruction must apply through the usual channels, stating the date on which he desires to be released, and that he undertakes to resume his studies with a view to obtaining a medical qualification. A similar difficulty is being met in a different way in France. Owing to the prolongation of the war the supply of newly qualified men is drying up; casualties among medical officers have been numerous, the medical service in this respect coming next after the infantry. The French mobilization scheme provided that a medical student in a certain stage of the curriculum, reached usually at the end of the second year, should, when called up, be appointed *médecin auxiliaire*, a grade unknown in the British army, but corresponding with that of surgeon probationer in the Royal Navy, which itself is the revival of the old grade of surgeon's mate. The case of medical students who have not advanced so far has recently engaged the attention of the Ministers of War and of Education, and of the General Staff, with the result that arrangements have been made by which medical students from the ranks may attend special courses of lectures and eventually obtain credit for them when they seek a civil degree in medicine. Three schools of military medicine have been established for their benefit in regions behind the front, and have been duly provided with professors, libraries, and laboratories. Two courses of lectures are given, one for those who have completed the first year of medical studies, the other for those who have completed the second year. Each course is partly practical and partly theoretical, and will last six months. At the end of each an examination will be held and those who pass it will receive a certificate, showing that they are entitled to be recognized by the civil medical faculties as having advanced a year in their studies.

BUTTER SUBSTITUTES.

THERE is at present a great shortage of butter and margarines. The public are at the moment hardly able to get any margarine at all in many towns, and, as margarines are popularly supposed merely to differ one from another in price and palatability, any substituted fats placed on the market in bulk will command a ready sale. A word of caution on this point seems desirable. It is known that butter is particularly rich in one of the "accessory substances" necessary to healthy metabolism. Drummond and Halliburton, in a recent note,¹ have called attention to the fact that this substance is not found indifferently in all margarines. According to them, the oleo-oil margarines, which have as a basal fat an oleo-oil prepared from beef fat, can fully replace butter in the

dietary. Vegetable oil margarines, on the other hand, which are usually prepared from coco-nuts, peanuts, etc., are by no means equal to butter and the oleo-margarines in nutritive value. Apparently the fat-soluble accessory substance is present in the coco-nut fibres and absent from the expressed oil. Hence some of the vegetarian suets and lard substitutes, which are often deodorized coco-nut oil or hydrogenated cotton-seed oil preparations, are unsatisfactory. These results accentuate the importance of effectively salving animal fats, the unavoidable waste of which in small households is considerable. This again points to the desirability of organizing communal feeding, a matter which the Ministry of Food is bringing to the notice of the local Food Economy Committees. Naturally any effective organization will take time to develop, and it is important for the medical profession to be adequately represented on the local bodies, so that the primary physiological elements of the subject shall receive proper consideration.

FOOD CONTROL.

THE public does not yet seem fully to have realized the position into which this country has drifted with regard to the food supply. Its seriousness is obvious to the medical profession, and the facts put forward by the scientific advisers called in by the Government can leave no doubt upon the matter in the mind of any one who examines them. We fear, however, that they have not yet been fully faced even by the Government departments concerned. It is unfortunate that there is no single body authorized to deal with the matter in all its aspects. It is getting on now for two years since the Royal Society, at the request of the President of the Board of Trade, appointed a Committee on the Food Supply of the United Kingdom. This Committee made a series of reports—the first dated July 1st, 1916, and the last December 9th, 1916. They were presented to Parliament as a White Paper (Cd. 8241) in the first days of February, 1917. We are not aware whether the Food Ministry considers itself bound by this report made to another department, and we fear that there is some evidence that it has, at any rate, not given full attention to it. The question of the food supply is one which nearly concerns the Munitions Ministry also. Mr. Lloyd George, when at that Ministry, appointed a committee with Sir George Newman as chairman. It is a mixed committee, containing representatives of medicine and physiology, as well as of the Factory Department of the Home Office, together with Mr. J. R. Clynes, M.P., Mr. Samuel Osborn of Sheffield, and Mrs. H. J. Tennant. This committee has issued a series of most valuable memorandums. Its third, published just two years ago, dealt with the subject of industrial canteens, and one of the appendices to this—the first edition of Dr. Leonard Hill's important memorandum on the investigations of workers' food containing suggestions as to dietary—is dated July, 1916, although not published until three months later. We hope that the Food Ministry has given full attention to these memorandums, which, though they concern munition workers primarily, have an application to hand workers generally, and therefore have a direct bearing on the work of that Ministry. We do not feel quite confident that this is the case, for we note that the new edition of Dr. Hill's memorandum, revised with the assistance of Captain M. Greenwood, who before he joined the R.A.M.C. was statistician to the Lister Institute, was issued simultaneously with the Food Ministry's circular as to food rations, published in the middle of November, and the recommendations of the two documents do not tally. The Wheat Commission also has something to say in the matter inasmuch as it is the authority which controls imports. The London Corn Exchange, after hearing Sir A. Yapp, on December 3rd adopted a resolution expressing its recognition of the gravity of the food situation for the allies as a whole and of the difficulty

¹ Proceedings of the Physiological Society, *Journal of Physiology*, li. 1917, p. 8.

which would arise in this country under a system of compulsory rationing, but we seem to be drifting rapidly in this direction. What is happening with regard to sugar—the replacement of the household sugar card by individual cards—is a foretaste of the complexities from which the housekeeper may shortly be suffering. The Government departments concerned require unified advice founded on ascertained facts, scientific and commercial, in order to give the public a clearer lead.

ALBUMINURIA DUE TO SALICYLATES.

ALTHOUGH pharmacological and other textbooks mention albuminuria and haematuria as due to salicylates, this toxic result is so rarely recognized in ordinary hospital practice that it is rather surprising that Scott and Hanzlik¹ invariably found albumin, leucocytes, and cast-like bodies in the urine of sixteen persons receiving full doses (on an average a total of 210 grains in 30 grain hourly doses) of sodium salicylate. Nine of the subjects were suffering from rheumatic fever, and the other seven were normal. Possibly the large size of the hourly doses accounted for the urinary manifestations. The albuminuria was at its height when symptoms of salicylism were produced, and usually disappeared when the excretion of salicylates was finished—namely, about four days after the drug was discontinued. Hanzlik and Karsner² have continued the research by the hypodermic injection of sodium salicylate in dogs, cats, and one rabbit, with the result that albumin, leucocytes, cast-like bodies, and sometimes red blood corpuscles appeared in the urine. Albuminuria, if present before the experiment, was aggravated by it. The albuminuria is renal in origin, and microscopically there is a change in the kidney, varying from simple cloudy swelling of the epithelium of the proximal convoluted tubules to extensive cloudy swelling of all the cortical parts of the tubules associated with an acute intracapillary glomerulitis. The blood of practically all the animals showed a variable though definite accumulation of non-protein and urea nitrogen, an indication, therefore, of diminished renal functional efficiency as far as these tests are concerned.

TRANSFUSION OF WHOLE BLOOD.

PROFESSOR SIR EDWARD SCHÄFER, in a letter published elsewhere in this issue, directs attention to a research conducted by him nearly forty years ago, in which he demonstrated experimentally, on dogs and cats, the value of the transfusion of blood in cases of severe haemorrhage. He attached the vessel of the donor to that of the recipient by cannulae inserted into each vessel, connected by a piece of rubber tubing six inches long. The cannulae and tube were filled beforehand with sodium carbonate solution. It is remarkable that the suggestions made in this paper were not widely acted upon and their clinical value proved, because, in the light of our present knowledge, we feel sure the method would have been successful in the treatment of haemorrhage. The method of direct transfusion introduced and described by Crile³ is in some respects ideal. A single metal cannula is used to connect the two vessels; the severed vein of the recipient is pulled through the lumen of the cannula and then turned back like a coat sleeve over its end. The artery of the donor is then pulled over the open end of the vein which has been turned back over the cannula, and the vessels secured in this position by a ligature. When the clamps previously placed on the vessels are released, the blood must flow from donor to recipient over uninjured continuous endothelium, and does not come in contact with a foreign surface of any kind. We pointed out last week (page 695) the objections to the employment of direct as

compared with indirect transfusion. Experience has shown that the indirect method has many advantages, and the greater number of those who have had extensive experience in transfusion of blood have abandoned all direct methods.

MEDICAL CERTIFICATES FOR RECRUITS.

SIR DONALD MACALISTER, in his presidential address to the General Medical Council, which was reported in last week's SUPPLEMENT, made pointed reference to the duties of medical practitioners in connexion with certificates as to the health of men liable to military service. One case in which the Council took a grave view, though it postponed judgement, is reported in the SUPPLEMENT this week, and it appears that several instances of doubtful or irregular certification were reported by tribunals, but were not thought by the Penal Cases Committee to demand formal inquiry by the General Medical Council. The President's words made it quite plain that the vast majority of the profession are fully conscious of the obligations laid upon them by the State in this matter, but that a few practitioners still lay themselves open to suspicion by the National Service Ministry through the looseness, or irrelevance, of statements appearing over their signatures. Later in the session a suggestion was made that the President's remarks should be circulated to every practitioner, together with the familiar warning notice in regard to the giving of medical certificates, and a covering letter pointing out the need for clear discrimination between facts of which a doctor has personal knowledge and statements made to him. After a short discussion the President suggested that the National Service Ministry might itself solve the difficulty by indicating to practitioners the nature of the certificates which would alone be acceptable or helpful for its purpose, and the Council agreed to communicate with the Ministry in this sense. It is unfortunate that there would appear to be a certain number of doctors who have brought their profession into disrepute by the carelessness or bias shown in their written statements. We hope that this small minority may be brought to a higher sense of responsibility by the ventilation which the matter has now received. The difficulty is to reach them without appearing to lecture the profession as a whole on a point of elementary professional conduct.

EPSOM COLLEGE.

ONCE again we would draw our readers' attention to the financial needs of the Royal Medical Foundation of Epsom College—an institution which is linked to our profession by many ties. Epsom College was founded in 1853 by one of our number—John Porport. His object was to assist medical men by educating their sons well and economically. The College foundation, on which fifty boys are educated and maintained free of cost, is confined to the sons of medical men; beyond this there are no restrictions as to entry, and Epsom provides a first-class education for all its pupils on the lines of the great public schools of England. Created by the efforts of the medical profession, and containing always a nucleus of the sons of medical men, it is only natural that Epsom College should furnish many recruits to medicine. The association between the College and the medical profession is thus twofold. But besides training the young for the battle of life the Foundation cares for those who have fallen out of the ranks, by giving pensions to aged practitioners, or their widows, whose means are slender. In order to keep up this good work—the maintenance of fifty Foundation scholarships and of fifty pensions—an annual sum of not less than £4,500 has to be raised. In the fourth year of the war this task will be heavier than at any previous time. The question of ways and means has grown more difficult each year; for not only has the cost of living increased out of all knowledge, but the sources of revenue have shrunk through the withdrawal of many subscriptions. It would be a public

¹ R. W. Scott and P. J. Hanzlik, *Journ. Amer. Med. Assoc.*, 1916, LVIII, 1838.

² P. J. Hanzlik and H. T. Karsner, *Arch. Int. Med.*, Chicago, 1917, xix, 1016-1028.

³ *Haemorrhage and Transfusion*, 1909.

misfortune if the Council through lack of fresh support should be forced to curtail the charitable work of this excellent Foundation. We therefore commend to the notice of our readers, and especially those who have influence with the wealthier sections of the public, an appeal by Sir Henry Morris, the treasurer, which appears on page 778. We endorse this appeal with the more confidence because we have reason to know that a large number of contributions came in last year as a result of what we wrote on this subject twelve months ago. The need is now greater than ever.

TYMPANISMUS VAGOTONICUS.

UNDER this heading Professor R. Bálint¹ of Budapest has recorded three cases of a condition which he has the courage, not to say temerity, to maintain has not hitherto been understood or described. All his patients were soldiers and their most prominent symptom was tympanites. Other phenomena were bradycardia, respiratory arrhythmia, excessive urinary excretion of water, sodium chloride and nitrogen, eosinophilia, Graefe's sign, excessive perspiration and hyperacidity of the gastric juice. The administration of atropine transformed the whole condition in less than an hour. The tympanites vanished, the collapse of the abdomen being accompanied by gripping pain, and the bradycardia, respiratory arrhythmia, and other symptoms either disappeared altogether or became much less prominent. The condition could be conjured up again simply by giving physostigmine. No abnormal quantity of gas could be found by the *x* rays in the stomach, and the distension was attributed to the dilatation of the intestines. One of the patients had suffered from dysentery, otherwise there was no history of typhoid fever or dysentery with which this condition could be associated, nor was it like the tympanites of typhoid fever or dysentery, which is usually associated with either diarrhoea or constipation. Professor Bálint could also find no evidence of hysteria, and he believes the condition to be a neurosis of the vagus provoked by faulty internal secretion. He suggests that this condition is not very rare, and that henceforth many cases will be recognized which have previously been misunderstood. The faulty diagnoses made to his knowledge were many and varied, including ascites, myocarditis, tuberculous peritonitis, and echinococcus of the liver. Several fruitless laparotomies were also performed.

MINISTRY OF PUBLIC HEALTH: A CONTRADICTION.

THE *Daily Express* published on Tuesday a long article in large type stating that Dr. Addison, Minister of Reconstruction, had been offered and had accepted the post of "Minister of Public Health"; the new ministry, it was said, would overshadow the Local Government Board and would aim at nothing less than the nationalization of the medical profession, involving free medical attendance for all without any element of charity, so that little of the present system of medical practice would survive except in the case of a few independent consulting physicians. This article was followed the same day by an official announcement that the assertion that Dr. Addison had been offered and accepted the post of Minister of Public Health was unauthorized and incorrect, no question having arisen of his leaving his present post. "His only personal concern with the question of the establishment of a Ministry of Health has been that, as Minister of Reconstruction, he is giving assistance in the negotiations for arriving at an agreed scheme for the establishment of the Ministry. At the present stage no question as to the policy of the Ministry of Health has been raised. As was pointed out by Dr. Addison, in a recent speech on the subject, the question of the policy to be pursued and the developments to be undertaken could only be effectively

considered by the Government in consultation with those concerned after the establishment of the Ministry of Health. It would obviously be impossible at the present time, when so many doctors are serving with the armies in the field or with the Home Forces, to consider any scheme which, in the words of the announcement that has appeared in the press, would throw the whole medical system of the country in the melting-pot."

THE constitution of the special Shock Investigation Committee, of which Professor E. H. Starling, F.R.S., is chairman, is stated at p. 772. The Committee will, we understand, be glad to receive information as to clinical studies or experimental observations on the subject. Communications should be addressed to Dr. H. H. Dale, F.R.S., secretary of the special Committee, at the Medical Research Committee, 15, Buckingham Street, Strand, W.C.2.

Medical Notes in Parliament.

The Appointment of Medical Boards: Method of Determination.—In reply to Mr. Needham, Sir Auckland Geddes said that members of medical boards were appointed by the Chief Commissioner of Medical Services on the authority of the Minister of National Service. The boards were composed of civilian medical practitioners drawn from a panel set up in the area of each board from medical practitioners whose names had been suggested by the Local Medical War Committee. The chairman of each board, who was the Deputy Commissioner of Medical Services of this Ministry for an area, arranged with the Local Medical War Committee a roster of attendances of members at sessions of his board. A board of four required a panel of eight to twelve members; the nominations reached the Ministry through the Central Medical War Committee; they were reviewed in the medical department of the Ministry by the Chief Commissioner of Medical Services, were made by the Minister, and notified to the Deputy Commissioner of the area.

Medical Volunteer Corps.—In reply to Sir William Collins, Mr. Macpherson said that sixteen county medical volunteer corps had been formed or were in process of formation, and that the total number of field ambulances provided by these corps was twenty-nine. No medical volunteer corps had yet been formed in the county of London, but it might be possible to use the services of certain personnel in London if proposals under consideration matured.

Inoculation in the Navy.—In reply to Mr. Dundas White, Dr. Macnamara said that inoculation was not compulsory in the Royal Navy. Certain consequences, however, ensued from refusal on the part of any individual to be inoculated against infectious disease. In particular such individuals were debarred from landing in ports where there might be any danger of contracting any disease against which inoculation was regarded by the Admiralty as advisable.

Neurasthenic Soldiers.—Mr. King asked Mr. Macpherson what was the result of the promised consideration of the question of sending back to the front soldiers who had suffered from neurasthenia. Mr. Macpherson replied that the question had been discussed with the expert advisers, and the proposal was to classify neurasthenics on discharge from hospital in groups representing the periods during which they should not serve again in the firing line.

Nerve Strain in Soldiers (Ireland).—In reply to Mr. King, Sir A. Griffith-Boscawen said that he did not agree that there was an undue proportion of medical men holding positions connected with lunacy on the Irish Medical Board which dealt with soldiers disabled for uncertifiable nerve strain. He added that Dr. McKisack, physician to the Royal Victoria Hospital, Belfast, who was in no way connected with lunacy, had been appointed president of the board in succession to the late Dr. Graham. He also stated that it was not practicable to give consideration to the opinion of a man's own doctor at the time of discharge from the army, but in case of re-examination it was always the practice to give full consideration to such opinions as well as to the representations of the local committees.

DR. A. J. RICE-OWLEY has been re-elected chairman of the Public Health Committee of the Council of the Royal Borough of Kensington.

¹ *Berl. klin. Wochs.*, April 30th, 1917.

THE WAR.

SHOCK: ITS NATURE, PREVENTION, AND TREATMENT.

So much has been done by scientific investigations and clinical work to bring under control the infections of gunshot wounds, that at the present time the military surgeon's chief preoccupation is the prevention and treatment of shock. It must have caused much anxiety during the Cambrai offensive, and the more recent severe fighting to meet the German counter-attacks. The majority of the wounds in the open fighting seem to have been bullet wounds, which, as is well known, heal with rapidity, and are much less dangerous than shell wounds. The weather, when it became wet, was not so wet as during many previous offensives, and all the correspondents have commented on the joy of walking over turf. The relative dryness of the ground must have been very favourable to the wounded, and we hear, indeed, that cases of gas gangrene have been rare. But the weather all through has been cold, and cold is the great enemy of a seriously wounded man suffering from shock. There seems to be no doubt that the first advance of General Byng's army was a surprise to the enemy. Owing to the decision to dispense with an intensive preliminary bombardment the number of guns which had to be moved into the area beforehand may not have been large, but many tanks, which are neither invisible nor silently moving objects, had to be brought up, and the medical preparations were necessarily on a large scale. As on previous occasions, they must have included the temporary enlargement of casualty clearing stations, involving additional operating teams and increased personnel generally, as well as the pushing forward of advanced operating stations. The speed with which the casualties were brought in and the condition in which they reached base and home hospitals proves that the medical arrangements worked very successfully, despite the quickness with which they had to be made.

We have on several occasions described the working of the resuscitation wards, which are now a feature of every up-country hospital and casualty clearing station. Continual improvements are being made. From quite an early stage of the war, as our readers know, attempts to prevent the onset of shock or limit its depth have been made. Hot drinks were provided for serious cases at the regimental aid posts and advanced dressing stations, and food and hot coffee at places on the roads and paths likely to be traversed by walking cases, as well as at the main dressing stations, which the wounded, whether lying or sitting, eventually reach. Among the motives underlying the constant endeavour to increase the rapidity with which wounded are collected and transferred to casualty clearing stations and up-country hospitals, this hope of preventing shock has been one of the chief. As we stated eighteen months ago, it had then become the practice to provide hot-water bottles in ambulances, and the later plan of warming motor ambulances by bringing the exhaust air from the cylinders through ambulance bodies, illustrated in the *JOURNAL* of August 18th, 1917, p. 224, has been found efficient as well as economical. The resuscitation ward is a very valuable part of the equipment of casualty clearing stations, and something of the same kind—a shock tent or shock ward—appears now to be a common feature of main dressing stations as well as of advanced dressing stations, when the subterranean character of most of the latter makes it possible to provide them. The temperature of the atmosphere of such wards or tents is raised by hot air, or each stretcher is warmed by converting it, when on its trestles, into a hot air chamber; in this way the stretcher and its occupant are kept warm while dressings or splints are being reapplied, or the patient's wet clothing removed. We have described the provision for warming-up patients by electric heaters, which, if necessary, can be made the equivalent of an electric light bath.

The prevention of shock has long been one of the leading aims of front line work; the value of the measures adopted has been thoroughly established, and a further stimulus to their systematic employment has been given by scientific researches into the physiological phenomena of shock. The researches have confirmed the opinion reached on clinical grounds, that the view commonly held, to the

effect that shock is in some way connected with a great draining of blood into the splanchnic area—that, in fact, a patient, in the picturesque phrase, bled into his abdominal vessels—is erroneous. Operations on the abdomen in cases of well-marked shock do not reveal any undue amount of blood in the abdominal viscera.

The result of the laboratory work summarized in the memorandum on surgical shock and allied conditions issued by the Medical Research Committee, and published in the *JOURNAL* of March 24th, tended to show that the concentration of the blood observed in shock is due to a widening of the whole capillary area of the viscera and musculature with an outpouring of plasma into the tissues. Active contractility of the capillaries has frequently been described and important evidence of its existence has recently been provided. There is some reason to believe that, so far from the smaller arteries losing tone in shock, they are constricted. In discussing the treatment of shock, the memorandum mentioned that pituitary extract, by causing a prolonged and general contraction of the arterioles, and thereby diminishing the total capacity of the circulatory system, mitigated the effects of deficient blood volume. The failure of injections of physiological saline in fully developed shock is known; the memorandum contained a suggestion that better results might be obtained by intravenous injections of hypertonic saline, and it was noted that calcium ions have a specific action in reducing abnormal permeability of capillaries.

Professor Bayliss explained his views on the importance of the factor of viscosity in solutions used to replace blood lost by haemorrhage, and the possible value of gum solutions, in a letter published in the *JOURNAL* of April 28th, 1917, p. 564. The results of his experimental inquiry, reported to the Royal Society last year in a paper on methods of raising a low arterial pressure,¹ may best be given in his own summary:

When the arterial pressure is low from loss of blood it cannot be brought back, except to a certain degree, by the injection of saline solution in volume equal to that of the blood lost. But if the viscosity of such solutions is raised to that of the blood, a return to normal height is possible.

The effect of saline injections is also much less lasting than that of solutions containing gum or gelatin. The difference in this case is due to the osmotic pressure of the colloids, by which loss of water by the kidneys and to the tissues is prevented. Solutions containing gum do not produce oedema in artificial perfusion of organs.

When the fall of blood pressure is due to peripheral vasodilatation, gum or gelatin solutions, although more effective than pure saline, produce a much less permanent rise than in cases of loss of blood. No signs of heart failure could be detected and the cause of the fall of the raised pressure to its original height is still obscure. The combination of a small dose of barium chloride, as recommended by Langley, with a moderate amount of gum solution, was found to be the most satisfactory method in such cases, and no diminution of vaso-motor excitability resulted.

The view that fall of arterial pressure produces peripheral vaso-constriction by means of nervous channels and that rise of arterial pressure produces vaso-dilatation was confirmed by artificial perfusion of a limb.

At the request of the Medical Research Committee Professor Bayliss last August visited various centres in France, to discuss with workers there special problems in the field and the application to them of methods devised in the laboratory. Acting upon suggestions made to it from France the Committee appointed a Special Investigation Committee for the purposes of further combined study of shock and the better correlation of laboratory and clinical observations. This committee consists of Professor F. A. Bainbridge, Professor W. M. Bayliss, F.R.S., Professor W. B. Cannon, Dr. H. H. Dale, F.R.S. (secretary), Lieut.-Colonel T. R. Elliott, F.R.S., R.A.M.C., Captain John Fraser, R.A.M.C., Professor C. S. Sherrington, F.R.S., Professor E. H. Starling, F.R.S. (chairman), and Colonel Cuthbert Wallace, C.B. Professor Cannon, whose own work in this connexion is of great value, has been good enough to make arrangements for co-ordinating the work of this committee with that of a similar committee of American physiologists, and we understand that a further memorandum on the subject will probably be issued before long.

In a paper in a recent issue of the *Archives Médicales Belges* Professor Bayliss stated that the physiological requirements of colloidal osmotic pressure and viscosity, can be met by the employment of a fluid containing 2 per

¹ *Proceedings of the Royal Society, B*, vol. XXIX, p. 380.

cent. of gum arabic, and that as this solution does not contain any protein there is no risk of anaphylaxis in the event of a second transfusion being necessary. He stated in his letter to the JOURNAL that he had established this point by experiments on animals. The solution of gum, by increasing the viscosity, enforces the peripheral resistance, and so raises the blood pressure, and the calcium salts contained in the gum exert their vaso-constrictor effect.

As much shelter, warmth, and comfort as possible should be provided for shock cases at the most advanced medical posts. A great deal has been heard of the extensive use of concrete by the Germans not only for making "pill boxes" and reinforcing trenches, but also for sheltering dressing stations near the advanced lines. Many visitors to the British front are aware that the British army also has advanced dressing stations built of concrete. They were, we believe, constructed almost solely by officers and men of the R.A.M.C. brought in from field ambulances and other units. The establishment of a medical unit under canvas is carried out by its own personnel, which lays out the site, erects the tents, establishes latrines, and lays out paths, doing a little gardening in spare time, but in many cases medical units themselves erect huts by their own exertions, almost without engineering assistance. The assistance of engineers becomes necessary when general hospitals and large stationary hospitals have to be huddled as rapidly as possible, their sites underdrained, communications with main roads established, and the supply of electric light as well as water arranged. In the selection of the site of a hospital its accessibility to a railway for receiving and evacuating patients must always be the main consideration, but an ample water supply is necessary, and has an important influence on the choice. Where a local spring is not available, the water must be piped from the reservoirs of the nearest town, and the number of hospitals that can be allowed to rely on the water supply of any one town is, of course, limited by the other demands on that source. The lighting of a hospital by electricity gives comparatively little trouble, for it is usually manufactured by plant in the hospital grounds, and it can be used for heating a bed or stretcher in the manner indicated above. Improvements of hospitals in matters of detail are continually being made, and some involve engineering assistance to a greater or less extent. A many-roomed solidly built operating unit is now, we believe, to be found at every hospital, even though the remainder of its accommodation be in tents.

We hear that in some instances it has been found desirable to remove medical units out of towns which have a special attraction for enemy bombing machines. This precaution, however, has not always been successful, and it would appear that some hospitals up-country have not found that their distance from a town or village, or from other camps, has lessened the frequency with which aeroplane attacks are threatened. It has been, in some instances, necessary to build large bomb-proof shelters for the protection of such patients as can be moved into them promptly.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Died of Wounds.

CAPTAIN G. A. HARVEY, R.A.M.C.

Captain Gilbert Aberdeen Harvey, R.A.M.C., died of wounds in a casualty clearing station on November 25th. He was the eldest son of the late James Harvey, of Adelaide, South Australia, and was educated at Adelaide University, where he graduated M.B. and Ch.B. in 1911. After serving as house-surgeon and house-physician at the Adelaide Hospital, and at the Adelaide Children's Hospital, he came to England, and took the post of house-surgeon of the West London Hospital. He joined the Special Reserve of the R.A.M.C. as a lieutenant on October 19th, 1914, and was promoted to captain after a year's service.

Died on Service.

MAJOR R. H. BONNYCASTLE, C.A.M.C.

Major Richard Henry Bonnycastle died on October 7th from pneumonia after a few days' illness. He was born in Ontario in 1881, the son of one of the earlier settlers in that district, and received his medical education at the

University of Toronto, where he graduated in 1905, and in the following year commenced practice at Campbellford. He received a commission in the R.A.M.C. in May, 1915, and went to France in July, 1915, with the Scottish Division. Subsequently he transferred to the C.A.M.C. and served in the trenches for over a year. He was promoted to major in 1916 and returned to Canada a few months ago in charge of a party of wounded and was appointed superintendent of training and hospital work at Valcartier Camp, Quebec. He leaves a widow and two children.

Wounded.

Captain J. R. Barriskill, Australian A.M.C.
 Captain S. G. Gibson, Australian A.M.C.
 Captain N. McA. Gregg, R.A.M.C. (temporary).
 Captain S. H. Harris, R.A.M.C. (temporary).
 Captain C. Hunter, R.A.M.C. (temporary).
 Captain A. Jones, R.A.M.C. (temporary).
 Captain A. J. A. McCabe-Dallas, R.A.M.C. (temporary).
 Captain W. W. Morrison, R.A.M.C. (temporary).
 Captain K. M. Nelson, M.C., R.A.M.C. (temporary).
 Captain T. F. B. Reid, R.A.M.C. (temporary).
 Captain H. F. Woods, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Atkinson, Miles Linzee, Second Lieutenant Tank Corps, only surviving son of Dr. Miles C. Atkinson of Leamington, killed November 20th, aged 29. He was born in 1888 and educated at Fettes College, at Emmanuel College, Cambridge, and at St. Thomas's Hospital. At Fettes he was in the Rugby fifteen, cricket eleven, and gymnasium eight. He played full back for Cambridge and also represented St. Thomas's, the United Hospitals, and Surrey. Early in the war he enlisted in the Machine Gun Corps, served for over a year abroad, and was invalided home. On his recovery he was given a commission in the Tank Corps, and returned to France in June, 1917.

Atkinson, Victor Rupert, Second Lieutenant West Riding Regiment (Duke of Wellington's), only surviving son of Dr. Atkinson of Beverley. Settled, killed November 23rd, aged 20. He was educated at Giggleswick School, where he was in the O.T.C., got his commission from the Inns of Court O.T.C. last March, and went to the front on April 6th.

Bond, Alexander Beckett, Sergeant 16th Battalion Australian Imperial Force, son of Dr. J. W. Bond of London, died in the war prisoners' camp at Munster, Westphalia, on November 5th, aged 26.

Clouting, Frederick Herbert, Sergeant Australian Army Service Corps, youngest son of the late J. R. Clouting, F.R.C.S., of Sevenoaks, killed November 3rd, aged 34.

Ensor, John Collen, Lieutenant Welsh Regiment, younger son of the late Henry Collen Ensor, ophthalmic surgeon, Cardiff, died on November 26th of wounds received on November 24th. He was educated at Llandaff Cathedral School and at Epsom College, and gained a classical scholarship at Cardiff University College, where he was studying medicine. When the war began he was in the College R.A.M.C. unit, and was mobilized with it. He got his commission on January 7th, 1915, and had been at the front for two years.

Snell, E. A. G., Major Bedfordshire Regiment and King's African Rifles, only son of Dr. G. Snell, late Colonial Medical Service, killed November 16th. He got his first commission in the Bedfords on September 14th, 1914, and was seconded for service with the King's African Rifles two months later.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

MENTIONED IN DISPATCHES.

A DISPATCH dated October 25th, 1917, from Lieutenant-General G. F. Milne, Commander-in-Chief, British Salonica Force, bringing to notice a list of officers, warrant officers, non-commissioned officers, men, and nursing staff for gallant conduct and distinguished services during the previous six months, was published as a special Supplement to the *London Gazette* on November 28th.

The following medical officers are included in the list:

STAFF.

Colonels: M. P. C. Holt, K.C.M.G., C.B., D.S.O., A.M.S.; G. T. Rawnsley, C.M.G., A.M.S.

Lieut.-Colonel and Brevet Colonel (temporary Colonel) F. Smith, C.M.G., D.S.O., R.A.M.C.

Lieut.-Colonels (temporary Colonels): W. H. S. Nickerson, V.C., C.M.G., M.B., R.A.M.C.; F. S. Penny, C.M.G., M.B., R.A.M.C.

Lieut.-Colonel (acting Colonel) A. R. Aldridge, C.S.I., C.M.G., M.B., R.A.M.C. (Res. of Off.).

Lieut.-Colonels: E. T. F. Birrell, C.B., C.M.G., M.B., R.A.M.C.; H. J. M. Buist, D.S.O., M.B., R.A.M.C.; J. E. Hodgson, R.A.M.C.

Temporary Lieut.-Colonel E. H. Starling, M.D., F.R.C.P., F.R.S., R.A.M.C.

Majors: P. G. Easton, D.S.O., R.A.M.C., J. T. Johnson, D.S.O., M.D., R.A.M.C.
Captains: W. R. Galwey, M.C., R.A.M.C., N. V. Lothian, M.B., R.A.M.C., M. J. Williamson, M.C., M.B., R.A.M.C.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonels: F. Aslie, C. B. Martin, M.B., L. F. Smith, C.M.G., M.B., S. H. Withers, C.M.G., M.B.
Temporary Lieut.-Colonel L. S. Dudgeon, F.R.C.P.
Majors (temporary Lieut.-Colonels): J. Gray, A. E. Kidd, M.B.

Majors (acting Lieut.-Colonels): D. L. Fisher, M.B., J. Ward, Major E. B. Waggett, M.B.
Temporary Major J. W. Struthers, M.B., F.R.C.S.E.
Captains (temporary Colonels, A.M.S.): T. C. English, C.M.G., M.B., F.R.C.S., J. P. Stewart, C.B., M.D., F.R.C.P.
Captain and Brevet-Major (acting Lieut.-Colonel) B. Johnson, M.B.

Captain (acting Lieut.-Colonel) P. S. Tomlinson.
Captains (temporary Majors): G. H. Colt, M.B., F.R.C.S., A. W. Falconer, M.B., K. W. Monsarrat, M.B., F.R.C.S.

Captains: A. E. Barnes, M.B., G. B. Brand, M.B., R. D. Cameron, M.B., T. Carnwath, M.B. (S.R.), W. F. Christie, M.B., W. K. Churchouse, F. H. Coyne, M.B., B. L. Davis, I. D. Dickson, M.D., H. A. T. Fairbank, F.R.C.S., W. B. Foley, M.B., J. F. Gaskell, M.D., E. G. Ganett, M.B., F.R.C.S., A. D. Griffith, M.D., F.R.S., A. W. Harrington, M.D., N. H. Harrison, J. R. Hill, M.B., H. S. Hollis, M.B., B. Hughes, M.B., F.R.C.S. (West Yorks Regiment), R. E. Kelly, M.D., F.R.C.S., G. F. V. Leary, M.B., W. A. Lethem, M.B., N. L. Lochrane, M.B., A. C. Macdonald (S.R.), D. Mallam, W. J. F. Mayne, M.B., P. H. Mitchiner, M.B., F.R.C.S., O. J. O'B. O'Hanlon, M.B., F.R.C.S., A. Oliver, M.D., L. J. Sheil, M.D., R. M. Vick, E. A. Wilson, M.B.

Temporary Captain (acting Lieut.-Colonel): C. V. Bulstrode (Major R.H.A.).

Temporary Captains: D. I. Anderson, M.B., R. D. Attwood, J. Bain, M.B., A. Benjamin, M.B., W. H. Brodie, M.B., M. S. Bryce, M.C., M.B., G. B. Burwell, M.C., M.B., L. Cassidy, M.B., F.R.C.S.I., A. H. Coleman, M.B., P. C. Davie, M.B., J. N. Dobbie, M.B., H. H. L. Ellison, R. R. Elworthy, M.D., H. R. Evans, M.D., D. Fettes, M.B., W. H. Fleetwood, J. G. Forbes, M.D., A. R. Green, M.B., C. S. van R. Harwood, M.B., J. F. C. Haslam, M.B., J. F. Hoare, H. G. Hobson, J. M. Kelly, M.D., A. A. Lees, W. K. McIntyre, M.B., H. H. Moffatt, H. G. Murray, M.B., D. R. E. Roberts, M.B., J. D. Watson, M.B., T. B. Williams, M.B., D. E. S. Wishart, M.B.

Lieutenants (temporary Captains): D. W. Beamish, A. M. McCutcheon, M.B.

Lieutenant W. Donald, M.B.
Quartermaster and honorary Captain (temporary Lieut.-Colonel) J. Keogh.

Quartermasters and honorary Lieutenants: J. Banks, W. Clegg, J. W. Corking.

Temporary Quartermasters and honorary Lieutenants: H. J. Angell, J. Cotter, A. Jackson.

MEDICAL WOMEN (ATTACHED R.A.M.C.)

Misses Mary A. Blair, Barbara M. Cunningham, Elsie J. Dalryell, Elizabeth M. Edwards, Edith B. Hollway.

CANADIAN ARMY MEDICAL CORPS.

Lieut.-Colonel G. Gow.
Major J. G. W. Johnson.
Captain (acting Major) D. A. L. Graham.
Captains: W. A. Clarke, A. B. Schinbein.

The dispatch also mentions Subassistant Surgeon Singh Bachint and one ward orderly of the I.M.S., sixty-six warrant officers, non-commissioned officers and men of the R.A.M.C., two warrant officers of the C.A.M.C., seventy-six members of the nursing services, including sixteen of the Canadian Army Nursing Service and five representatives of the British Red Cross Society.

England and Wales.

THE NEW NATIONAL FUND FOR WALES.

THE new Welsh National Fund for the Welfare of the Sailors and Soldiers of Wales and their Dependents, to which we referred last week, was successfully launched at a representative conference held at Shrewsbury on November 28th, under the presidency of Mrs. Lloyd George. By Brigadier-General Sir Owen Thomas, the Hon. Violet Douglas-Pennant, Mr. Ellis J. Griffith, K.C., M.P., and other speakers it was made abundantly clear that the object of the new fund was not to relieve the State from any of its obligations, but to supplement State aid where necessary, and to provide medical and surgical advice as well as pecuniary assistance to those direct sufferers from the war who might technically or otherwise be outside the scope of Government relief. Mr. Ellis Griffith, M.P., formerly Under Secretary at the Home Office, in a characteristic speech, was insistent upon the full

discharge by the State of its just obligations to the country's soldiers and sailors. The State must fulfil its responsibilities to the letter; but after the State had done all that it was bound to do, there would remain an important sphere in which a great deal of relief and advisory work could be done. And this, he said, was not by way of charity. That word had been completely banished from the vocabulary of those interested in this organization, which it was intended should be controlled by some one with the power of an official and the sympathy of a human being. Memorials to the dead were sometimes spoken of; the best memorial to the dead was to succour the living. It was not by monuments of bricks and mortar that the valiant dead were honoured, but by a heartfelt resolve to place their wives and children permanently beyond the pale of want. Our fighting men stood before us as the sole saviours of our inheritance. They had not failed us in the hour of need; let us see to it that we did not fail them.

After some discussion as to the constitution of the administrative committee a resolution to pursue an active campaign in support of the object in view was unanimously adopted. It was resolved to ask the Prince of Wales to become patron. Mrs. Lloyd George was appointed president, Lord Plymouth and Sir O. Thomas vice-presidents, and Sir Owen Philipps, K.C.M.G., and Sir E. Vincent Evans, honorary treasurers, with Messrs. W. Lewis and Marlay Samson as honorary secretaries.

THE WELSH HOSPITAL FOR LIMBLESS SOLDIERS.

THE Prince of Wales's Hospital for Limbless Soldiers at Cardiff has been fortunate from the time it was initiated a couple of years ago by Colonel Lynn Thomas, C.B., C.M.G., in its number of benefactions, and it is gratifying to find that now it is in full working order benefactors are still coming forward to help and to encourage the movement. At a special reception held at the hospital on December 1st Miss Smith, a former lady mayoress of the city, presented to the institution a full-sized billiard table, a piano, a cinematograph lantern, a cabinet gramophone, twenty card tables, and a clock for the use and entertainment of the men undergoing treatment there. Her brother, Dr. R. J. Smith, during his mayoralty took an active interest in the establishment of the hospital, which was the gift of Cardiff to the Principality and its disabled heroes, and the presentation, purchased out of the surplus of the fund raised in June, 1916, at the Lady Mayoress's fête for providing a motor ambulance launch for service on the Tigris, was supported by the presence of the Lord and Lady Mayoress (Alderman and Mrs. Roberts), the town clerk Mr. J. L. Wheatley, and several of the aldermen and councillors of the city. The Lord Mayor, seconded by Lord Aberdare, and supported by Colonel Lynn Thomas, expressed the thanks of the hospital committee to Miss Smith, an expression of thanks which was more than cordially cheered by the sixty patients who are enjoying the benefits of the institution, and who took a lively interest in the proceedings.

THE CANCER HOSPITAL, MANCHESTER.

THE report presented to the annual meeting of the Christie Hospital (Cancer Pavilion), Manchester, on November 30th, when Sir Daniel McCabe was in the chair, stated that the work of the hospital had been continued under constant strain. The number of in-patients treated during the year was 109, and 16 had been admitted for radium treatment. Professor Wild, in replying to a vote of thanks to the medical and surgical staff, said that the radium treatment had been used extensively in all suitable cases, but it was still too soon to say definitely what could be accomplished by it. All that could be said was that it was distinctly promising. Sir William Milligan agreed that a great deal more knowledge and experience were needed before a final opinion could be given though he was still an optimist as to the value of radium. At the same time he thought they could not too much rub the idea into the minds of the public, as well as of the medical profession, that operative treatment in the early stages of cancer was the great salvation. Dr. Burrows said there was every hope that the exact doses of radium required in different types of cases would soon be ascertained. Owing to the war, research work had been greatly hindered, but it was hoped to start it again when the war ended, or even before, and to enlarge the institution.

Scotland.

WAR DRESSINGS SUPPLY.

In the official report of a committee of British surgeons who visited France last summer on the Carrel-Dakin treatment, published in the *BRITISH MEDICAL JOURNAL* of November 3rd, p. 597, reference was made to the advantage and economy effected by using sphagnum moss in carrying out the method. The director of the War Dressings Supply (sphagnum moss), Edinburgh, writes for the information of surgeons in naval and military hospitals to point out that this organization supplies not only surgical dressings made of sphagnum moss, but also moss pads specially prepared for Carrel-Dakin treatment. The latter are packed rather fuller than the ordinary dressings. The dressings are supplied as soft dressings, soft sublimate dressings or compressed sublimated cakes, all put up in muslin bags. The dressings can be obtained free on requisition to the D.G.V.O., Scotland House, New Scotland Yard, London, for naval and military patients. It is well to state whether the dressings are required for the Carrel-Dakin method. The trade is not supplied, nor civil practitioners, except when the dressings are for use in military hospitals.

THE LATE DR. ELSIE INGLIS.

In last week's *JOURNAL* there appeared a short obituary notice of Dr. Elsie Maud Inglis. We are indebted to Dr. Beatrice Russell for a personal memoir from which we take the following extracts, supplementing the details already given:

To the many friends of Dr. Elsie Inglis the news of her death came as a very unexpected blow. That her health was unsatisfactory was known from a telegram received from her a few days before she arrived in this country, but the outlook expressed was so definitely towards further work and new activities that her friends were hopeful that need for a period of rest was all that the message implied. On the arrival of her unit at Newcastle again a reassuring message reached her friends and family circle, and as it was evident that Dr. Inglis intended to proceed to London before going home to Scotland no special anxiety was felt. Shortly however, after landing at Newcastle on November 25th, serious symptoms supervened and her condition became critical. She was conscious until a few minutes before her death on the evening of November 26th, facing the end with calmness and serenity. Her friends then learnt that she had been struggling against ill health for months past, but had refused to come home until her work was finished.

Apart from the practice of her profession, Dr. Inglis was actively interested in public affairs. She took a deep interest in all questions connected with the medical education of women, and took a foremost part in every movement to obtain greater facilities for women medical students. She was keenly interested in political matters, more especially devoting herself to the cause of women's suffrage, and for some years acted as honorary secretary to the Scottish Federation of Women's Suffrage Societies. Dr. Inglis was an inspiring leader, for in addition to her strong and always lovable personality, she was possessed of an unbounded optimism, which never deserted her. She spoke easily and well, and never spared herself in any cause she had at heart. We are not yet at liberty to speak fully of the services which she rendered to the Serbian army, but all friends of Serbia know the value to that nation of Dr. Inglis's vigorous support and championship.

Mors janua vitae. She has passed on, and we look after her with love and pride. A devoted doctor, a warm-hearted woman, a very generous opponent, and the most loyal of friends.

Ireland.

POOR LAW MEDICAL OFFICERS' BONUSES.

At a recent meeting of the Listowel Guardians a letter was read from the Local Government Board relative to the proposal of the guardians to grant a bonus of £10 each to the medical officers of the union, and pointing out that the recent award of the Civil Service Conciliation and

Arbitration Board was limited to (1) whole-time employees at salaries of £250 a year or less, and (2) part-time employees engaged in manual duties. The award contained no provision applying to any class of official upon a footing similar to that of Irish Poor Law medical officers, and those officers might reasonably be expected to bear their personal shares of the burden due to and dependent on the existence of the abnormal conditions which now prevailed in consequence of the war. As an alternative to the guardians' proposal the board suggested that the medical officers who had not reached their maximum salaries under the scale would be allowed, say, £5 or £10 as an immediate increase of salary, with a further increment accrued under the scale on completion of the necessary qualifying periods. The Chairman of the Board of Guardians remarked that the letter was the most sensible he had ever seen from the Local Government Board. The Poor Law medical officers, however, do not endorse the chairman's view, particularly the smug statement in the letter that "Poor Law medical officers might reasonably be expected to bear their personal shares of the burden due to and dependent on the existence of the abnormal conditions which now prevailed in consequence of the war." Before the outbreak of the war the salaries of Poor Law medical officers were admitted to be less than the working expenses of their districts. Now that the cost of living and travelling has more than doubled the expenditure of Poor Law medical officers, the Local Government Board, in addition to its gratuitous advice, suggests that a board of guardians may give an increase of threepence a day to their medical officers! In these circumstances it is not to be wondered that the appeals of the Local Government Board to enlist the co-operation of its Poor Law medical officers to further its schemes for "public welfare" fall on ears that are not very receptive.

The difficulty is in an acute stage at Ballinrobe; at a special meeting of the guardians Sir J. A. MacCullagh, Senior Medical Inspector, Local Government Board, urged a friendly settlement, and the doctors, at the request of the County Association and the Local Government Board, withdrew their resignations; the guardians, however, refused to make any advance.

DOCTORS OF MILITARY AGE AND THE LOCAL GOVERNMENT BOARD.

In the King's Bench Division, Dublin, last week, judgement was given in favour of the Local Government Board in a case raised by the Lismore Guardians, which involved a question as to the power of the Local Government Board in the exercise of its discretion to decline to approve of the appointment of Dr. Cronin as medical dispensary officer on the ground that he was of military age, due regard being had by them to proper and satisfactory provision of medical relief for the sick poor. The Court held unanimously that the Local Government Board had that power, and that it had exercised its discretion and jurisdiction in the matter legally and properly in the existing circumstances. The Lord Chief Justice in a considered judgement said that the question for the decision of the Court in this particular case was narrowed down to this: was it open to the Local Government Board in the exercise of its discretion to require that in view of the national and military exigencies, the appointment of medical officers during the war should be confined to practitioners over military age, in cases in which other suitable and satisfactory arrangements could be made for the medical relief of the sick poor? He was satisfied, and so, he believed, were the other members of the Court, that so long as the Board had due regard to the paramount necessity of suitable provision for the medical relief of the sick poor it was open to that great department of the State to refuse, in these days of national and unprecedented strain, to encourage by premium or inducement medical practitioners of military age to seek civil appointments. He declined to entertain the suggestion (made by the applicants) that the Local Government Board in enforcing this policy was solely actuated by the indirect motive of enforcing the conscription of the medical profession in Ireland, being of opinion that it had no foundation upon any of the documents or facts in evidence. To attempt to enforce conscription was one thing, but to encourage the performance of a patriotic duty by withholding premiums or inducements to seek civil employment was another, and a wholly different matter. There was no evidence to

show that the Local Government Board had in any respect failed to have regard to the provision of suitable and satisfactory medical relief for the sick poor of Tallow district, or that there was anything savouring either of illegality or excess of jurisdiction in any of the other matters taken into consideration in this particular case. Accordingly the Court decided that the application had failed both upon the law and upon the merits. This judgement may have the effect of putting an end to the attempts that are being made by various boards of guardians to evade the order made by the Local Government Board early in the war that in all cases in which other arrangements were possible, no doctor of military age should be appointed either temporarily or permanently to do Poor Law medical work.

Correspondence.

TRANSFUSION OF WHOLE BLOOD.

SIR.—Since blood transfusion seems just now to be occupying attention, I venture to bring to the notice of those who are more immediately interested in it the account of a research which was conducted by me in 1879 at the request of the Obstetrical Society of London, "to determine with what fluids and by what methods the operation of blood transfusion may best be performed." The work was published in vol. xxi of the *Transactions* of the society, and the results obtained are not without significance at the present time; indeed, certain of your recent correspondents are advocating methods which are in some respects similar to those which proved in my hands to be the best, although I think that they fall a little short of it. The paper is not a long one, but is full of detail, and has rather surprised me, on looking it up after an interval of nearly forty years, by its singularly modern aspect.

The chief conclusion I arrived at was that immediate transfusion—towards the heart of the recipient—from artery to artery through a simple rubber tube and glass cannula, filled beforehand with sodium carbonate solution, is not only easy but by far the most effectual method of restoration after severe haemorrhage; and that two minutes' flow is usually more than enough to obtain the desired result. Naturally, in so short a time as this there can be no question of clotting, and the loss of blood which the donor suffers is negligible. Injection of sodium citrate produces a marked fall of blood pressure; its employment should therefore be avoided.—I am, etc.,

EDWARD A. SCHÄFER.

Department of Physiology, Edinburgh,
November 28th.

AN OLD HOSPITAL DIETARY.

SIR.—In these days when the attention of the profession and public is particularly called to questions of diet, the following observations may be of some slight interest:

In the late Dr. G. Munro Smith's *History of the Bristol Royal Infirmary*, recently published, he mentions on p. 31 certain dietarys in vogue there during the second quarter of the eighteenth century, and gives details of two which enable a rough estimate to be made of their nutritive values.

Common Diet.

The first of these was the "common diet," which on four days of the week consisted of beef, bread, milk pottage, and bread and broth.

The caloric value of this diet works out thus:

	Calories.
10 ounces beef	650
12 ounces bread	928
1 pint "milk pottage"	400
1 basin bread and broth	150
	2,128

On three days in the week 1 pint of "rice milk" was substituted for the meat and basin of bread and broth, and on alternate days there was either 1 pint of broth or 2 oz. of cheese. Allowing the "rice milk" to contain 4 oz. of rice and half a pint of milk, this diet would give:

	Calories.
1 pint "rice milk"	608
12 ounces bread	928
2 ounces cheese	222
1 pint "milk pottage"	400
	2,158

The protein content works out as follows:

10 ounces meat	1.5 oz.
12 ounces bread	0.96 "
1 pint "milk pottage"	0.6 "
	3.06 oz.

or,

1 pint rice milk	0.6 oz.
12 ounces bread	0.96 "
2 ounces cheese	0.5 "
1 pint "milk pottage"	0.6 "
	2.66 oz.

The caloric value of this diet, though not high, was quite suitable for sick persons in bed, and was further increased in practice by the fact that mutton was allowed in place of beef, and that there was a liberal allowance of "small beer"—namely, three pints in summer and a quart in winter. Supposing this to contain 2 per cent. alcohol—not a high estimate—a quart would yield at least 140 additional calories.

The protein content is certainly not high; what strikes me as remarkable is how closely the alternative diets correspond in nutritive value and how nearly they approach modern scientific standards.

Dry Diet.

The other diet was called the "dry diet." It is not stated for what purpose it was intended; very likely oedematous or corpulent patients were fed thus:

It consisted of 6 oz. of meat, or 8 oz. of boiled rice, with two meals of bread and cheese, and 1 pint of beer or cider. If we assume that the bread was 12 oz. and the cheese 4, we get:

	Calories.
6 ounces beef	390
12 ounces bread	928
4 ounces cheese	444
1 pint beer	70
	1,832

or,

8 ounces rice	816
12 ounces bread	928
4 ounces cheese	444
1 pint beer	70
	2,258

The protein content works out at:

6 ounces meat	0.9 oz.
12 ounces bread	0.96 "
4 ounces cheese	1.0 "
	2.86 oz.

or,

8 ounces rice	0.64 oz.
12 ounces bread	0.96 "
4 ounces cheese	1.0 "
	2.6 oz.

This diet has therefore a higher protein content than the "common diet," but the caloric value of the alternatives is less equal.

The values have been calculated from Dr. E. I. Sprigg's pamphlet on *Food and How to Save It*.—I am, etc.,

Clifton, Nov. 27th.

J. M. FORTESCUE-BRICKDALE.

HOW IS THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS TO BE MADE?

SIR.—In your issue of November 24th Dr. A. Garvie rightly expresses the views of the profession on the difficulties of an early diagnosis of cases of pulmonary tuberculosis. He asks for the practical experiences of fellow general practitioners in connexion with the earliest diagnosis of incipient cases. In an article published in 1914¹ by Dr. Wm. Murdie and myself we pointed out that one of the chief difficulties was to ensure that patients will consult a medical practitioner at an early stage of the disease. The onset of this trouble is so insidious that, unless there is an attack of haemoptysis or pleuritic pain, it may never occur to a patient that there is anything much wrong. Coughs and colds are so prevalent in this country, especially in the winter, that, as a rule, nothing very much is thought of catarrhal attacks, and it is only when a patient begins to feel weak, loses weight, and suffers from anorexia, or one of the complications of the disease appears, that a medical man is consulted. An

¹ *Medical Press and Circular*, June 24th, 1914.

effective plan to meet this difficulty might be to distribute at intervals a short circular to every household explaining in a judicious manner the mild onset of symptoms and the harmfulness of delay in having an infection of this kind attended to. This is already done by some municipal councils in connexion with cancer. With one-fourth of our population insured, and so entitled to free medical advice, any patients in this section could be assured as to whether or not they were suffering from consumption.

The earlier the stage the easier is it to miss a definite diagnosis. The most careful percussion and auscultation may reveal little or nothing. Diagnosis by means of the x rays, tuberculin tests, or serum reactions, cannot be generally applied. The simplest and one of the most valuable tests at our disposal is the careful use of an accurate clinical thermometer. It is advisable to leave the thermometer in longer than usual to ensure a correct reading. When from the history and symptoms a suspicion of incipient tuberculosis arises, if an elevation of temperature occurs at some time of the day of even a half to three-quarters of a degree above the normal for some days, we hold that such a case should have the most careful observation so as to endeavour to prevent it going on to be an "open" case of pulmonary tuberculosis.

Unfortunately, many patients at the present time do not present themselves for diagnosis or treatment until they are already expectorating sputum. In such instances it is strongly advisable to have the most thorough and repeated examinations of the secretions for the tubercle bacillus. We should not be content with one or two negative results; but in all clinically suspicious cases should persevere with the search, examining the sputa at different intervals, even six, eight, or nine times, until we are fairly certain of the presence or absence of the bacillus of tubercle. Again, a complete bacteriological and cytological examination of the sputum is of great value in distinguishing between a pneumonic or influenzal infection, simple bronchial catarrh, and a tuberculous infection of the respiratory tract. This should be made at the earliest opportunity at the nearest laboratory.—I am, etc.,

Ballachulish, Nov. 26th.

LACHLAN GRANT.

THE WASSERMANN REACTION.

SIR.—In a report in the *BRITISH MEDICAL JOURNAL* of November 24th, p. 698, on the above reaction it is stated:

In the later stages, with certain exceptions, a rather higher proportion of undoubted syphilitic cases give negative results. . . .

I am writing to confirm this statement in the light of practical experience. Some time ago the blood of every newly admitted case was examined by the Wassermann method, and the results showed that in one case which was reported as "positive"—the patient had no signs or history of syphilis—he made a good mental recovery, and for more than three years has been in the army. In three other cases which gave a negative reaction the patients in each case suffered from general paralysis of the insane (which is syphilitic in origin), and the diagnosis was confirmed later by *post-mortem* examination.

In its infancy the Wassermann reaction was heralded as a great aid to mental specialists in the diagnosis of obscure cases of general paralysis, but in my opinion it is not always reliable.—I am, etc.,

GUY R. EAST, M.D., D.P.H., B.Hy.

Northumberland County Asylum, Morpeth,
Nov. 24th.

REMUNERATION OF RURAL PRACTITIONERS.

SIR.—I happen to be located in a hilly part of Devon with a very scattered practice; in several directions there are villages, hamlets, or groups of cottages within a radius of three or four miles, but the gradients are such that it not infrequently takes the greater part, if not the whole, of a gallon of petrol to pay a single visit (unfortunately they are often single in the sense of being the only one in that particular direction), the greater part of the journey having to be done on "first" speed.

It does not appear to me to be exorbitant if one asks that at least the petrol may be paid for even if such insignificant items as time, tyres, and professional services rendered are not to be taken into account. Drugs, too, is another sore point with those of us who have to dispense

our own—still only 2s. a head, as in pre-war times, although the prices in some cases are five or six times and sometimes ten times as much.—I am, etc.,

November 27th.

STILL ANOTHER RURAL G.P.

THE THEORY OF IMMUNITY.

SIR.—As one interested in all coming finally under the head of biology I wish to ask whether it is not time to simplify the theory of immunity. Much modern work seems intended to support "orthodox Ehrlichism," though by the multiplication of sub-hypotheses its confusion grows worse confounded. Moreover, the giant molecule and side-chain theory is wholly discredited by such physiologists as Bayliss, Hopkins, and others. The "biogen" can no longer be considered a chemical entity, but must be regarded as a complex system of molecules whose interaction, not their substance, is life, while before long the cell will be looked on as a highly organized symbiotic community of labile molecules. Nevertheless the structure built on the foundation of the giant molecule still grows. I find that many workers have never seen, much less considered, Moore and Whitley's paper on Enzymes and immune bodies.¹ This note puts forward the view that immune bodies should be classed with enzymes, the substrate being the cell or bacterium to be dissolved or the toxin to be rendered inert, and the "complement" the combining bodies with which either becomes chemically united. Such reactions are obviously similar to those which occur, in enzyme action, with the substrates and combining bodies of foods. May it not be, however, that nutrition reactions are in their origin essentially immunizing and that nutrition enzymes should therefore be regarded as a subclass of immune bodies, as these are a subclass of catalysts generally? The main difference between them is that the catalysts which deal with foods (in themselves "poisonous" before being broken down) are the result of long evolution, while the class commonly called immune bodies are either catalysts "provoked" *ad hoc* as a natural reaction of protoplasm or normal catalysts not specialized to deal with one substrate only.

Such a view gives the coherent picture wanted in explanation. It does away with the need of special names for fresh phenomena, and permits them to be described in the known language of colloidal chemistry. It seems legitimate to regard unaltered foods as poisonous bodies requiring to be dealt with before they can be used. If enzymes fail, foods remain a poison. They only become "foods" by exciting reactions which break them up. It is known that enzymes proper do not exist till they are provoked. We may compare the absence of lactase in the meat-fed dog until it has been fed on milk.

To some it will seem an inversion to reckon these enzymes a subclass under immune catalytic bodies. But if immunization is the result of the total defensive machinery which makes growth possible for protoplasm, nutrition enzymes may properly be regarded as the specialized catalytic immune bodies used in normal physiological upkeep. The view that they are to be classed as immune bodies is supported by Weinland and Abderhalden's work. Weinland showed that the subcutaneous injection of cane sugar provoked invertin, for carbohydrate in the blood stream is a foreign body. The tissues can produce new catalysts to deal with emergencies. The "Abderhalden test" shows that the intrusion of any foreign substance is followed by an antibody, which deals with it. Intrusive cells of the chorionic villi are thus disposed of. We do not know how "antibodies" are produced. They are possibly a result of the hostility by which each individual colony of cells in a symbiotic community inhibits its neighbours and preserves its own characteristics. Such processes are complex, but are not rendered less so by giving a special chemical name to every phenomenon observed. Agglutinins, precipitins, bacteriolysins, etc., are not entities; they only mean that certain obscure reactions occur.

Abderhalden applies his methods to the diagnosis of pregnancy.² The embryo produces "poisons" which affect the parent and are slowly overcome by a process of immunization. It thus seems that immunization should not be considered a special phenomenon, but the universal method of protective reaction against such different alien

¹ *Biochemical Journal*, 4, 136-168.

² *BRITISH MEDICAL JOURNAL*, March 29th, 1913, p. 677.

substrates as a carbohydrate and the toxins of pregnancy. The glands which produce zymogens for dealing with food when these "gens" are activated by the substrate, are obviously the evolutionary result of a long-continued action which in its early form is to be elicited from other tissues than these glands.

In nutrition we know what the combining bodies are. They are in fact complement. What, then, are the complements of immunity in infection? It may be inferred from the rapid loss of fat in most infections that they are lipid. In typhoid, where emaciation is not usually rapid, the special combining body may, perhaps, be found in parts of the small intestine. This might explain the ulceration of Peyer's patches. In extreme weakness with a febrile reaction it may be that the infection is proteolytic. It seems probable that what can be easiest spared goes first. Probably the function of the phagocytes is not their ingestive power but their capacity of being used as complement. Their ingestion of infective organisms may be only a failure of their resistance against the bacteria which combine with complement under the influence of the catalyst they have provoked. It is, in fact, the immune body which renders them liable to destruction. If sufficient lipid-complement, say, can be spared by the cell membranes the phagocytes survive. If the membrane fails they are attacked internally and perhaps die. If this is so the phagocytes play another rôle than that usually assigned to them. We get rid of metaphors in dealing with them, and come back to simple tropisms. The phagocytes are an easy source of complement. We may infer that the substrate bacterium "seeks" or combines with part of their substance rather than that they "seek" the substrate under the influence of the provoked catalyst. If this is so opsonins do not exist. The word merely means that under the influence of the immunizing catalyst the bacterium on contact combines with the phagocytic complement, not that the phagocyte becomes bacteriotropic. The collection of phagocytes in any given area of inflammation is due, not to their "purposeful" sacrifice, which seems too often implied, or to their being attracted to the spot, but to their incapacity to escape, after having been brought there by the blood or lymph stream or by the failure of the cells of the vascular walls to prevent their wandering.

I think these views tend to the simplification of theory. It may be stated tentatively that (1) to understand immunity it must be held to include the preparatory processes of nutrition; (2) nutrition enzymes are immune bodies or catalysts, perfected by ages of evolution, which have rendered the organism immune to certain compounds and have made "foods" of them; (3) What are generally called immune bodies are catalysts "provoked" *ad hoc* for dealing with the substrate infective bacterium or are unspecialized normal catalysts.

The terms employed in general physiology should thus be sufficient for bacteriology, and observers of fresh phenomena ought to be chary of coining new words. Their hasty multiplication usually implies some additional hypothesis. It is characteristic of a false explanation to require an increasing number of sub-hypotheses while a real one abolishes a multitude of superfluous terms and, displaying a phenomenon as the function of known variables, by such a disclosure is essentially a simplification.—I am, etc.,

London.

MORLEY ROBERTS.

LAY RADIOGRAPHERS AND ELECTRO- THERAPEUTICS.

SIR.—In your issue of November 24th "J. H. E." raises a question of great importance, both to the medical profession and to the public, when he calls attention to the vast number of lay persons engaged in the practice of radiography and electro-therapeutics and asks for steps to be taken to put a stop to the practice.

The state of affairs he describes not only existed in civil hospitals in small towns and in the country before the war, but is actually true of large general hospitals in London at the present time. There is a general hospital in London where a layman has been appointed to the position of radiographer and has done the work for the past two or three years and is still doing it. There is also a large general teaching hospital in the heart of London where a layman has just recently been appointed in charge of

the x-ray and radiotherapeutic department, and this same layman is engaged in private practice as a radiographer in the West End.

There was one of the largest general hospitals in London where until quite recently, if not still, the out-patient x-ray department was run entirely by a layman who was known to the patients as Dr. —, and the lay-worker at another large general hospital, also in London, was actively engaged in private x-ray work in the locality of his residence.

It is quite time, when we consider the important—nay, indispensable—part the x-ray plays in both medical and surgical practice both as a diagnostic and curative agent, that its use should be entrusted to none but specially trained registered medical practitioners. Furthermore, it seems to belittle the medical and surgical staffs of large hospitals when their members depend upon the laity for diagnosis.—I am, etc.,

London, W., Nov. 26th.

CHRISTOPHER KEMPSTER.

EPSOM COLLEGE.

SIR.—I would again ask you to allow me to make an earnest appeal to your readers for contributions to the Royal Medical Foundation of Epsom College.

This Foundation provides an education of the highest class, together with maintenance, clothing, and pocket-money for fifty necessitous sons of medical men, and gives pensions of £30 each to fifty aged members, or widows of members of the medical profession in reduced circumstances. In order to maintain the full numbers of beneficiaries a sum of about £4,500 must be obtained by annual contributions.

I appeal to all medical men as well as to members of their families who do not already contribute regularly, to assist the Council at this particularly difficult time by becoming annual subscribers. In the case of those who do subscribe I earnestly request them to increase if possible their regular contribution during the period of the war, and subsequently for two or three years at least.

An increased number of applications is sure to be received as a consequence of the war. Already the Governors have elected as a Foundation Scholar the son of a medical officer who was killed in action on board H.M.S. *Good Hope*, and there are at this time on the list of candidates the son of a medical man who was lost in the *Royal Edward* when she was torpedoed in August, 1916, and the son of another medical officer who was killed whilst in command of a battery in France last April.—I am, etc.,

HENRY MORRIS,

Honorary Treasurer of Epsom College and its
Royal Medical Foundation.

8, Cavendish Square, London, W.,
Nov. 27th.

CHRISTMAS APPEAL OF THE Y.M.C.A.

SIR.—The members of our profession in all parts of the empire have given so generously of their skill, time, money, health, and life for the wounded and sick of our navy and army that it would seem almost an insult to ask further of them.

The appeal, however, which is appearing in the leading London and provincial newspapers is a national one, and we would not wish to be left out of it, and, moreover, this appeal is for the many who are fighting or preparing to fight for us, and not only for those who are *hors de combat*.

Our men are worth anything we can give them, and this appeal for £500,000 for the work of the Y.M.C.A. among them is practically equivalent to handing each man three shillings as a Christmas box.

Major W. McAdam Eccles is willing to receive with thanks whatever sum members of the profession will send to his address as given below before December 20th, 1917, and to hand it over as the contribution of our profession to this fund.—We are, etc.,

ALFRED PEARCE GOULD, K.C.V.O.

DONALD MACALISTER, K.C.B.

CHARTERS J. SYMONDS, C.B.

W. McADAM ECCLES, Hon. Sec.

124, Harley Street, W.1,
Dec. 1st.

Obituary.

PETER MACGREGOR, F.R.C.S. EDIN., J.P.,
HUDDERSFIELD.

MR. PETER MACGREGOR, who occupied a prominent position in Huddersfield for nearly forty years, died at his country cottage at Oswaldkirk Yorkshire, on November 15th, in his sixty third year, after a long and trying illness. He received his medical training at Edinburgh, and qualified L.R.C.P. and L.R.C.S. Edin. in 1877. Some years afterwards he took the Fellowship. After qualifying he went on a whaling expedition, and, later, acted as assistant for a short time in Lancashire. Then he settled down in Lockwood, Huddersfield, soon made his presence felt, and quickly acquired an extensive practice. He was capable of a great amount of work, and never spared himself. Few men in the medical profession can ever have worked harder than he did for many years. He did not, however, confine himself exclusively to his profession. Before long he became known as an eloquent speaker, and, as he was a man of wide and varied information, with a keen, incisive intellect, his speeches were always listened to with great interest. He became a prominent member of the Huddersfield Corporation, but municipal work, with its numerous committee meetings, did not appeal to him, and, after a few years, he retired from it.

About twenty years ago Mr. MacGregor was appointed honorary surgeon to the Huddersfield Infirmary. He was a daring operator, and took keen interest in his surgical work. His favourite operation was thyroidectomy, and in its performance he was very successful. When the Huddersfield War Hospital, with 500 beds, was opened in 1915, he received a commission with the rank of major, and threw himself with enthusiasm into the work. He had at that time already more than enough work to do as surgeon to the Royal Infirmary and in his private practice. Two days before he was taken seriously ill he went through a long list of operations at the infirmary though feeling far from well. He had been a man of much vigour and abounding energy both physically and mentally, but the severe strain was telling upon him, and when pneumonia set in his resistance was low. He did, however, make a partial recovery, but was never well enough to return to work. His great ambition was to get back to the war hospital.

"Peter" or "Mac," as he was affectionately called, was one of the best known and most popular men in the Huddersfield district. He was a master of repartee; many of his witty sayings will be long remembered. For many years he was much in evidence on the political platform, his sympathies being strongly on the Conservative side. His generosity knew no bounds, and he was particularly fond of children, seldom passing a poor boy or girl without the bestowal of some gift. He loved his profession, but disliked the business side of it. At the time of his death he was President of the West Riding Medical Charitable Society, which has done so much for the less fortunate members of the profession, in the area it covers, during the last three-quarters of a century.

At the funeral on November 20th the route was lined on either side for a distance of two miles with people closely packed in many places. The mills were closed, and it was touching to see the manifestation of sympathy amongst the workpeople for whom Mr. MacGregor had done so much.

EDWARD PARKER YOUNG, M.R.C.S. L.S.A.

MR. EDWARD PARKER YOUNG, who died recently at Westbourne Square, Hyde Park, aged 79, was well known for over fifty years as a practitioner in Paddington. After studying medicine at St. Mary's Hospital he took the diplomas of M.R.C.S. and L.S.A. in 1860. He was a member of the first London County Council, a past master of the Society of Apothecaries, and an original member of the Central Midwives Board. He was also a governor of St. Mary's and the Lock Hospitals, a former chairman of the Royal Medical Benevolent Fund, and a prominent member of various religious societies, including the Y.M.C.A., of whose national council he was vice-president.

We have received the following appreciation from Sir Francis Champneys:

I have been intimately associated with Mr. Parker Young since 1902, when the newly constituted Central Midwives Board began to hold its preliminary meetings, until a few months ago, when he retired on account of failing health. He was a man of marked personality, of independent views, courageous in maintaining them, even when he was in a minority of one, precise in business, and a systematic critic of the least inaccuracy. His honesty was so apparent that no divergence of views ever interfered with the friendliest personal relations, especially as such divergence almost always concerned methods rather than principles. Personally he was a man of strong and deep religious convictions, which bore fruit in work for the benefit of his fellow creatures in many charitable and philanthropic enterprises. He spent much time in attending boards and committees of such institutions, and put his heart into all which he undertook. He bore his illness, which was long and painful, with great courage and patience, and maintained his interest in his work long after he ceased to be able to take part in it. He will be greatly missed, and will be remembered as a very public spirited, charitable, and self-sacrificing man, and as a type of what a high-minded general practitioner of the old school could be.

Medical News.

COLONEL SIR THOMAS OLIVER, M.D., has been appointed a deputy lieutenant for the county of Northumberland.

DR. ARTHUR KEITH, F.R.S., Conservator of the Museum of the Royal College of Surgeons, has been appointed Fullerian Professor of Physiology in the Royal Institution.

DR. M. J. NOLAN, R.M.S., Down District Asylum, has been appointed Consulting Visitor in Lunacy in the place of the late Lieut.-Colonel Graham, M.D.

SIR ROBERT ARMSTRONG-JONES will open a discussion on alcohol and mental states at the meeting of the Society for the Study of Inebriety on January 8th, 1918, at 4 p.m.

Surgeon Lieut.-Colonel Sir Warren Crooke Lawless, C.I.E., and Lieut.-Colonel Thomas H. Symons have been appointed Commander and Officer respectively of the Most Excellent Order of the British Empire.

A NEW fasciculus of the *Athenaeum Subject Index to Periodicals* (November, 1917, 5s. net) contains references to publications on historical, political, and economic sciences in 1916. Appended to the subject index is an index of authors.

IN a Chadwick Trust lecture delivered on December 1st at Leicester by Professor H. T. Davidge, on electricity and the hygiene of the body, a warning was given that quite ignorant and unskilled persons might under present conditions exploit that large section of the public to whom the mysterious words "electricity" and "radium" might mean anything.

THE medical profession will be represented next year in the North Wales shrievalty. Dr. R. D. Evans of Blaenau-Festiniog has been appointed high sheriff for the county of Merioneth. Dr. Evans is the father of Dr. Carey Evans, who won distinction in the Mesopotamia campaign and was recently married to Miss Olwen Lloyd George, the eldest daughter of the Prime Minister.

THE University of London Press is issuing this week the first batch of volumes of translations of books published in the Collection *Horizon* by Masson, many of which have been reviewed in our columns. The series of translations is being reproduced under the general editorship of Sir Alfred Keogh, and the English translation has in each case been edited by a specialist. The first batch includes volumes on the psychoneuroses of war (6s.); hysteria (6s.); the after-effects of wounds (6s.); typhoid and paratyphoid fevers (6s.); the dysenteries, cholera, and exanthematic typhus (6s.); syphilis and the army (6s.); and the treatment of infected wounds (5s.).

THE autumn meeting of the Irish Medical Schools' and Graduates' Association was held on November 28th at Pagani's Restaurant, Surgeon-General Sir Laurence Gubbins, K.C.B., President, in the chair. It was resolved to send a donation of five guineas to the Royal Medical Benevolent Fund Society of Ireland. At the dinner which took place subsequently covers were laid for seventy-four members and guests. The toast of "Our defenders" was acknowledged by Major T. J. Crean, V.C., D.S.O., and Colonel O'Sullivan. The toast of "Our guests" was

proposed by Dr. J. A. Macdonald, who said the association was fortunate in having at its board that night Captain Archer Redmond, the gallant son of the leader of one of the parties in the House of Commons, as well as the leader himself of another party. Mr. Stephen Walsh, M.P., in responding, said he looked forward hopefully to a day when all Irishmen would follow the example set by that association, the members of which included men and women of all creeds and political parties, and yet during the forty years of its existence there had not been even the whisper of a quarrel. This showed that men educated in Ireland for the medical profession rose above the bitterness and pettiness of political and sectarian strife, and worked in perfect harmony for the advancement of science and the good of the community. Dr. T. Jenner Verrall proposed "Continued prosperity to the association," and coupled with the toast the name of Sir Laurence Gubbins, who, in responding, said he felt much honoured by being invited to occupy a chair which had been filled by men of such distinction as Lord Ilkerton, Sir William MacCormac, Professor Alexander Macalister, and their old and valued friend Dr. Macnaughton Jones, from whose sick bed there had come that evening an affectionate message.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them, with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and Journal are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, Aitiology, Westrand, London; telephone, 2634, Gerrard.
 2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 2630, Gerrard.
 3. MEDICAL SECRETARY, Medisecra, Westrand, London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.
- The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

AMENORRHOEA IN WAR TIME.

DR. JAMES OLIVER, F.R.S. Edin. (London, W.), writes: In your issue of to-day (December 1st) under the above heading, you draw attention to the fact that in Germany there has, in consequence apparently of war conditions, been noted a "great increase of amenorrhoea in women of child bearing age." In this country, prior to the war, I had already observed that intermittent menstruation, as I was disposed to call the condition—that is, the suspension of menstruation now and then for intervals varying from five or six weeks to many months—was becoming more and more common. Since war broke out the derangement has probably increased somewhat. Nature has predicted that the menstrual discharge should recur somewhat regularly, about every four weeks, from about the age of 14 until about the age of 45, and that it should only be suspended during those thirty odd years because of the occurrence of pregnancy, and in some cases as a result of lactation too. This being so, it is quite clear that intermittent menstruation, whether it is or is not associated with any other untoward symptoms, is undoubtedly an indication of some derangement which calls for rectification. In this and other civilized countries there has also during the last decade been noted a growing inability to suckle, and one cannot help concluding that the cause of the disability to menstruate is not far removed from the cause of the disability to suckle. From a national point of view they are both physiological disabilities of some importance.

PALMYRA FIBRE AS A SUTURING MATERIAL IN PLACE OF SILKWORM GUT.

LIEUTENANT G. SRINIVASAMURTI, M.B., C.M., I.M.S., writes: At the instance of Dr. T. M. K. Nedungadi, District Surgeon, Cuddalore, S. India, I am communicating to you our experience in the use of palmyra fibre as a suturing material in place of silkworm gut. Silkworm gut was one of the articles of our annual indent which the Government medical stores at Madras had not in stock for supply this year, adding that there was not any prospect of any fresh supply in the near future. Being thus thrown on our own resources, we decided to give palmyra fibre a trial, and the experiment was an unqualified success.

The fibre is obtained from the fibrous netting that surrounds the bases of the leaves of the toddy palmyras growing

luxuriantly on the West Coast of India, especially Malabar; hence the fibre is also known as "Malabar fibre." It can be had in all required sizes; requires very little preparation before it is ready for use and is easily preserved; it keeps well and is easily sterilized; it is fairly strong and sufficiently flexible; is very cheap and is an entirely "Swadeshi" product, so that the supply is not likely to be overprecarious. In this connexion we may cite the following opinion of Dr. Newman, who, in speaking of silkworm gut in his *Aseptic Surgery*, says: "In spite of its hard and apparently unabsorbent texture, it is by no means so safe as it may look at first light." We therefore strongly recommend the use of palmyra fibre in all cases where silkworm gut is being hitherto used.

Supplies may be obtained from Messrs. T. S. Dutt and Co., chemists, Calicut, Madras Presidency, S. India.

BACTEROL IN RINGWORM.

DR. ROBERT HOWIE (Eastbourne) writes: On September 1st, 1917, I found my youngest son, aged 3½ years, had contracted ringworm of the head, and verified the diagnosis with the microscope. The first patch was very small, but the disease spread rapidly, until there were five patches on the head, and one on the forehead, one on the left eyebrow, and one on the left ear. I started at once having the patches damped with a watery solution of bacterol (1 in 500) every twenty minutes during the daytime for three days. This caused a little irritation of the scalp, so I lengthened the time to once every two hours, and this was continued for four weeks, when I believed the growth was all killed. The head was then washed every night with soap and a warm solution of bacterol (1 in 5,000) for two more weeks. I then examined several hairs under the microscope and found them healthy. A week later I asked a colleague to examine the boy's head, and take hairs from it for examination. He thought the head looked very well, and informed me the following day that neither he nor his partner could find any disease in any of the hairs which he had taken from different areas of the head. I have treated several cases of ringworm lately quite successfully with bacterol, and intend to treat all my ringworm cases in a similar manner. The treatment is so simple. No shaving or hair cutting is required, only damping the head with the lotion at frequent intervals. In some cases I have applied an ointment containing 1 per cent. bacterol when the child has scratched the head and caused small abrasions. Bacterol is an Italian preparation containing eucalyptus, iodine, formalin, and Alpine peppermint.

TYPHOID FEVER FOLLOWING A BITE BY A HORSE?

DR. T. G. MATHEWS (Kirkby Lonsdale) writes: It is so generally accepted that the only method of transmission of typhoid fever is through the alimentary canal that the following case, which suggests another and more direct entrance into the blood, seems to me to be worthy of record.

P. M., aged 41, came to my surgery on October 6th, 1917, suffering from a lacerated wound of the terminal phalanx of the left thumb the result of a bite from a horse.

He attended each succeeding day to have the wound dressed. This seemed at first to be healing up, but after a few days he complained of some stiffness in the shoulder on that side; the axillary glands were slightly enlarged.

On October 15th he asked me to go and see him as he felt too ill to walk. I found him in bed with a raised temperature, and complaining of malaise and severe headache. From that date until his death on November 3rd he remained in bed, the headache being at first intense, and being only relieved by morphine given hypodermically. On October 19th he had a few typical spots on the abdomen, and on successive days these increased until he had a very copious rash. All the symptoms of a severe attack of typhoid fever developed, and the temperature remained high.

A specimen of his blood was sent to Professor Delépine of Manchester on October 23rd, and was reported to be positive for typhoid.

On November 1st there was evidence of pneumonia in the left lung, and he sank rapidly, and died on the morning of November 3rd, exactly four weeks from the date on which (as I think) he was infected by the bite on his thumb.

I am of course aware that this may have been in the nature of a pure coincidence, but the date and method of the onset are strongly suggestive of the bacilli having gained a direct entrance to the blood or lymph stream.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *postes restantes* letters addressed either in initials or numbers.

Remarks

ON

PENETRATING GUNSHOT WOUNDS OF THE CHEST, AND THEIR TREATMENT.

BY

G. E. GASK, D.S.O., F.R.C.S., MAJOR R.A.M.C.(T.),

AND

K. D. WILKINSON, M.D., M.R.C.P.,

CAPTAIN R.A.M.C.(T.).

This paper is based on 500 cases which have come under our care during three periods, namely:

October 13th to December 12th, 1916	...	56 cases.
April 1st to April 25th, 1917	...	79 "
June 7th to August 31st, 1917	...	365 "

These periods cover different phases of warfare and include periods of heavy fighting and of relative quiet.

We have included all cases of penetrating wounds of the chest admitted to the casualty clearing station, however serious the complications, and have excluded those cases of concussion haemothorax in which the pleura had not been opened by the missile.

For the analysis of cases and results, shown in the subsequent tables, we have excluded the first two periods because:

1. It is uncertain that all chest wounds admitted to the casualty clearing stations were seen by us in those periods.

2. It is probable that the more serious cases were diverted by the field ambulances ahead of us to advanced operating centres.

3. The clearing stations at which we were working were so placed that a period of twenty-four hours elapsed between wounding and admission of patients. Thus many of the more seriously wounded must have died in advanced posts.

4. In this last period we have been able to follow up our cases to the base or England, and have thus been enabled to include base mortality with casualty clearing station mortality in the subsequent tables.

We think that the analysis of cases from one casualty clearing station will give a fairer conception of the mortality.

The objects of our investigation have been to determine accurately the cause of death, and the possibility of lessening mortality and shortening convalescence by early operation.

We wish to render our thanks to Surgeon-General O'Keefe, Surgeon-General Bruce Skinner, and Surgeon-General Porter, for facilities given for this investigation, and to Lieut.-Colonel J. E. Davey, O.C. Canadian Casualty Clearing Stations, and his staff, who have rendered us every possible assistance; also to the Medical Research Committee, which has furnished us with books and instruments.

CAUSES OF DEATH AND PROLONGED ILLNESS.

I. If the complicating wounds are disregarded the causes of death in pure chest wounds may be divided into three groups:

(a) Deaths a few hours after admission to a casualty clearing station, due to very extensive and severe injuries which can seldom be aided surgically.

(b) Deaths in a casualty clearing station after a few days. These are almost always due to sepsis of the pleural cavity and its contents.

(c) Deaths at the base; sepsis again is the great factor.

Similarly, prolonged illness is almost entirely due to sepsis.

Therefore treatment should be directed towards the elimination of infection in chest wounds as in any other wound.

II. The pleural cavity may become infected:

(a) By the missile and portions of cloth carried in by it. Splinters of indriven bone are a material factor both in causing and maintaining sepsis.

(b) Through the wound of the chest wall; a wound that opens directly into the pleural cavity, and through

which air is sucked, will always lead to infection. Further, a wound even of moderate dimensions, through which air is not being aspirated, unless adequately dealt with may become septic in the course of one or two days, and unless the thoracic cavity is sealed off organisms pass through into the pleural cavity, where they find the blood a convenient medium. This accounts for many cases which show septic changes only after four or five days.

(c) From the wound of the lung in which foreign body, bone, or clothing may be retained.

PRINCIPLES OF TREATMENT.

A patient admitted with a suspected penetrating wound of the chest is put to bed and allowed to rest undisturbed for one or two hours to recover from shock. The only exception to this rule is when there is a large opening into the pleura through which air is sucked. In such cases the opening is immediately closed by temporary skin suture without anaesthetic. This gives the patient immediate relief. We are strongly of opinion that all such wounds might be sewn up with great advantage at advanced dressing stations. The procedure is easy, rapid, and much more efficient than plugging and strapping.

The Italian surgeon Bastianelli recommends the use of a dumbbell-shaped pneumatic bag, which when inserted into an open thorax and inflated prevents suction of air, and also controls intercostal bleeding. We have no experience of its use, but the idea seems excellent.

A survey is then made of the whole patient, and all wounds examined; evidence of haemothorax, pneumothorax, or collapse of lung is sought. Much may be gained by careful examination of the movements of the chest as a whole; the position of the heart is of the greatest importance. The whole body should be searched for complicating wounds, especially with regard to abdominal and spinal injury. Cases in which the missile has not passed out of the body should be examined by x rays, by which valuable information may be gained concerning:

1. The position and size of the foreign body.
2. The existence and extent of haemothorax and pneumothorax.
3. The condition of the opposite lung, cardiac displacement, and movements of the diaphragm.

INDICATIONS FOR EARLY OPERATION.

The indications for early operation are:

1. A ragged wound of the soft parts.
2. Compound fracture of ribs.
3. Bleeding from parietal wound.
4. Suction of air into the pleural cavity.
5. Retention of a large foreign body in an accessible position.
6. Pain (often the result of indriven splinters of rib scratching the lung with every respiratory movement).
7. Rapidly increasing pneumothorax due to a valve-like opening into the pleural cavity, which allows air to be sucked in and prevents its expulsion.

TREATMENT WITHOUT OPERATION.

Where none of these indications is present—that is, when the wounds of the chest wall are small and clean, when there is no evidence of fractured ribs, when the foreign body retained in the lung or mediastinum is small—the case is treated on general medical principles. The patient is kept in bed, propped up or flat as he prefers, and a careful record is kept of the pulse, respiration, and temperature.

Haemothorax.

When the haemothorax is large enough to produce symptoms by its size it is aspirated; otherwise the chest is only needled if the condition of the patient suggests that a haemothorax is becoming infected, when a sample of blood is removed for bacteriological examination. The chief clinical signs of infection are a rising pulse rate, high temperature, sudden increase in the size of an effusion, or sudden occurrence of pneumothorax several days after the receipt of the wound.

Massive Collapse of Lung.

Apart from collapse of the injured lung as the direct result of an effusion of blood or air, we have noted massive

collapse in about 10 per cent. of cases (contralateral in 1 per cent.). It was invariably in the lower lobes, and is indicated by respiratory restriction of the chest wall with cyanosis and distress, diminution of percussion note, and bronchial breath sounds over the base of the lung. Theories as to the causation of this condition are numerous and unsatisfactory.

Cyanosis.

Cyanosis, which is often due to collapse of one or both lungs, is best treated by inhalation of oxygen for five or ten minutes every half-hour.

Pneumothorax.

Pneumothorax is frequently associated with haemothorax in the early stages, but, as a rule, the absorption of air is rapid, and when the chest is closed a pneumothorax may disappear completely within twelve hours after the receipt of the wound.

Occasionally the wound of the chest is of such a nature that some air may be sucked in by each inspiration, and yet none escape on expiration (valve-pneumothorax). The pneumothorax increases in size, and the distress of the patient is very marked. Aspiration is useless, and early operation, affording relief of pressure, followed by repair and closure of the chest wall, is the correct procedure.

Surgical Emphysema.

This is of frequent occurrence. Often it extends throughout the subcutaneous tissues, but does not require any special treatment even when very extensive.

Substernal Emphysema.—In addition to this general distribution it occurs in the extrapericardial fat and loose connective tissue of the anterior mediastinum. This "substernal emphysema" may give rise to physical signs, which are especially noticeable when the emphysema is localized to the mediastinal tissues. Such signs are:

1. Absence of the precordial area of dullness on percussion.
2. Crepitations which occur with each heart beat, and may more or less replace the heart sounds.
3. A pericardial, or pleuropericardial, murmur may be present, and may render a differential diagnosis from pericarditis very difficult. As a rule, the general condition of the patient, and a moderate heart rate with the absence of pain, will suggest that such a serious complication as pericarditis is not present.

Apart from the above physical signs the condition is of no significance, and usually disappears in a day or two.

A steam tent is sometimes necessary for the treatment of bronchitis. We endeavour to retain patients for ten days at least.

TREATMENT BY OPERATION.

TIME OF OPERATION.

The best time is as soon as possible after the patient has recovered from the initial shock, and with us has averaged about six hours after admission.

WOUNDS OF THE SOFT PARTS.

If nothing further be done, wounds of the soft parts, unless small and clean—for example, rifle bullet wounds—should be excised, because otherwise they will suppurate, and infection will spread along the track of the missile into the pleural cavity, giving rise to empyema.

FRACTURE OF RIBS.

Excision of the wound of the soft parts leads the surgeon to the ribs. More often than not the ribs or scapula are broken, and whether or not further operative procedure be undertaken for opening the chest, the splinters of bone should be removed, ragged ends of rib cut clean off, and all dead tissue excised.

Examination of the wound in this way may reveal either a bleeding intercostal artery or a large hole, hitherto unsuspected, leading into the chest, and a finger introduced into the pleural cavity may discover splinters of bone, free or sticking into the lung. Such splinters should be removed, for we believe that they play a great part in the production and maintenance of infection.

At this stage the case has been converted into one of open haemothorax; if it is decided not to open the chest

further the blood should be evacuated as far as possible by rolling the patient on to his side and then the chest should be closed in layers—pleura to pleura, muscle to muscle, and skin to skin. When there is a deficiency of pleura, muscle should be brought over the gap; where there is a deficiency of pleura and muscle, even if a flap has to be cut, skin should be brought over the gap. The chest must be closed.

RETENTION OF LARGE FOREIGN BODY.

By a large foreign body we mean a shell fragment about one inch by half an inch, with which are associated, as a rule, splinters of undriven rib and clothing; we do not include a rifle bullet.

It will be understood from this that we attribute much more importance to infection and damage caused by the missile than to the retention of the foreign body itself. But if the missile lies free in the pleura, or projects into the pleura either from the lung or the chest wall, it should be removed.

When it is decided that the removal of a retained foreign body is necessary, the operation may be undertaken either through the wound or by fresh thoracotomy. If the route chosen is through the wound, the procedure undertaken will be that detailed above for the excision of a wound, but instead of the removal of the broken ends of rib a resection of four inches will be necessary.

The choice of route for removal of a retained foreign body depends upon its position relative to the wound of entry. Where possible, thoracotomy through the wound is preferred, because in any case the wound has to be excised, and less damage is done to the chest wall.

A fresh thoracotomy may be done by resection of four inches of rib, or by an incision in the intercostal space. The easiest route is probably *via* the fifth rib in the mid or anterior axillary line; by this means, with the insertion of a retractor, any part of the pleural cavity can be reached.

On looking into the chest thus opened, the damaged lung can be seen, and the foreign body may be immediately visible; if blood obscures the view, it should be removed by rolling the patient or by mopping. If not visible, the foreign body may be sought by inserting the hand into the pleural cavity, and may be removed through the wound of entry into the lung, or by a fresh incision into lung tissue.

Lung tissue may be incised without fear, because any fresh bleeding following incision is easily controlled by suture. Continued bleeding from the lung is exceedingly rare, and in the few cases observed was due to inability of the lung to collapse, either from adhesions or splinters of bone. Early operation, even within twelve hours, with evacuation of the haemothorax, does not cause recrudescence of bleeding.

When readily accessible the wound of the lung should be cleansed either by excision or by wiping with gauze, it should always be sutured, because, if left open, organisms can pass from the lung into the pleural cavity, and there is evidence that the lung is capable of dealing satisfactorily with infections—gas gangrene of the lung, for example, is of very rare occurrence.

ABDOMINO-THORACIC INJURIES.

Injuries involving both the chest and the abdomen are not infrequent, either as the result of a single or multiple missiles. When a missile has traversed both chest and abdomen the diaphragm is necessarily injured and abdominal viscera may protrude into the pleural cavity. As efficient repair of the diaphragm can only be obtained from above it is better in such cases to open the chest first, replace the abdominal contents, suture the diaphragm, deal with the chest as already indicated, and then, if there is evidence of injury to the hollow viscera, laparotomy may be performed.

The passage of a small missile through the diaphragm may not necessitate repair; in such a case, with evidence of injury to hollow viscera, the abdomen is afforded preferential treatment.

Similarly, with multiple injuries involving both chest and abdomen, it is probably better to deal with the abdominal injury first, but when the patient's condition allows the chest injury should be dealt with in addition, even if only a minimum can be done.

INFECTED HAEMOTHORAX.

We believe that the incidence of infection will be diminished when more attention is paid to complete excision of wounds of the chest wall. But infection of the intrapleural contents occurs also in cases of small clean wounds where no foreign body is retained, and also after excision of the parietal wounds, and particularly in men who have lost a large quantity of blood.

The infecting organism and resulting toxæmias vary considerably; in our experience, while a mixed infection is always severe, the anaërobic bacilli are among the most benign, and the streptococci—especially if haemolytic—are the most dangerous. Evidence of infection is rarely seen before the third day after the wound and may be delayed for many days. The only certain evidence of infection is either a positive bacteriological finding or the removal of stinking fluid. By clinical signs it is often possible to diagnose the presence of infection before organisms can be detected by the bacteriologist.

As soon as infection is proved or suspected, the essential treatment is to empty the chest of all infected blood and clot. This cannot be done by aspiration, and must be done by open operation.

The common practice has been resection of one inch of rib and insertion of a tube. Provided that the operation is done within a few days of the receipt of the wound, we believe that it is better to do a wider resection, by which means all clot can be removed and the pleural cavity washed out with eusol, and then to close the chest in layers.

This method offers the following advantages:

1. The chest may remain closed, the organisms not developing.
2. The lung is allowed to expand, and adhesions may form which will prevent complete collapse, even if the pleural cavity is subsequently drained.
3. Respiratory distress is much less with the closed chest.

The condition of the pleural contents can be determined by post-operative needling. If infection persists the chest must be opened and drained; this can be done by the removal of sutures from the resection incision, provided only that the incision has been made in a suitable place, that is, low and postero-laterally.

ANAESTHETICS.

Patients bear operation well, and take a general anaesthetic satisfactorily. We believe that any patient on whom an intrathoracic operation is to be performed should have a general anaesthetic.

We have generally administered chloroform through a Shipway's apparatus. One side of the chest can be opened without danger of respiratory failure, except when there is damage or collapse of the opposite lung, as evidenced by inspiratory retraction of the chest wall.

A short experience of gas and oxygen anaesthesia leads us to the belief that it is an ideal anaesthetic for such cases.

CIRCULATORY DISTURBANCES.

When one side of the chest is open, either as the result of an operation or the original injury, and also in cases of pneumothorax, respiratory variations in pulse volume are very marked. During inspiration pulse volume diminishes and pressure falls; the pulse may become imperceptible. This condition is not of serious import, and, when the chest is closed, diminishes considerably or disappears altogether. We mention it as it is apt to alarm the anaesthetist.

CONTRAINDICATIONS FOR OPERATIONS.

1. Shock and collapse, such as would be contraindications for any surgical procedure.
2. Small clean wounds, without evidence of serious intrathoracic injury.
3. Retention of a small foreign body in the lung or mediastinum. In our experience of early convalescence the foreign body, if small, may be disregarded. We are not in a position to speak of the ultimate results.
4. Collapse of the opposite lung, as indicated by inspiratory retraction of the chest wall on the side opposite to the wound. In this condition an anaesthetic and opening of the chest may be fatal.

In one of our cases a plug of blood and mucus had been sucked into the bronchus of the opposite lung, and the patient died of respiratory failure when the injured side of the chest was opened.

OPERATIVE TECHNIQUE.**THORACOTOMY THROUGH THE WOUND.**

The first essential is the complete excision of the wound including the skin, muscles, and broken ends of rib. This having been completed, the chest should be opened with fresh instruments. An incision is made from the edge of the wound through the skin along the line of the broken rib, either forwards or backwards, to obtain the best access to the cavity of the chest. Then the muscles are incised down to the rib, retracted, and the periosteum incised along the middle line of the exposed rib. Along this line the periosteum is stripped off with a rugine. A Doyen's periosteal rib elevator is then slipped in and the periosteum entirely separated. The bone is then cut through with a pair of rib shears or bone forceps and removed. To allow free access to the pleural contents and insertion of the hand it is necessary to take away four inches of rib.

The posterior layer of periosteum of rib with the parietal pleura attached is next incised with a pair of scissors along the middle of the gap. Then a retractor or rib spreader is inserted and the chest opened widely.

THORACOTOMY BY FRESH INCISION.

As previously stated, this operation may become necessary when thoracotomy through the wound will not allow access to the injured portion of lung, for instance, when the wound is in the lower and posterior part of the thorax and the foreign body near the hilum or in the upper lobe of the lung.

Choice of Route.

Resection of four inches of the fifth or sixth rib in the anterior axillary line gives a good exposure of the thoracic contents, and if there are no other considerations this is probably the best and easiest route to follow. It has to be remembered, though, that if drainage of the pleural cavity has to be performed later on, it cannot be done effectively through this incision. Therefore, if the nature of the wound and missile is such as to indicate probable future infection, it may be advisable to choose a lower rib and make the incision more posteriorly.

Operation.

A six-inch incision is made along the line of the selected rib, and continued down to the periosteum, which is stripped off the anterior surface with a rugine. With rib elevator and shears four inches of the rib is resected. The posterior layer of periosteum with the parietal pleura attached is then incised along the whole length of the middle of the gap, and the retractor or rib spreader inserted.

This is the method we have usually adopted with good results.

Alternative Methods of Opening Thorax by Fresh Incision.

1. Incision through an intercostal space, with or without section of one or two costal cartilages. A good exposure may be obtained by this method, provided the patient is young and has elastic ribs. We have found some difficulty in closing the chest efficiently afterwards, and prefer the resection method.
2. Before the war the pleuro-costal flap method was advocated. This is unnecessary, and prolongs the operation.
3. Cowell has suggested that the rib should be split along its longitudinal axis. This method merits trial.

PROCEDURE WITHIN THE THORACIC CAVITY.

After the chest has been widely opened, either through the wound or by fresh incision, it is advisable to remove the blood from the pleural cavity, first, because it is easier to see what has to be done, and, secondly, because removal of the blood relieves respiratory difficulties by lessening pressure on the mediastinum. The blood can be removed

by rolling the patient on to his side. Probably, however, it is better to do it by swabbing with gauze and scooping out the clot with the gloved hand; less disturbance is caused to the patient by this method.

This done, the gloved hand should be inserted into the pleural cavity and swept round in order to detect and remove any splinters of bone which may be lying free, or the missile and portions of clothing. These are most likely to be found in the pleuro-diaphragmatic reflexion.

Next the foreign body, if retained in the lung, may be detected by the fingers, and with the aid of two pairs of lung forceps the affected area is brought into the opening of the chest. The lung can be handled as easily as a coil of intestine, and without causing a great fall of blood pressure.

TREATMENT OF THE WOUNDED LUNG.

A foreign body, when present, seems to lie generally near the surface of the lung, and can easily be removed; if necessary, a small incision may be made through the lung substance.

The hole in the lung should now be explored for splinters of bone and shreds of clothing, and cleansed as far as possible by swabbing. When there is a large ragged wound, and it is anatomically possible, a wedge of lung may be removed, or the edges of the hole clipped with scissors.

In any case, whether the wound is excised or not, it should be closed by catgut sutures, in either one or two layers, according to the depth of the wound. Bleeding is easily controlled by such suture.

CLEANSING OF THE PLEURAL CAVITY.

In most cases it is only necessary to cleanse the pleural cavity by swabbing it dry and clean. If, however, there has been much soiling, it is advisable to wash it out with either warm saline or eusol. In any case, however, the chest should be left dry, an essential factor in the early expansion of the lung.

CLOSURE OF THE CHEST.

Whether the operation has been performed through the wound or by fresh incision, the chest should always be closed. The relief afforded the patient is instant and marked. An attempt should be made to repair the chest wall in layers—pleura to pleura, muscle to muscle, and skin to skin.

Where a large hole has been blown through the chest wall it may be impossible to make the edges of the pleura meet; in that case muscle should be made to cover the gap, even if a flap has to be cut. Finally, the skin should be closed by interrupted sutures. In the majority of cases healing will be by primary union.

INSTRUMENTS.

The following instruments have been found of service:

(1) A self-retaining retractor or rib-spreader. This is of great value, and allows easy manipulation of the pleural contents. We use one obtained from Schaefer's, instrument makers, of Berners Street, London, W. Another pattern, Tuffier's *écarteur*, can be obtained from Parisian instrument makers.

(2) Doyen's periosteal rib elevator, and (3) Doyen's rib shears, can both be obtained from the ordinary English instrument makers.

(4) Duval's lung forceps (Pince de Poumon à Duval), Maison Collin, Rue de l'École de Médecine, Paris.

(5) An electric head lamp.

Table of Results, showing Casualty Clearing Station and Base Mortality.

Total number of cases	...	...	...	365
Total deaths	...	...	...	76=20.8%
Deaths from complications:				
Chest and head	...	...	...	6
Chest and abdomen	...	...	...	14
Chest and spine	...	...	...	4
Chest and heart	...	...	...	4
Chest and large systemic vessels	...	...	...	1
Chest and multiple wounds	...	...	...	14
Chest and lethal gas	...	...	...	1
Total	...	...	...	45

If the above 45 deaths from complications are excluded there remain 320 cases. Of these 31 died (9.6%) of chest injuries.

Causes of deaths from chest injuries:

Shock and haemorrhage	...	...	...	19
Sepsis	...	...	...	10
Bronchitis	...	...	...	2
Total	...	...	...	31 = 9.6%

Table of General Results.

	Recovered.	Died.	Total.
Cases operated on	83	21 (20.2 %)	104
Cases not operated on	206	55 (21.07 %)	261
Totals	289	76	365

Average stay in casualty clearing station ... 6.7 days.

Table of Operation in 365 Cases.

Operation.	Total.	Subsequent Empyema.	Recovered.	Died.
Excision of wounds of parietes	36	—	34	2
Thoracotomy for repair of chest wall and lung with evacuation of haemothorax and closure of chest	24	4	15	9
Thoracotomy for removal of foreign body, repair of lung, evacuation of haemothorax, and closure of chest	16	2	13	3
Thoracotomy for infected haemothorax, and closure of chest	15	12	10	5
Abdomino-thoracic operations for repair of chest, replacement of viscera, suture of diaphragm	12	4	10	2
Laparotomy, with small wound of diaphragm not requiring suture	1	—	1	—
Aspirations	48	—	—	—
Total (excluding aspirations)	104	22	83	21

Table showing the Nature of the Missile and the Percentage Mortality in 290 Cases.

		Mortality.
Rifle bullet, entry only	12	16.6 %
Rifle bullet, entry and exit	62	9.68 %
Shell fragment (including bombs)—		
Entry only	158	20.9 %
Entry and exit	19	47.3 %
Shrapnel ball	11	9.09 %
Multiple shell wounds	28	21.43 %
Total	290	

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A NOTE was published last week on the experiments of Hanzlik and Karsner on albuminuria and haematuria after the use of salicylates. We have since received a report of a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, on October 26th, at which Dr. Boxwell mentioned the case of a soldier in whom an attack of haematuria immediately followed the exhibition of sodium salicylate on two occasions. Blood was present at first, but later the corpuscles disappeared, though the urine remained a deep brown colour for some time. The spectroscopic appearances were negative. At the same meeting Dr. Wallace Beatty described a case of sporotrichosis in a boy aged 15½ years, a worker in a brush factory, who was injured on the front of the wrist by a piece of bass. Professor McWeeney confirmed the diagnosis by cultures. This, it was stated, was the first case recorded in Ireland. Dr. Walter G. Smith pointed out that the condition might be confounded with syphilis, tuberculosis, and purulent inflammation. It could be cured by potassium iodide.

Lectures
ON
THE ANATOMICAL AND PHYSIOLOGICAL PRINCIPLES UNDERLYING THE TREATMENT OF INJURIES TO MUSCLES, BONES, AND JOINTS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,
NOVEMBER–DECEMBER, 1917.

BY
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CONSERVATOR OF THE MUSEUM.

II. JOHN HILTON'S PRINCIPLES OF TREATMENT.

Abstract.

IN the spring of 1862 John Hilton completed in the theatre of this College a series of lectures which, when published in a book under the title of *Rest and Pain*, won an enduring place in the minds and hearts of medical men. I have our College portrait of him to show what kind of man gave those lectures here fifty-five years ago. "Rest and pain" is a title with more than a touch of romance in it; it prepares you to expect the finely chiselled face of a poet; but the man who wore those vivid and incisive lectures from materials freshly gathered at the bedside had nothing of the poet about him. His is a flat, rotund, plainly moulded, robust, and honest face. His contemporaries tell us that he had the outward appearance of a dapper, prosperous city man. There is nothing at all of the student's cast of countenance about this man whose skilful practice we are to follow. There is no trace in him of the society man; he cold-shouldered all the world save the few he selected for associates and friends. He could be, and often was, overbearing, rude, and mordantly sarcastic. But we shall see that he faced adversity with a brave heart, asking no favour and having no fear of any man, knowing well that he had that to sell which the world must buy, not at its, but at his price.

Having thus introduced John Hilton when he had established for himself a sure place in British surgery, I propose now to turn to his earlier years, and watch his growth in knowledge. Hunter served the apprenticeship to his life's career in the dissecting room; so did John Hilton. Hunter's dissecting room was in Covent Garden; Hilton's lay in the Borough, beyond the south end of London Bridge. In the year 1824, when Hilton, a lad of 17, came from Chelmsford Grammar School to commence his medical studies, the twin hospitals of St. Thomas's and Guy's were cheek by jowl in the Borough. They had a common dissecting room when Hilton attached himself to Guy's. He was born at Castle Hedingham, in the upper reaches of the Colne, in North Essex, as pure a Saxon settlement as is to be found anywhere in England. He was a Saxon in build of body and in frame of mind. His people were apparently not well off, for Hilton could not afford to pay the surgeon-pupil's fee which would have secured for him the privileges of climbing to the highest position in his hospital. Hunter had been dead more than thirty years when Hilton entered the Borough in 1824, but his name and teaching were kept green there by two ardent Hunterian pupils and disciples, Henry Cline and Sir Astley Cooper. Hilton could begin where Hunter left off.

In 1828, at the age of 21, having taken the diploma of this College, he entered the dissecting room of Guy's Hospital as demonstrator of anatomy, and there and in the post-mortem room he was destined to abide and work for seventeen long years, when, in 1845, at the ripe age of 38, he was appointed assistant surgeon to the hospital and lecturer on anatomy. Like Hunter, he served his apprenticeship to surgery in the dissecting room. Only it was a different apprenticeship. There was a home in the suburbs, but no experimental station in the suburbs, no sedulous cross-examination of freezing eggs, incubating chicks, or sensitive hydra to yield the secrets of life. Certain things had happened since Hunter's death which influenced the men of Hilton's time. Archdeacon Paley had cast a spell on the marvellous mechanisms of the human body. It became the chief duty of the anatomist

to discover the utility and design of every one of its many structures. Hence we find Hilton in the dissecting room seeking continuously for an explanation of the arrangement and use of its various parts. He turned his attention to the distribution of arterial trunks, and sought for a functional—or, as his contemporaries would have phrased it, a teleological—explanation. For him the internal maxillary became the "artery of mastication"; it was designed and laid down to supply all the parts concerned with the jaws and the muscles which moved them. Its large middle meningeal branch, far from proving his thesis to be wrong, proved its truth, for did it not supply that temporal area of the skull which provided a firm basis for the largest of masticating muscles—the temporal? On the same basis he explained the distribution of the branches of the subclavian arteries; they were "respiratory vessels" destined to supply muscles and bones concerned in the act of respiration. The coeliac axis was "the artery of digestion"; it supplied the organs immediately concerned in that act. We see him hot foot in the application of the doctrine of utilitarianism to the structure of the human body.

Certain events which occurred just before and just after he became demonstrator at Guy's in 1828, turned his attention to the manner in which nerves are distributed; these were the discoveries of Charles Bell and of Marshall Hall. On becoming a medical student Hilton could not have escaped the glamour of the doctrine which Charles Bell was still preaching from the precincts of Piccadilly; for the first time a utilitarian explanation of nerve roots had been given; for the first time it was shown that nerves going to muscles were compound in nature; they contained fibres which carried messages from the brain, and also others which carried messages to the brain. It was late in 1832, just as Hilton was commencing his fifth year in the dissecting room, that Marshall Hall, working in a laboratory extemporized in his Bloomsbury home, announced to an incredulous world his discovery of the "reflex"—or, as he preferred to call it, the "excito-motor"—function of the spinal cord. Hilton never understood the nature and full significance of Marshall Hall's discovery, but nevertheless it bent him towards the investigation of nerve distribution. Hence we find him dissecting out the exact distribution of the laryngeal nerves; he shows that the nerve which furnishes the mucous membrane of the larynx with sensory fibres also supplies the muscles which are situated beneath the membrane with motor fibres. For him that observation became the basis of a law—the nerve which supplied the motor power of a part also served the sentient surfaces connected with that part. For him the nerve trunk became the functional element. He preferred to work on what seemed a solid anatomical basis than trust himself to the intangible "excito-motor" theory of Marshall Hall.

He applied himself to the investigation of the nerve supply of joints. In the hip he observed that the three nerve trunks—anterior crural, obturator, and sciatic—which supply the muscles which act on the joint, also send sentinel branches to the joint itself. By such an arrangement he believed a consensus of action was obtained: the articular sentinels kept their muscular colleagues informed as to the condition of parts in all stages of a movement. In the knee-joint he found further confirmation of his belief: the obturator nerve sent a twig to the knee-joint because the gracilis—an obturator or adductor muscle—acted on that joint. For the same reason the nerves which supplied the extensors and flexors of the knee also supplied the joint. At the knee-joint he was able to go a step further: the nerves which supplied a joint also supplied the sentient skin which enclosed and protected the joint.

As regards the knee-joint this theory presented a difficulty: the internal saphenous nerve which furnishes a large branch to the skin of the knee was distributed chiefly in the leg and foot. A nerve which observed his theory should not do a thing like that. Hilton's was an eminently logical and practical mind, and this seemed an exception to his law of "consensual distribution," he turned to its support in the following manner. The sartorius muscle acted not only on the knee-joint, but through its fascial insertion on the whole of the inner side of the leg. It was necessary, he conceived, that a nerve of a muscle group should supply the skin over its entire area of action, and hence the extension of the distribution of the internal saphenous nerve to the inner side of the leg.

He supported his contention by an appeal to the upper extremity: the posterior circumflex—the nerve of the shoulder-joint—sent cutaneous branches beyond the deltoid because that muscle had an insertion to the fascia of the arm; the musculo-cutaneous of the arm sent a branch to the forearm because the biceps, by its fascial insertion, acted on the forearm. In the dissecting room, and afterwards in his surgical lectures, we shall often find him straining a hypothesis far beyond its breaking point. But right or wrong, it was just because he tried to explain appearances and kept his eye ever on the alert that he became a power in British surgery. In 1839, while still engaged in these dissecting-room researches, he was elected to the Royal Society at the age of 32.

We are now to follow Hilton when he is launched in the field of surgery, at the ripe age of 38, and watch him apply, in the treatment of joints, muscles, and nerves, the knowledge he had gained during the seventeen years of continuous labour in the dissecting and *post-mortem* rooms. In some respects he is to out-Hunter Hunter. He never leaves us a moment in doubt as to the rôle the surgeon is to play in the treatment of disease. He must be nothing more and nothing less than Nature's humble assistant. At the end of his fourteenth lecture, when his experience was ripe, he summed up his philosophy in these words:

By regarding this subject of physiological and mechanical rest in what I conceive to be its proper professional light, the surgeon will be compelled to admit that *he has no power to repair directly any injury*. It will induce him to acknowledge in all humility that it is the prerogative of Nature alone to repair the waste of any structure. He will thus realize that his chief duty consists in ascertaining and removing those impediments which obstruct the reparative process, or thwart the effort of Nature, and thus enable her to restore the parts to their normal condition.

Hilton had the power of putting into words thoughts which were beyond the power of Hunter's utterance. Nor can I resist to quote here another instance from his third lecture which shows not only his opinion of the surgeon's place, but gives a glimpse of his humanity and his command of idiomatic English, learnt while a boy at Castle Hedingham.

A surgeon from the country lately came to my house with a patient. He said: "I want to consult you about a young lady who has a diseased toe." With her was a relative, an elderly gentleman, a very kind-hearted man, who thinks himself a good surgeon and goes about doctoring people, sometimes doing harm and sometimes perhaps a great deal of good. He is very fond of animals, and has a number of pets. After I had examined, with the surgeon, the lady's toe, the elderly gentleman said: "Well, Mr. Hilton, what are you going to do to cure this young friend of mine?" I said: "I think I shall put a splint on the foot and keep the toe quiet, attend to her general health, and Nature, in all probability, will do the rest." I then said to him: "What led you to adopt the occupation of a philanthropic surgeon?" "Well, Mr. Hilton," he replied, "I will tell you. Some years ago I caught a live mouse in a trap. . . . Then I thought to myself, 'This mouse must have had difficulties in the treatment of its injuries; and—' Interrupting his story, he said, "I hope you won't be offended at what I am going to say?" "No," said I, "not in the least." "Well," he continued, "I said to myself, surely this mouse, although it is cured, never had a physician or a surgeon? I agree with you, Mr. Hilton, that Nature is a very valuable surgeon."

This vivacious passage makes it very clear that Hilton considered the surgeon's first duty was to give the injured parts rest. It was by means of rest that he could best help Nature. The therapeutic value of rest has been recognized by surgeons of all periods. It constituted the fundamental principle of Hunter's practice, but while Hunter gave it a place at the end of a paragraph, Hilton made it the heading for a new chapter. He used his knowledge of the structure and function of the body as a means to discover how parts could be rested. He began by applying his dissecting-room investigations to the treatment of inflamed joints. "Why is an inflamed joint fixed and flexed?" he asks. His answer is that

the irritated or inflamed condition of its interior (say the knee-joint) involves all the articular nerves, excites a corresponding condition of irritation in the same nerve trunks which supply its extensor and flexor muscles. The flexors, by reason of their superior strength, compel the limb to obey them, and so force the joint into a *flexed condition*. . . . The muscles, indeed, appear to be told, through the medium of the nerves of the interior of the joint, that its articular structures are over-taxed; the antagonistic muscular forces of the joint being thus *involuntarily* excited, the joint is at once rendered rigid and stiff for the purpose of keeping it at rest. . . . The flexors act

unceasingly day and night apparently without rest, and especially declare their mischievous assiduity by the wakeful slumbers and disturbed sleep of the patient.

The surgeon's first duty was therefore to give the exhausted muscles rest by removing the source of their disturbed action—the stimulus which arose within the diseased joint at each movement. That could be done in only one way: if we would set the muscles which act on the knee-joint at rest, then we must prevent the articular nerves of the joint from being irritated by the pressure and friction which result from every movement—particularly involuntary movements. There was only one way—rest. But not the rest given by a general instruction to patient, guardians, or nurse—as Hunter gave it; not rest in homoeopathic or intermittent doses, but a long continuous course. The methods used to secure such rest must be founded on a sure anatomical and physiological basis, prescribed with precision and carried out meticulously, until Nature had effected a cure. The application of splints was his chief means of securing physiological rest of joints. We shall have occasion later to allude to the designs he employed; his service to surgery lies not in the forms of splints he recommended, but in his insistence on their unremitted application.

In passing at once to Hilton's chief work—his application of the principle of rest to the treatment of diseased and injured joints—I have failed to do justice to the solid basis of observation on which he based his practice. He had noted, as had many a surgeon before him, that spasm departed from the orbicularis palpebrarum when the irritant, whatever form it might assume, was removed from the eye; that the removal of a fish-bone from the throat set the pharyngeal muscles at rest, and that the extraction of a calculus relieved spasmodic contractures of the bladder. To obtain rest the irritant had to be removed. He construed the word "rest" in a wide sense. You will recall this case:

That of a man who had received a blow on the chest from a fall upon the part. I could find no fracture of the ribs, but observed that the patient had a most worrying wife. I suggested to the physician that the sole cause of the pain was in all probability produced by the patient constantly moving the injured or bruised soft parts by using his chest and lungs in speaking. All I recommended was that he should hold his tongue and have his chest bandaged. I requested that his wife should not say a word to him. From that time he got quickly well by local rest.

The instance shows us that he used the word "irritant" as well as "rest" in a wide sense. He considered that the false membrane which forms on an acutely inflamed mucous surface, the scab which spreads over an open wound, the exudates which appear on the surfaces of inflamed serous membranes, were Nature's means of protecting these parts from irritation and thus providing them with rest. It was to give rest that he excised painful cicatrices, and cut the nerves which supplied the painful points of irritable ulcers. He rested the heart by confining the patient to bed, and elevated the extremities to rest their vessels. He relieved tension to give rest—the tension of abscess, of stretched nerves, and muscles. Occasionally he resorted to tenotomy to give a spasmodic muscle rest. One series of cases which he treated by rest for the relief of tension of nerves is now of particular interest to us. They are cases which Hilton described as "cervical exostosis," but which we now know are due to the pressure of the lowest trunk of the brachial plexus against the uppermost rib—usually one attached to the seventh cervical vertebra. Hilton treated such cases by rest—rest in the recumbent position, which relieved the suspensory muscles of the shoulders and lifted the nerve trunk from the point of pressure. Whether we agree with Hilton in all his interpretations of Nature's intention or not, we must admit that he sought for and obtained a rational basis for his means of treatment—one founded on the facts of Anatomy, Physiology, and Pathology.

In his scheme of therapeutics action finds no part—neither active movements nor passive movements are considered. "No counter-irritation, none of the old horse-doctoring style of treatment, no setons, issues, or painful applications of any kind," is his verdict as regards ancient and widely established practices. He gives us no reason: simply his dogmatic assertion. He warns his readers of the danger of "walking off" muscular pains and stiffnesses. He had never seen long-continued rest produce harm:

healthy joints which had been confined for months came out undamaged from months of continuously enforced rest. Yet there is one of his observations which does bear on the utility of movement in preventing ankylosis. He remarks on the rarity of ankylosis in the joints between ribs and spine. They are joints at which movements go on unceasingly throughout life. But he refused to associate their freedom from disease and from ankylosis with their inability to assume a position of continuous rest.

If Hilton's first service to surgery was to give "rest" a foremost place in the means of treatment, his second service was to give "pain" its rightful place in the means of diagnosis. He was a teleologist; he regarded the human body as a specially designed machine provided with a sense of pain to serve as a signal of disease.

I conceive that pains situated on the surface of the body, and associated with some abnormal state of an internal viscus, must be looked on as a beneficent provision, enabling us by external pain to receive the information and to appreciate slight organic changes or derangement of function of the internal viscera.

That statement of Hilton's was particularly directed against those who hide their ignorance by tracing all obscure pains to rheumatism and gout. In his opinion, pain was provided by Nature to guide the surgeon to the seat of disease; a knowledge of the distribution of nerves and the manner in which the nerve system acted was the means by which the surgeon was to obtain a correct diagnosis. Pain was a demand for rest. He made certain observations which throw some light on the production of pain. In a case where the ulcerated articular surface of the astragalus was exposed, he made his pupils note that when he merely touched the ulcerated area the patient felt nothing, but when he pressed it there was pain. Pressure gave pain; rest relieved it. In another case, one of necrosis of the tibia, he showed how pressure on the artery above the seat of disease diminished pain, while pressure on the veins increased it. Pressure within the capillaries caused increase of pain.

I should give a very imperfect picture of the foundation of Hilton's methods of treatment were I to omit his inquiries into pathological conditions. I need only cite two cases to show you that he sought in every case, before commencing treatment, to realize the exact nature of the deeply seated lesion; he never allowed an opportunity to escape which would yield him information. The first case I shall cite is this:

A young gentleman, 18 years of age, living in Islington. On a Sunday evening, returning from chapel, wearing a very narrow high-heeled boot, walking at the edge of the pavement, his left foot turned inwards with a sudden jerk, and he exclaimed to his sister, who was with him: "Oh! I have twisted my foot; I never had such a dreadful wrench before." I saw him on the following Sunday with Dr. Billingham, and I then came to the conclusion that he had sustained some injury to the lower epiphysis of the tibia, for, upon close examination, I found the ankle-joint free from mischief. Hilton advised rest. Some days later, when he was visiting patients in the city, he learnt by accident that the young man was dead. He set out for Islington. "The hearse was at the door, so that I had only time to unscrew the coffin and examine the leg. I took away the bit of tibia; it fairly rewarded me for the trouble. There was a laceration between the shaft of the tibia and its lower epiphysis—precisely the spot where the boy had the first sense of pain on the Sunday morning."

Hilton thus provides us with an everlasting example of the manner in which surgery is made into a rational art. The second case I am to cite is equally instructive.

A man, going across Blackheath rather the worse for liquor, fell down or jumped six or eight feet into a gravel pit, and, alighting on his feet, his leg was very severely broken. I amputated the leg below the knee. On examining the ankle-joint, which had apparently not been injured, I found the articular cartilage upon the astragalus actually depressed at one part, and at another I saw within it a large black, deep patch.

This patch Hilton cut out and brought to my predecessor at this College—Mr. Quekett—who cut microscopical sections of it, and found that it was due to an extravasation of blood beneath the articular cartilage. In this instance Hilton provided us with a kind of observation of which we still stand much in need—the lesions of joints which we classify under the generic term of "sprain."

GASTRO-INTESTINAL SEPSIS A CAUSE OF MÉNIÈRE'S SYMPTOMS.

BY

T. MARK HOVELL, F.R.C.S. EDIN.

SINCE Ménière's paper dealing with a set of symptoms produced by hæmorrhage into the labyrinth, and consequently producing an incurable form of deafness, was published on February 9th, 1861, this set of symptoms, with which his name has been associated, has conveyed to the medical profession at large the idea of a condition of the ear for the relief of which little can be done.

Although aural surgeons of late years have clearly drawn the distinction between Ménière's disease, or the class of cases to which Ménière referred in his paper, occurring suddenly in patients without previous ear trouble, and Ménière's symptom complex occurring in patients suffering from an affection of the middle ear—which condition for many years I have preferred to call by the simpler term of Ménière's symptoms—the distinction is not as yet universally understood in the profession, and there is in consequence a tendency, except with aurists, for any patient suffering from the group of symptoms which Ménière described to be regarded as having an incurable ear disease, so that palliative treatment is all that is possible.

It is not my intention now to deal with the cases in which the symptoms are produced by syringing the ear when perforation of the drumhead exists, or by quickly rotating the patient, or to an extension of suppuration to the labyrinth, or are found in the course of an acute disease from inflammation or infective processes extending to it, or with the attacks of giddiness and tinnitus which occur sometimes as part of the vasomotor disturbances which accompany the menopause, or any of the cases in which the cause is obvious, but to confine myself to those which occur in patients suffering from middle-ear disease and come on without the reason being apparent.

Having noticed a similarity in the general condition of patients who become affected in this way, I began to pay close attention to the matter, and found that the treatment adopted not only greatly diminished the frequency and severity of the attacks, but in some cases practically freed the patients from this distressing condition.

Many of the patients I have seen had the following conditions present at the first visit: A furred tongue, congested pharynx, nasopharyngeal catarrh, hypertrophic rhinitis, flatulence frequently causing a considerable amount of distension, and constipation, although sometimes the motions were broken and light coloured. Several patients have told me that previous to an attack the motions have been noticed to be especially offensive.

With these symptoms it did not surprise me to find often, although not invariably, the blood pressure high, for toxæmia due to intestinal sepsis is a common cause of increased blood pressure, and as might be expected some dilatation of the heart often existed, although this symptom was not always present. It is not customary habitually to examine the size of the heart by gently percussing the chest wall whilst a stethoscope is held against it; if this were done the transition of sound from clear to more dull, indicating that the cardiac area has been reached, could easily be appreciated, and dilatation would be found to be far more often present than is now generally supposed.

Although I have only mentioned toxæmia due to intestinal sepsis, oral sepsis due to pyorrhœa, decayed teeth, crowns, or bridges must not be overlooked, or any other condition which might tend to produce this result.

With the patient in the state which I have described, it is not surprising that closure of the Eustachian tubes is usually present when Ménière's symptoms exist, for gastro-intestinal derangement is a common cause of congestion of the pharynx and nasopharyngeal catarrh and consequent closure and catarrh of the Eustachian tubes. Nor is it to be wondered that tinnitus and giddiness are found when toxæmia is present, these symptoms being more the result of this condition than caused by high blood pressure when it exists.

* A paper read before the Otological Section of the Royal Society of Medicine, November, 1917.

With the condition I have described present it is obvious that in many instances it would add materially to the comfort and well-being of the patient if the set of symptoms known as Ménière's were to convey in the first instance the impression of the existence of gastro-intestinal derangement rather than as at present an incurable condition of the ear; for with the former basis thoughts would travel to gastro-intestinal antiseptics, medicines for reducing blood pressure and correcting digestive derangement, and as to the advisability or otherwise as a preliminary measure of washing out the stomach with an alkaline solution in the usual manner by means of a funnel attached to a flexible rubber tube. In some cases I have had a specimen obtained from the stomach during fasting and a vaccine prepared and administered as an adjunct to other treatment.

With regard to blood pressure, I may mention in passing that a solution of adrenalin chloride taken internally is by many supposed to increase blood pressure, but in reality a small dose reduces it, and three to five drops with a little dilute hydrochloric acid, appropriately flavoured, makes a pleasant and useful mixture; but no medicine given with the object of reducing blood pressure will yield satisfactory results unless the intestinal tract is restored to a healthy condition, and as a first step to medicinal treatment I am in favour of a full dose of castor oil.

Although the removal of the cause is essential for the successful treatment of the case, local measures also give material relief; the most important of these is to restore the patency of the Eustachian tubes. In many instances the mere injection of air into the tympanum lessens the distressing symptoms, but I find that for permanently restoring the patency of the Eustachian tubes the injection into them through a catheter of a few drops of collosol argentum is often shortly followed by a beneficial result. The nozzle of the syringe which injects the drug into the catheter must not fit the catheter tightly, or the drug might be forced directly into the Eustachian tube instead of being sent into it in the form of a spray by air pumped from an air-bag, the nozzle of which closely fits the catheter. To lessen the nasopharyngeal catarrh, collosol argentum or collosol iodine is useful, sprayed directly backwards through the nostrils by an all glass or vulcanite spray producer so that it reaches the nasopharynx and the orifices of the Eustachian tubes.

The injection of a few drops of collosol argentum, or in some cases of collosol iodine, into the Eustachian tubes with the object of restoring their patency, is useful not only to patients suffering with Ménière's symptoms but also in closure of the tubes to Valsalva's inflation due to any cause. I have seen many instances in which this treatment greatly relieved or removed tinnitus when closure of the tubes existed, although the patient may have been suffering from incurable deafness due to sclerosis or other conditions. Whether in this case the tinnitus is due to a congestion produced by long-continued closure of the tubes, and the mere restoration of the patency by removing this causes the tinnitus to subside, or whether it is due to the tissues being affected by the drug, I am unable to say. This simple method of removing the tinnitus, often of old standing, which is frequently the patient's chief trouble, is worth remembering, as tinnitus has always been a difficult symptom to get rid of; even the more troublesome treatment by ionic medication, when it gives relief, is not always followed by complete cessation.

I have found collosol argentum also useful for stopping earache, and usually apply it for this purpose by placing the patient with the meatus of the affected ear upwards and then filling it with the drug and allowing it to remain there. Collosol iodine or collosol mercury should not, I have been told, be given in conjunction with arsenic, as mercurial poisoning or iodism respectively quickly follows. I have had no personal experience of the result of these drugs being administered together or in close succession.

AN institute for soldiers blinded in the war was recently opened at Salerno. Its establishment is due to the initiative of Professor Carlo Carneci, director of the local technical school. There was no ceremony, but an interesting feature of the occasion was a musical performance by Professor Marinuzzi, who is himself blind.

THE PARAFFIN TREATMENT OF BURNS.

BY

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THE introduction of new non-irritating antiseptics has led to several modifications in the paraffin treatment of burns.

Various preparations of paraffin have been made under my direction, containing acriflavine, brilliant green, chloramine-T, etc., dissolved in the paraffin base. These preparations have been given a very extensive trial. Another direction in which the new antiseptics have given scope for improvement has been the treatment of the burn by an antiseptic before the application of the paraffin. The results following this modification have been so satisfactory that we have adopted it as a routine method.

The method of application of the paraffin base is the same in all cases. The burn is first of all washed with normal saline (1 in 1,000 acriflavine solution or proflavine has now been substituted). The burn is dried with gauze or an electric drier. A layer of paraffin is painted over the burn. The paraffin is applied at a temperature of about 55° to 60° C. A thin layer of wool is placed over the first layer of paraffin and a second layer of paraffin at the same temperature painted over the wool. A dressing of wool and bandage is applied over the paraffin dressing. The dressing is changed every twenty-four hours. It is important to paint or spray on a sufficiently thick layer of paraffin. If the temperature of the paraffin is too high, the layer is liable to be too thin. The efficacy of this treatment depends largely upon the mechanical effect of the paraffin. The epithelium is conserved from damage; the tissues are held at rest by a splint-like action of the dressing. The addition of antiseptics to the paraffin preparation gave better results than preparations without antiseptics. The first antiseptic to be extensively used was eucalyptus oil, which, in conjunction with beta-naphthol, is still used in No. 7 paraffin. Scarlet-red paraffin has given satisfactory results in general use, and has special indications for its use which makes it a preparation of value. Burns which have been treated with No. 7 paraffin occasionally become sluggish and present unhealthy granulations. We have therefore changed the paraffin to scarlet red paraffin when burns have become clean and shown a tendency to begin to heal. This treatment has resulted in great acceleration of healing. We have made many experiments with a view to improving the paraffin base, but no preparation has given such good results as No. 7 paraffin. Later a flavine paraffin has been extensively used, and has given satisfactory results. Paraffin preparations of brilliant green and chloramine-T have not been satisfactory from a pharmaceutical point of view, the antiseptics being difficult to incorporate in the paraffin.

Various paraffins of varying degree of melting point have been tried, but the use of paraffin of intermediate melting point does not produce so good a mechanical base as No. 7 paraffin. The dilution of a high melting point wax with vaseline and oil appears to have some special value in the treatment of granulating surfaces, and makes a better mechanical mixture. The question as to whether special paraffins (scarlet-red, acriflavine, chloramine-T) possess any particular value has been debated. It would appear that since the antiseptic can be painted on the burn before the application of the paraffin, the use of special paraffin is somewhat unnecessary. The results of acriflavine applied in the form of solution followed by the application of No. 7 paraffin have been so good that we have practically discarded the use of special preparations with the exception of acriflavine paraffin and scarlet-red.

The effect upon recovery of the application of various antiseptic solutions previous to the application of the paraffin has been studied.

Ensol accelerated the cleaning of the burn but was too irritating in its action.

Brilliant green cleaned the burns well, but if used beyond a certain stage caused light-coloured and unhealthy granulations.

Acriflavine cleans the surfaces well; whether better than brilliant green or not is doubtful, but it certainly produces a healthier type of granulation.

Scarlet-red is only used when the burns are clean and

require stimulation. A 10 per cent. aqueous solution is painted over the burn before the application of the paraffin. There is very distinct evidence that convalescence is greatly accelerated by the use of this powerful stimulus to the formation of epithelium: 1 and 10 per cent. have been tried, and in most cases the 1 per cent. has proved sufficient.

Mustard gas burns heal readily by the ordinary application of No. 7 paraffin.

The treatment giving the most satisfactory results, obviating pain, sepsis, and other complications, and which we have found generally applicable, is the preliminary painting of the surface of the burn with aqueous flavine solution 1 in 1,000, followed by the application of No. 7 paraffin. In cases of long duration scarlet-red 1 per cent. is substituted for the flavine solution. We have found rapidity of healing and minimized scarring to be greatly favoured by this treatment.

FORMULAE.

No. 7.

Resublimed beta-naphthol	...	...	0.25 per cent.
Eucalyptus oil	...	...	2 "
Olive oil	...	...	5 "
Vaseline	...	...	25 "
Paraffinum durum	...	...	67.75 "

No. 10. Red.

Scarlet-red	...	...	0.2 per cent.
Eucalyptus oil	...	...	2 "
Olive oil	...	...	5 "
Adeps lanae hydrosus	...	...	4 "
Paraffinum molle	...	...	21 "
Paraffinum durum	...	...	67.8 "

No. 11.

Scarlet-red 0.2 per cent. at expense of paraffin molle. It is difficult to get a good wax which will melt and retain most of the scarlet-red.

No. 12.

Brilliant green	...	...	0.05 per cent.
Eucalyptus oil	...	...	2 "
Olive oil	...	...	5 "
Adeps lanae hydrosus	...	...	4 "
Paraffinum molle	...	...	21 "
Paraffinum durum	...	...	67.95 "

No. 13. Flavine Wax.

Flavine	...	...	0.2 per cent.
Eucalyptus oil	...	...	2 "
Olive oil	...	...	5 "
Adeps lanae hydrosus	...	...	4 "
Paraffinum molle	...	...	21 "
Paraffinum durum	...	...	67.8 "

No. 14.

Dichloramine-T	...	...	0.2 per cent.
Eucalyptus oil	...	...	2 "
Olive oil	...	...	5 "
Paraffinum molle	...	...	25 "
Paraffinum durum	...	...	67.8 "

To make a Kilogram of Paraffin.

Take $\frac{1}{2}$ gram of brilliant green or 2 grams of scarlet-red or flavine, and 40 grams of lanoline, rub up the coloured material with the adeps lanae hydrosus until a highly-coloured smooth paste is obtained which contains no undisintegrated particles of the dye; using about half an ounce of water assists the solution of the dyes. Melt the paraffinum durum (678 grams), and add 210 grams of paraffinum molle and 50 c.cm. of olive oil. Let the temperature of the resulting mixture sink to at least 65° C., then stir in the previously prepared lanoline paste, stirring until thoroughly mixed. At about 55° C. add 20 c.cm. of eucalyptus oil, stir and allow to solidify.

The adeps lanae hydrosus is used as a suspending and diffusing agent. Smaller quantities do not satisfactorily take up the dyes. Larger quantities are undesirable, as they make the resultant wax less satisfactory to paint on. If the above directions are carefully followed, little of the dye falls out of suspension, although reheating the wax for use tends to make this occur. Unless small quantities of wax are melted at a time, it is advisable to stir the liquid before using. The scarlet-red forms the least satisfactory suspension, and requires stirring while using, but its therapeutic value has caused it to be persevered with.

To prepare dichloramine-T paraffin, dissolve the dichloramine-T in eucalyptus oil and add to the other ingredients at 55° C.

The dichloramine-T wax has proved an unsatisfactory wax from a practical point of view owing to the tendency to be brittle and adhere to the raw surface of the burn, instead of being easily removed in one piece, as is the case with the other preparations.

A CASE OF FULMINANT CEREBRO-SPINAL FEVER WITHOUT MENINGITIS.

BY

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THE case here reported is one of meningococcal infection, the course of which was so rapid (twenty hours) that the meningeal symptoms and signs remained undeveloped, whereas the outstanding symptoms (witness the laparotomy) pointed to some abdominal lesion, these symptoms being intense pain in the abdomen, rigidity of the recti, repeated vomiting, and diarrhoea. The absence of headache is to be remarked; the pain in the back was not associated with any naked-eye sign of spinal meningitis.

On September 16th, 1916, a boy aged 16, apparently in good health, went to his work as usual in one of the Belfast shipyards. Shortly after commencing work, about 7 a.m., he was seized with violent pain in the abdomen and back; he lay on the ground and vomited freely. He was sent to the Royal Victoria Hospital, arriving almost in collapse, cyanosed, and vomiting. There was now marked diarrhoea, some rigidity of the abdominal muscles, but no trace of headache; the temperature was 98° F. and the pulse 98. By evening the temperature was 100.2 F., and the pulse 130. There was still no headache, but increasing weakness and considerable cyanosis of face. He died twenty hours after the appearance of the first symptoms. Some hours after admission to hospital laparotomy had been performed by Mr. Holmes, without, however, throwing any light on the case.

At the post-mortem examination the points noted were as follows: numerous petechiae on the posterior aspect of the heart, an enlarged and much reddened thymus, enlarged mesenteric glands, some of which showed minute haemorrhages, marked enlargement of the solitary follicles in the lower ileum and colon, the bowel being hyperaemic; Peyer's patches were unchanged. The liver showed superficial yellowish patches scattered over the upper surface near the anterior border. The remaining thoracic and abdominal organs were normal.

The above appearances¹ were identical with those I have invariably seen at the autopsies in cases of cerebro-spinal fever in Belfast during the past seven years, and therefore, at this stage of the autopsy, this disease was suspected.

The brain and cord, however, on being removed, were found normal to the naked eye; there was not the slightest appearance of meningitis, unless some exceedingly faint turbidity of the scanty ventricular fluid could be so interpreted. This cerebro spinal fluid was small in amount, the brain and cord being somewhat drier than is normally the case. The few drops of fluid collected showed microscopically some finely granular debris, to which its faint turbidity was due; there were a few polymorphonuclear cells, but no inclusion of bacteria.

This fluid, when planted out on ascitic agar,² however, furnished very numerous colonies of the meningococcus in pure culture, the agar tubes being covered by scores of the typical colonies, consisting of the well-known Gram-negative cocci, which acted upon the various sugars in the manner characteristic of this organism—namely, acid production in maltose and dextrose, absence of acid on the others, including galactose.

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¹ BRITISH MEDICAL JOURNAL, February 16th, 1907, p. 391; *Lancet*, February 23rd, 1907, p. 508. ² BRITISH MEDICAL JOURNAL, June 22nd, 1907, pp. 1477-79.

CHLORINE WATER IN THE TREATMENT OF INFANTILE DIARRHOEA.

BY

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THE use of chlorine water in the treatment of typhoid fever was advocated by Burney Yeo, and it occurred to me that it might be usefully applied to diarrhoeal conditions in children. The death-rate in these is high everywhere, and in Shoreditch and Hoxton the dangers are increased by the very unfavourable conditions under which most of these children are reared, and many of them were admitted to the Shoreditch Infirmary in a critical condition.

During recent months fifty-three cases have come under observation, varying to a considerable degree in severity,

In each case chlorine water in the following mixture was administered:

R. Aqua chlori	...	...	...	...	miv
Quin. sulph.	...	...	...	...	gr. ½
Salol	...	...	...	...	gr. iv
Mucilag. tragacanth.	...	...	...	...	q.s.
Aqua chloroformi	...	...	...	ad	5j

Dose: 5 ss to a child under six months, and proportionate doses in elder children.

This was given every six hours for the first twenty-four to thirty six hours, and then thrice a day until the stools were normal. In addition, 10 to 20 m, according to age, of the following mixture was administered twice a day:

Ol. ricini	...	...	...	...	3j
Ol. olivae	...	...	...	...	3j
Tinct. opii	...	...	...	...	mij

The opium, however small the dose, has a soothing effect upon the bowels, and helps to induce a much-needed rest, which is an important factor in treatment. Lavage of the bowel with normal saline was resorted to in many cases.

In the very severe cases, where the child was admitted in a collapsed state, with depression of the fontanelle, cold and dry skin, blue extremities, sunken and heavy eyes, and general flabby condition, a mustard bath was first ordered, to be followed immediately by injection of pituitrin $\frac{1}{4}$ c.cm., repeated two or three times at intervals of four hours. Then an inunction of warm olive oil was given to diminish loss of heat from the skin. Lavage of the bowel was practised two hours after the mustard bath. The diet in these cases varied according to the severity of the attack. In the milder cases albumin water and barley water were sufficient. In the more severe cases sherry whey was given first until the vomiting ceased.

The majority of cases recovered in four to five days, the very severe in ten to twelve days. In the latter it was often necessary to administer brandy in 10 to 20 m doses every two to four hours, as an additional check to collapse, and in such cases also during convalescence I have found thyroid, grain $\frac{1}{2}$ twice a day, useful in helping to accelerate recovery and increase weight, as recommended by Dr. J. Simpson of Edinburgh.

The essential difference between the treatment adopted and that which is in common use was the administration of chlorine water, and a comparison of the cases which received this with those treated without it has strongly disposed me in its favour. Time and facilities did not permit systematic bacteriological investigations, and no explanation of the action of chlorine is attempted, but clinical results were so striking as to justify a recommendation of this treatment.

Out of the fifty-three cases so treated there was one relapse and only one death, upon which unfortunately an autopsy was not allowed. As soon as the vomiting and diarrhoea had ceased, and the children considered well enough, they were placed on a milk mixture adapted to their age and condition, gradually increased in quantity and strength, and their weight regularly recorded. Before discharging the patients one or other of the infantile proprietary foods was given, suitable to their digestion, so that they became accustomed to an article of diet they were likely to receive at home.

A CASE OF CAESAREAN SECTION COMPLICATED BY RUPTURE OF THE UTERUS.

BY

MAJOR G. W. KILNER CROSLAND, D.S.O.,
HONORARY SURGEON, HUDDERSFIELD ROYAL INFIRMARY.

A SHORT account of an unusual complication in a case in which Caesarean section was twice done may be of interest.

Caesarean section was performed on Mrs. B., aged 26, by me in April, 1913, owing to contracted pelvis; she was delivered of a dead child, weighing 10½ lb.

She again became pregnant, and I saw her in consultation with Dr. Brown in June, 1917. I advised waiting until labour commenced and her admission then to the Royal Infirmary for a similar operation. Labour began on August 8th at 4.30 a.m. The pains were not severe; she was admitted to the infirmary at 3.30 p.m. She says that immediately after her admission she had three fairly strong pains, and that they then entirely ceased.

On admission the abdomen was rather tender, but the patient was not in pain; no uterine contractions could be felt; the

temperature was normal and the pulse 90. There were no signs of collapse, and she was quite cheerful. On vaginal examination the head was presenting, but had not entered the pelvis; the os was patulous, not much dilated, nor was the cervix drawn up.

The abdomen was prepared with iodine, and laparotomy was done at 7.30. On opening the peritoneum the uterus presented, the upper part being normal in appearance, but across the lower third there was a very large subperitoneal haematoma, which extended into both broad ligaments. It was difficult at first to make out the exact cause of this unusual complication, but on opening the uterus towards the fundus (where the wall was normal), as soon as the knife reached the edge of the haematoma it entered a large circular rent or gap in the middle line of the organ, about three inches in diameter, obviously a subperitoneal rupture of the uterus through the lower part of the scar left by the former operation. The living child and placenta were easily delivered.

The question of the best way of dealing with the condition then arose. Owing to the edges of the rent being very friable and much infiltrated with blood, it seemed to be impossible to close it in a satisfactory manner, and hysterectomy was considered. However, on account of the very large haematoma filling the pelvis, this was not thought feasible, and I decided to suture the incision in the uterus as best I could. This, of course, was easily done in the upper part, but when the rupture was reached great difficulty was experienced, and it was closed apparently not very effectively, owing to the infiltrated and lacerated edges. A large rubber tube was passed through the cervix and left there until morning to obviate any distension of the uterus with blood; an injection of pituitrin was given, and the patient, who had stood the operation well, removed to the ward.

After operation she never gave any cause for uneasiness, and made an uneventful convalescence.

An interesting point about the case is the freedom from signs of shock and collapse after such an injury to the uterus, with the subsequent effusion of so much blood. The pains also were never really very severe, nor was the os much dilated even at the time of operation. I was not at all satisfied that the closure of the uterine wound was effectual, and felt that if it had been possible hysterectomy would have been the better operation.

NOTE ON THE FATE OF HALAZONE IN THE ANIMAL BODY AND ON THE STABILITY OF TABLETS CONTAINING IT.

BY

E. K. DUNHAM, M.D.,

AND

H. D. DAKIN, D.Sc., F.R.S.

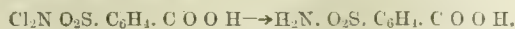
(Report to the Medical Research Committee.)

In a recent paper in this JOURNAL,¹ an account was given of the use of "halazone," *p*-sulphondichloraminobenzoic acid, for the sterilization of small quantities of infected water. As was previously stated, one of the great difficulties encountered in securing tablets of high germicidal potency for the sterilization of water has been occasioned by the lack of stability of the substances employed, when present in the small quantities required for tablets. Halazone appeared to offer distinct advantages in this respect over other substances hitherto made use of. Since our original communication we have had the opportunity of further testing the stability of our product and we have also determined its fate in the body when ingested.

The Fate of Halazone in the Animal Body.

Halazone even in large doses appears to be practically devoid of toxicity. We have fed rabbits for many weeks with doses of 100 to 200 mg. per day, without observable symptoms, and repeated doses of 500 mg. were also without effect. As the quantity needed for the sterilization of a quart of water is only 4 mg., the substance may be regarded as perfectly innocuous. The urine of rabbits which had received "halazone" given by stomach tube was collected and examined. As was to be expected, no unchanged substance was present and all active chlorine had disappeared. On acidifying the urine and extracting with ether, a crystalline acid was separated, which was purified by dissolving it in sodium carbonate and reprecipitating with hydrochloric acid. The substance decomposed at 280° C. and had all the properties of *p*-sulphonamidobenzoic acid. On analysis, the substance was found to contain 6.94 per cent. of nitrogen compared with a theoretical value of 6.96. The yield of pure acid recovered from the

urine was approximately 60 per cent. of the halazone fed, and as no other compound could be isolated, it is probable that halazone is quantitatively converted into *p*-sulphonamidobenzoic acid in the animal body, with the loss of two atoms of chlorine:



The Stability of Halazone Tablets.

In our first communication we emphasized the necessity of making tablets containing halazone with perfectly dry materials, using either dry sodium carbonate or borax with common salt. Our later experience has only served to confirm this conclusion, and also to indicate the superior keeping properties of the tablets containing dry borax or soda as compared with those containing sodium bicarbonate or salts containing water of crystallization. The difference is particularly marked at temperatures above 30° C.

The results of an extended series of experiments with halazone itself, and tablets containing it mixed with various salts, are now available. The tablets were made by ourselves from carefully dried material, and preserved in amber-coloured bottles. Their stability was estimated at three temperatures: (a) room temperature varying from 15° to 32° C., (b) 40° ± 2, (c) 50° ± 2. The amount of decomposition of the halazone was estimated by heating known quantities of the mixtures or tablets with potassium iodide in 50 per cent. acetic acid and titrating the liberated iodine with decinormal sodium thiosulphate. The deductions drawn from the experiments are as follows:

1. Halazone itself appears to be indefinitely stable at room temperature, while at 50° not more than 1 per cent. decomposition was noted in sixty days.

2. Halazone (5 per cent.) mixed with either dry borax or dry sodium chloride (95 per cent.) is stable at room temperature, but at 50° suffers about 20 per cent. decomposition in sixty days.

3. Tablets containing halazone (0.004 gram), dry borax (0.008 gram), and sodium chloride (0.088 gram) usually showed less than 2 per cent. and never more than 7 per cent. decomposition in 150 days at room temperature (15°–32°), and equally good results were obtained with similar tablets containing dry sodium carbonate (0.004 gram) in place of borax, while tablets containing sodium bicarbonate (0.004 gram) showed 7 per cent. decomposition. For practical purposes they may be regarded as stable at these temperatures.

At higher temperatures the rate of decomposition was most rapid with the bicarbonate tablets—namely, 76 per cent. decomposition in 115 days at 40°. The tablets with borax showed 35 to 48 per cent. decomposition in 115 days at 40° and 33 to 34 per cent. decomposition in 60 days at 50°. The tablets with sodium carbonate showed 48 per cent. decomposition in 95 days at 40° C.

The practical conclusions drawn from these results are as follows: Halazone tablets prepared from thoroughly dry materials, using sodium chloride with either borax or sodium carbonate and preserved in amber bottles, will maintain their germicidal efficiency at temperatures up to 32° almost unchanged for five months, and should be serviceable for considerably more than a year. Prolonged exposure to temperatures constantly maintained as high as 40° to 50° C. will reduce their efficiency by about one-half in three months.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, May 26th, 1917, p. 683.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PRELIMINARY NOTE ON X-RAY DETECTION OF THE PRESENCE OF CLOTH IN WOUNDS.

THE result of some experiments which I have just made appear to me to justify the appearance of this note in advance of a detailed paper which I propose to write when I have finished the set. I am not aware that anything of the kind has hitherto been published.

Many wounds do not heal because of the presence in them of foreign bodies that are as pervious to x-rays as, or more so than, the tissues in which they are embedded; it may be that others may wish to avail themselves of a

proceeding likely, as it seems to me, to prove simple and effective in demonstrating their presence.

Having been lately asked to radiograph a leg for the purpose of detecting a piece of reed that was believed to have been in it for eighteen months, I failed, as I expected from my previous efforts in like work. With the aid, however, of bismuth emulsion injected into the sinus I was surprised and pleased to see in a stereo-radiogram—what was quite distinguishable *in situ*—a piece of reed about two inches long and one-eighth of an inch in diameter, and related to a sinus which branched.

This result immediately suggested the possibility of similarly demonstrating the presence of pieces of cloth in fresh wounds or old ones that refused to heal. I find that the texture of pieces of khaki cloth thrust into the interior of a lump of ox liver and similarly treated can be clearly distinguished.

It seems hardly credible that every radiographer who has injected refractory sinuses—there must be few that have not done so—has failed like myself hitherto to stumble on so simple a solution of this question.

NEIL MACLEOD, M.D. (Edin.),
Radiologist, Shanghai General Hospital.

Reports of Societies.

DISCUSSION ON SCOPOLAMINE-MORPHINE NARCOSIS IN CHILDBIRTH (PAINLESS CHILDBIRTH).

A MEETING of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine was held on December 6th, the President, Captain G. F. BLACKER, being in the chair. The discussion was opened by the reading of the papers forming the report of a committee appointed to investigate the effects of scopolamine-morphine narcosis. The Committee consisted of Dr. Fairbairn, Dr. T. G. Stevens, Dr. C. Hubert Roberts, Dr. Herbert Williamson, and Dr. Eardley Holland, but the last named was unable to take part owing to his absence on active service. The observations were carried out independently. A standard solution of scopolamine was employed, the initial dose being morphine gr. $\frac{1}{4}$, and scopolamine gr. $\frac{1}{150}$; subsequent doses consisted of scopolamine gr. $\frac{1}{150}$. The patient was isolated during labour, and, as far as possible, precautions were taken to avoid sensory impulses. The cases were selected by the officer in charge of the ward, and the patients were preferably to be primiparae in whom no complications were anticipated. Two charts were drawn up for use in the labour room, and at each injection observations were recorded, the results of which appear in the papers.

Report from St. Bartholomew's Hospital.

This report (read by Captain HERBERT WILLIAMSON) was on 20 cases only. Careful precautions were taken to avoid any disturbance to the patient.

Dosage.—The initial dose of morphine gr. $\frac{1}{4}$ and scopolamine gr. $\frac{1}{150}$ was given when the cervix was dilated sufficiently to admit a finger and, as a rule, when the pains were recurring regularly at intervals of not less than a quarter of an hour. One hour after the administration of the initial dose, $\frac{1}{150}$ gr. of scopolamine was given, and twenty minutes later an object with which the patient was not familiar was shown to her. From this point onwards the memory test alone was employed; it was considered a safe, but not an absolutely reliable guide, for there were instances in which apperception was present throughout, but amnesia was complete. It was the best guide to dosage, but demanded considerable experience and powers of close observation in the administrator. Its value was diminished by the necessity of arousing the patient each time it was applied. Two alternative tests had been suggested—Babinski's reflex and the pupillary pain reflex. These were tried in all cases, but were found of little value.

Effect on Uterine Contractions.—If the pains of the first stage were good before the administration was commenced little effect was produced; if they were weak, injection of the drugs sometimes led to their entire cessation. Experience at St. Bartholomew's Hospital confirmed that reached by Gauss—that in uterine inertia scopolamine-morphine narcosis should be avoided, for

under its influence the pains become weaker and sometimes cease entirely. In the absence of uterine inertia it was found that little effect was produced upon the strength, frequency, or duration of the contractions in the first stage. The second stage was markedly prolonged, especially amongst the primiparae. This was due to the lack of voluntary expulsive efforts on the part of the patient, and in three of the cases to weakening of the uterine contractions. The third stage was prolonged, but there was no severe *post-partum* haemorrhage. In three cases there was a temporary relaxation of the uterus four or five hours after delivery. A high percentage (45 per cent.) of the patients were delivered artificially. This was partly accounted for by the high proportion of abnormal labours, but Captain Williamson was of opinion that some of the patients in whom forceps were applied would have delivered themselves spontaneously had voluntary bearing-down efforts been present, and therefore, that scopolamine-morphine narcosis increased the number of instrumental deliveries.

Effect on General Condition.—There was no tendency to increase of maternal pulse rate, and in only one case were the respirations affected. Thirst was complained of by almost every patient. Nausea and vomiting were present in four cases. Distension of the bladder, with inability to pass urine, necessitating the use of the catheter, was present in six cases. Flushing of the face and dryness of the skin were marked, but never caused much distress. Restlessness was common during the stage of induction. Analgesia was marked in twelve of the patients, slight in five, and absent in three. No definite relation could be traced between analgesia and amnesia. Complete amnesia was attained in 11 cases, or 55 per cent., incomplete in 4 cases, or 20 per cent., and absent in 5 cases, or 25 per cent. In these the whole course of the labour was clearly remembered.

Effects upon the Child.—In sixteen cases the rate of the fetal heart was not affected, in four there was increased frequency, which might have been due to the labour itself. Nineteen of the children were born alive; one child was stillborn, but this was not to be attributed to the scopolamine-morphine narcosis. Of the nineteen born alive, eight were born in a condition of oligopnoea, undoubtedly due to the combined action of scopolamine and morphine. Most of the infants were born in this condition, and, although it appeared alarming, it was transient and need not cause anxiety. No treatment was required beyond covering up the child and keeping it warm. Of the nineteen children born alive all left the hospital well. In the majority there was no evidence that the scopolamine had produced any effect upon the child. There was no evidence that scopolamine was excreted in the milk, several cases having been examined.

The *puerperium* and period of recovery were not affected adversely by the injections. After long and trying labours the patients made a quicker recovery than those who had been delivered without it. Lactation was not affected unfavourably.

St. Thomas's Hospital.

Captain J. S. FAIRBAIRN read a paper giving his observations on 80 cases. The usual dosage was used except in a few of the later cases, when a slight modification was made, the second injection being $\frac{1}{300}$ gr. hyoscine instead of $\frac{1}{150}$. Cases of normal labour were preferred. Administration was begun when pains were regular, at about five minute intervals, and the os about two fingers, but it was difficult to be sure of the precise moment. Of the 80 cases 60 were primiparae and 20 multiparae. The number of injections varied from 1 to 19, the average being 6.5. In the primiparae the average was 7.2, and in the multiparae 5.5. The memory test proved quite useless. The behaviour of the patient between and during the pains and the notice she took of the prick of the hypodermic needle were found to be more useful, and had the great advantage of involving no additional disturbance of the patient. The method was to begin with hourly hyoscine injections, and when the drowsiness and absence of response to the pains, injections, or other manipulations indicated that the woman was fairly narcotized, to omit one or more of the hourly injections.

Amnesia was classified as "complete" when the patient remembered nothing from the time of the first injection;

as "partial" when she had no clear recollection of her labour but retained some impression of the final expulsive pains; as absent when she was able to recollect the events and progress of her labour. Complete amnesia was obtained in 36 cases—that is, 45 per cent.; partial amnesia was obtained in 26 cases, or 32.5 per cent.; amnesia was absent in 18 cases, or 22.5 per cent.

Analgesia was considered complete in all those cases in which complete amnesia was obtained, partial in those cases in which the patient appeared to obtain relief from the injections and was satisfied that she had had an easy labour, and absent in those cases in which she did not seem to have had any relief.

Complete analgesia was obtained in 36 cases = 45%	
Partial " " " 40 " = 50%	
No " " " 4 " = 5%	

No decided influence on the maternal pulse or respiration rate was observed. In 8 cases there was sufficient slowing of the pulse rate to be noteworthy; in only one case was quickening recorded.

Sleep between the pains was present in all but 3 cases, and in 27 there were periods in the labour when the pains did not rouse the patient. Mental confusion to some degree was present in most patients in whom narcosis was well marked. Restlessness to some degree was noted in 29 cases, and in many the result was good as far as amnesia was concerned. Thirst was present in 75 per cent. of the cases, vomiting in 20 per cent., and flushing of the face in nearly 90 per cent. Dilatation of the pupils was noted in 21 cases, or about 25 per cent. No dangerous effects on the mother were observed.

Effect on Labour Itself.—There was a fairly constant diminution in the strength and frequency of the contractions after the first injection, sometimes lasting an hour or two, after which the uterine contractions appeared to follow their normal development. Bearing-down efforts were present in 55, feeble in 10, and absent in 15 cases. There seemed to be a tendency to delay in the latter part of the second stage, shown by the increase in the number of forceps deliveries, which was more than three times the average ruling in the ward. The placenta was expelled spontaneously in 41 cases, and was expressed after expulsion from the uterus in 39 cases. Bleeding was stated to have been greater than normal in 9 cases, or 11.25 per cent. In 4 of these cases the bleeding was described as *post-partum* haemorrhage. The cases seemed to indicate a slight tendency to increased loss in the third stage, though readily controlled, but it was impossible to ascribe the haemorrhage to the narcotism alone. The condition of the patient after delivery was good throughout, and no case of shock or other dangerous symptom, except two cases of *post-partum* bleeding, was noticed. There were 3 cases of cardiac disease, in one of which the patient had been in the medical wards for several weeks owing to failure of compensation. In all these cases the partial narcosis had a beneficial effect on the patient. Out of 13 cases in which a general anaesthetic was given at the end of the second stage, complete amnesia occurred in all but one, or in 92.8 per cent. If the pain of expulsion brought the patient to consciousness the amnesic effect was lost. Probably all of the 26 cases classed as partial amnesia, and a proportion of those in which no amnesia was obtained, would have been classed as complete had the actual birth been conducted under a general anaesthetic, but given for this purpose. The second stage would no doubt have been prolonged and the number of forceps deliveries increased, but the percentage of complete amnesia would probably have been raised to 90 per cent.

Effect on the Child.—There were 3 cases of stillbirth, 2 of which were due to causes quite independent of the narcotism; in the third the fetal death was due to the delay in the aftercoming head. In 19 cases the child did not breathe or cry spontaneously at birth, but in 9 of these the delay was so trifling as to be scarcely worthy of notice. In 6 cases external stimulation, and in 3 a hot bath, were sufficient to start respiration at once. Besides these cases, in 16 there was blueness of the child, for the most part trifling in character and of short duration. Regarding pituitary extract given before birth as a contributory cause of difficulty in starting respirations, it was thought not to add appreciably to the danger to the child.

The General Lying-in Hospital, York Road, S.E.

Captain FAIRBAIRN read a report on 20 cases; 19 were primiparae, and 1 multipara; the number of injections varied from 1 to 17, the average being 6.8, in the primiparae only, 7.0. The methods, dosage, and drugs were as laid down by the Committee. The memory test was not of much assistance.

Amnesia was complete in 10 cases	= 50 %
" " partial " 7 "	= 35 %
" " absent " 3 "	= 15 %
Analgesia " complete " 10 "	= 50 %
" " partial " 8 "	= 40 %
" " absent " 2 "	= 10 %

Thus 10 per cent. of cases were failures; in 90 per cent. some relief was obtained; and in 50 per cent. complete amnesia and analgesia. No great effect was noticed in the mother. In 3 cases there was slight acceleration of the pulse towards the end of labour. No decided effect on respiration was found.

Some restlessness was present in half the cases observed. Flushing of the face and thirst were present at some time in nearly all cases. No dangerous effects on the mother were observed, and in all cases the convalescence was satisfactory.

Effect on Labour.—There was a marked delay in labour as the result of the narcosis, more especially in the absence of strong expulsive efforts at the end of the second stage, calling for instrumental delivery when the head was on the perineum. There was no evidence of delay or complication in the third stage, and no case of excessive haemorrhage. The condition of the mother after delivery was good throughout.

Effects on the Child.—There was spontaneous breathing in 65 per cent., breathing not spontaneous but easily started in 25 per cent., artificial respiration in 10 per cent. There were no stillbirths; but one infant, restored after artificial respiration for twenty minutes, died seven hours later. The child was immature and badly nourished.

Queen Charlotte's Hospital.

Dr. C. HUBERT ROBERTS read a report on 67 cases observed by himself and Dr. T. G. Stevens. The results were good. In 90 per cent. the pains of labour were diminished; complete amnesia was obtained in 46.2 per cent., partial in 44.7 per cent. Analgesia was complete in 32 cases, partial in 31. There were two failures.

Indications for commencing treatment were the character of the pains, which should be regular and strong. The size of the os could not be taken as a guide. The number of injections varied. Three patients had only one injection, whilst one had ten. In all cases but one the pains were good at the time of the first injection. Indications for repetition of the hyoscine injection seemed to be the patient's general condition and the frequency of the pains. In no case was a second dose of morphine given.

The memory test could not be relied on: observations on the corneal and plantar reflexes were of minor importance in drawing conclusions.

Considerable experience was required by the practitioner, and the same remark applied to nurses, who, if left in charge of such cases, should be carefully trained in the routine beforehand, as it was more than possible that dangerous results might supervene if the giving of morphine and hyoscine were left to inexperienced persons. Every case demanded the constant attendance of the doctor.

With regard to the general effects upon the patients, mental confusion, thirst, and restlessness, were observed in about half the cases, but no active delirium.

Effect on the Labour.—Labour did not seem so prolonged after giving the first injection. Any prolongation which was noted in their series occurred before the injections were given. Out of the 67 cases there were twelve forceps deliveries, but the indications were due to obstetric complications such as occipito-posterior positions, or large head, and not due to the effects of the drug on uterine contractions. The placenta was spontaneously expelled in 65 out of the 67 cases, there being evidence that uterine contraction and retraction was not interfered with. There were two cases in which there was haemorrhage in the third stage, one due to an adherent placenta, the other to a low-lying succenturiate placenta. These cases could not be laid to the door of the narcosis alone.

The puerperium in all cases was undisturbed, nor was involution retarded.

Effects on Infants.—In 53 out of 68 babies (one case of twins) breathing or crying was noted as spontaneous. In 13 cases the baby was described as blue, but in one instance only was there cause for alarm. Most of the blue babies at birth were limp, but soon recovered. Hot baths and artificial respiration were only required in the minority of cases. Violent resuscitative methods for such babies were to be deprecated. Three babies died; of these two were premature, and one died of bronchopneumonia on the sixth day. There were three cases of white asphyxia with forceps deliveries, due to delay from obstetric complications and not to the drugs used. A definite opinion on the effects of hyoscine and morphine on lactation could not be given owing to the short stay of patients in the hospital. Of the 64 living babies who left the hospital, 49 were breast-fed, and 34 had regained their birth weight during the first week.

City of London Lying-in Hospital.

Mr. GORDON LEY read a report on 135 cases observed by Dr. Comyns Berkeley and himself. Of the 135 cases reported, 128 were primiparae and 7 multiparae. The first injection was given with the cervix two fingers dilated and the pains strong and regular. The second dose was given three-quarters of an hour to one hour after the first, and the succeeding doses at hourly intervals. The number of injections varied from 1 to 53, with an average of 13.1. Morphine was repeated in $\frac{1}{4}$ grain dose in seven cases when consciousness was being gradually regained, and produced a satisfactory return to the desired state. The memory test was applied in all cases and was found generally unsatisfactory. Catheterization was, as a rule, necessary during labour.

Effect on Mother.—Complete amnesia was produced in 47.4 per cent. of the cases, partial amnesia in 45.2 per cent. Complete analgesia was produced in 8.2 per cent. Partial analgesia was present in 22.9 per cent., excluding in each case those patients in whom there was complete amnesia.

Thirst was present in 63 per cent. of the cases, nausea and vomiting in 24 per cent. Mental confusion was marked in 24 per cent., slight in 34 per cent. Restlessness was considerable in 25 per cent., slight in 17 per cent. Excitement was present in 35 per cent., and a small proportion of these were maniacal. Pulse and respiration were never affected. In 34 per cent. the pains appeared subnormal, and in one there was complete suppression. The interval between the pains was in all cases normal. Bearing-down efforts were, as a rule, subnormal. They were good in 44 per cent., fair in 3 per cent., slight in 40 per cent., very slight in 3 per cent., and absent in 10 per cent.

Labour.—There was prolongation of the second stage of labour. Compared with the average percentages of the hospital, the number of forceps cases was increased. perineal tears were greatly in excess (due to the difficulty of controlling the patient with the head on the perineum), and there was an increased failure of occipito-posterior positions to undergo spontaneous rotation, attributable to the lack of bearing-down efforts, which, combined with strong pains, are so important in the spontaneous rotation of these positions. The third stage was unaffected.

Effect on the Infant.—In some cases, especially when chloroform was given, there was a disinclination to breathe, associated with cyanosis and general limpness. Three children were stillborn. In one the pregnancy was only thirty-two weeks advanced. In the other two death was almost certainly due to intrauterine pressure resulting from the drainage away of the liquor amnii. Of the children born alive, the subsequent condition of 126 was satisfactory. Six died within the first twenty days of life, but in none could it be said definitely that the treatment played any part as a cause of death.

General Observations and Conclusions.—From the point of view of the practitioner, it must be remembered that the number of forceps cases is considerable, and these are relatively difficult owing to the fact that the diminished bearing-down efforts fail to force the head deeply into the outlet, or fail to rotate occipito-posterior positions, which therefore require manual rotation before extraction. The condition of the baby may cause grave anxiety to the inexperienced, and deaths are likely to be produced by too vigorous treatment. The constant attendance of the

doctor and the absolute necessity of having a nurse skilled in this line of treatment cannot be too forcibly impressed on patient and friends. The treatment requires considerable experience both of the method itself and of midwifery, and it appears probable that it should be withheld in all cases except those in which the capacity of the patient for bearing pain is greatly below the normal, and is evidenced early in labour.

DISCUSSION.

Dr. W. A. POTTS said that he had never met with nausea or vomiting. He thought the restlessness might be due to overdosage with hyoscine. He always gave morphine gr. $\frac{1}{4}$ to $\frac{1}{2}$, and hyoscine gr. $\frac{1}{32}$ to $\frac{1}{16}$, and for subsequent doses of hyoscine gr. $\frac{1}{32}$ at two-hourly or longer intervals. If the patient were not under at the third dose he gave a whiff of chloroform, and in this way could make a success of any case. He usually used chloroform at the end of labour, giving the last dose at some considerable interval before the child was born, so that at that time the patient was just coming from under its effects. It was essential that the patient be given water at intervals when the labour was prolonged, and it was advisable to let her come out from the influence of the drugs and have a meal, and then start the administration again. This diminished the tendency to uterine inertia. He had only had one case of *post-partum* haemorrhage, and that was probably due to slight capillary oozing from a small laceration of the cervix. He had not found an increased use of forceps necessary.

Dr. W. O. GREENWOOD said that out of a series of 240 cases he had only had two complete failures. He thought that his success depended upon frequent and rigid testing of the patient. The dose could be standardized, but the patients differed in their reaction to the drugs. He had used morphine gr. $\frac{1}{4}$ and scopolamine gr. $\frac{1}{16}$. Only highly nervous patients needed larger doses. He thought gr. $\frac{1}{32}$ too small a dose on the whole. He thought that if amnesia was perfect it was safe to say that there was some analgesia.

Dr. J. M. BRYDENE thought the method could be made an absolute and complete success from the patient's point of view. A little chloroform at the start was a great help. He had never given more than three injections. He had had no trouble with the babies. He had found the memory test unsatisfactory.

Dr. C. HUBERT ROBERTS considered that the method had given good results. Pain was diminished in practically 90 per cent. Administration should be begun when pains were regular and strong. The size of the os was no guide. Judgement was necessary with regard to the number of injections to be given. Repetition depended upon the condition of the patient and on the pains. Further observations were necessary to determine the value of the memory test. The corneal and plantar tests were of minor use. Training of physician and nurse was very necessary. Constant attendance on the part of the physician was needed. Prolongation of labour was not marked in their series. Warmth and quiet were all that were needed for the baby.

Lady BARRETT said that in a series of 50 hospital cases she had always given morphine gr. $\frac{1}{4}$. Patients had rarely failed to remember objects shown, but many had amnesia with regard to labour. She had had greater success by giving small amounts of chloroform at the end of labour, so that the last few pains were not remembered. There had been no case of *post-partum* haemorrhage. The only stillbirth was a small premature child.

Dr. COMYNS BERKELEY said that the memory test was useless. The only danger to the child was in trying to revive it. Strict supervision was necessary.

The PRESIDENT said that the method was by no means devoid of danger. Hyoscine was a dangerous drug owing to an idiosyncrasy towards it on the part of certain people, and once given hypodermically it could not be recalled. And on top of this dangerous drug chloroform was given as a general anaesthetic. The morbidity increased with the number of forceps cases. There was an increased morbidity of the mother, an increased mortality of the mother, and increased mortality of the baby.

Captain WILLIAMSON said the method was valuable in suitable and selected cases. It should be administered only after every precaution had been taken, and only by those who were competent to deal with any obstetrical emergency which might arise.

ATTEMPT TO PRODUCE CARCINOMA BY RADIUM.

At a meeting of the Pathological Section of the Royal Society of Medicine on December 4th, when Professor WILLIAM BULLOCK, F.R.S., president, was in the chair, Dr. W. S. LAZARUS-BARLOW described an attempt at the experimental production of carcinoma by means of radium. He showed microscope slides and a considerable number of lantern slides from rats and rabbits in which he had endeavoured to produce carcinoma experimentally. In the case of the rat minute tubes containing radium in amounts of the orders 10^{-8} to 10^{-1} mg. (calculated as element) were introduced beneath the skin. These experiments were undertaken on the basis of the facts that exposure to α rays caused squamous cell carcinoma of the hand, and that small quantities of radium had been demonstrated by him to be of frequent occurrence in carcinomatous tissue. In the case of the rabbit small gall stones obtained from the human subject and proved to be devoid of radium by alpha ray electroscopical analysis were artificially impregnated with radium and introduced into the gall bladders of the animals. These experiments were based on the fact that he had found a marked difference between the radium content of gall stones in man according as they were associated with cancer of the gall bladder or not, gall stones associated with cancer of the gall bladder containing relatively large quantities of radium, whereas gall stones associated with cancer of other parts, or unassociated with cancer, contained mere traces of radium or none could be detected. The experiments were commenced in 1912 and were not yet complete. He had not succeeded in producing in the animals the clinical condition known in man as cancer, but in the skin of rats he was able to produce, by means of suitable doses, an irregular, considerable overgrowth of squamous epithelium which sent processes into the corium, was frequently supplied with well-marked cell nests, and was indistinguishable histologically from a very early squamous cell carcinoma in man. This condition could be produced at will, but if the action of the radium persisted the newly formed cells came under its destructive influence, and if the radium were removed the skin condition receded with some rapidity, leaving merely a thin scar tissue devoid of hair and hair follicles. The gall bladder of rabbit experiments showed a more advanced condition, and a marked contrast obtained between the appearances of the gall bladders according as the gall stones introduced experimentally into them contained radium or not. Whether containing radium or not there was a great thickening of the connective tissue of the gall bladder, and this Dr. Lazarus-Barlow ascribed to the mere presence of the gall stones as a foreign body. But a fundamental difference obtained in the behaviour of the columnar epithelium lining the gall bladder according as the calculus which it contained was radium-free or impregnated with radium. If the calculus were radium-free the most that occurred was a slight polypoid overgrowth of the epithelium with an excessive formation of mucus; there was no tendency of the epithelium to invade the wall of the gall bladder. On the other hand, when the lining membrane of the gall bladder had been exposed to the action of a gall stone containing radium the epithelium showed changes indistinguishable from those occurring in columnar cell carcinoma in that there was an irregular growth of the epithelium which projected into the cavity of the gall bladder and invaded the thickened wall of the viscus in an irregular manner. As a consequence of the invasion, parts of the thickened gall bladder wall showed the presence of irregular tubules lined with columnar epithelium, grouped in irregular fashion through a less or greater thickness of the gall bladder wall, and usually preceded by a zone of lymphocytes. In one rabbit a metastatic focus exactly recalling the appearance of the gall bladder itself was found in a distant part of the liver. This was the sole metastasis found in the entire series of experiments, which involved 122 rats, 6 radium gall stone rabbits, and 3 control rabbits. Reference was made to experiments on the same lines carried out on mice at an early period of the research. In these animals the radium was not contained within tubes, and though introduced beneath the skin in the axillary region in the form of an insoluble sulphate or silicates, was found to disappear from the body within a few weeks. In

addition, it was not found possible to keep the animals alive for a prolonged period. Nevertheless, of 67 radium mice living six months after inoculation, 5 developed definite malignant tumours of the mamma (one animal bearing two primary tumours) and 7 other animals developed doubtful tumours (one papilloma and 6 nodular masses, chiefly in the neck, as large as peas, oscillating in size and finally disappearing). Thirteen control animals inoculated in the same way, but without radium and also living six months after inoculation, showed no tumour formation whatever.

Professor S. G. SHATTOCK, whilst fully recognizing the value of the results, and the prospect they opened up of further developments in experimentation upon the etiology of carcinoma, did not consider that the lesions could safely be regarded as more than precancerous. The downgrowth of the epidermis in the rat's skin in no case transgressed the limits of the corium; and on the removal of the radium the changes, instead of progressing, disappeared. In regard to the proliferative changes set up in the mucosa of the gall bladder by the action of radium introduced into gall stones, those seen in the bile ducts in coccidiosis of the rabbit's liver were quite as pronounced. The speaker held that for the production of carcinoma there still remained a second factor which needed discovery. The author's view that this consisted in a lessened resistance required scientific demonstration; nor was it logically the only other possibility, for there might be a second *extraneous* factor, such as the access of an ultramicroscopic virus. A further point against the change in the gall bladder being carcinomatous was the circumstance (as the author stated in answer) that the epithelial cells did not yield the proper Altmann granule test. Amongst the author's results there was one in which a metastasis had occurred in the liver; but here a second extraneous factor might have come into play, and the inflammatory proliferative process have been followed by the growth of a proper carcinoma.

EXPLOSIVE PHENOMENA IN GUNSHOT INJURIES.

At the same meeting of the Pathological Section Professor S. G. SHATTOCK, F.R.S., read a paper on explosive phenomena in gunshot injuries. He observed that, from the strictly pathological standpoint, the new factor introduced into gunshot injuries, as injuries, was the velocity of the penetrating body; they were otherwise confused and infected wounds like those produced by other foreign bodies, although their number and variety gave them special surgical features. Under the term "explosive effect" more than one thing was included: it was applied (1) to the increase of damage due to shattering of the bullet; (2) to the additional injury resulting from the comminution of a bone and the dispersal of its fragments; and (3) to the damage resulting from the high velocity of the missile. The last alone possessed any special pathological interest. It had been asserted (Professor Dr. K. Stargardt) that the British bullet was an expanding one, in consequence of the core being composed of aluminium at the point, and elsewhere of lead; that on striking (bone at least) the momentum of the lead carried this forwards over the harder aluminium, and so split the mantle. In order to test this the author had had recourse to the following experiment. The bullet was fired at a distance of 20 ft. through a sternum, into cotton waste, from which it was recovered without having struck any second object. The sternum was selected in order to obtain a direct hit. The bullet was found to have undergone no distortion whatever. Two sterna were then spliced together and shot through in the same way; the bullet, on recovery, was found quite undamaged. In solid organs the results of high velocity were best seen in the liver when perforated by rifle bullets at close range. The typical injury was a perforation accompanied with radial fissuring of wide extent. Even here the elimination of extraneous factors, such as obliquity of impact, or turning of the missile in transit, damage due to the introduction of clothing, could only be effected by experiment. In firing through suspended sheep livers at 20 ft. with a service rifle and pointed bullet, this was the form the injury took; the mechanical action of gas produced by explosion was eliminated by the distance. In analysing the physics of this result the wave of compressed air produced by the bullet (demonstrated by Professor Vernon Boys in instan-

taneous photographs) was wholly negligible. The speaker had found that if tense screens of tissue paper were shot through at 20 ft. with a service rifle, the hole was but little larger than the bullet; were the air wave of any moment the paper would obviously have been widely rent. Sir Victor Horsley, in commenting upon the cavitation produced in his experiments of firing into clay, attributed more importance to the spin of the bullet (centrifugal action) than to its forward movement. The speaker had carefully inspected all the plaster casts made from the clay in these experiments, and was unable to find the evidence of such rotation; the coarser ridges (representing shallow fissures in the clay) as well as the finer markings were longitudinal. The turn of the present British bullet was only in 10 in., yet explosive effects were observable in, for example, the sheep livers before referred to, where the thickness was only $1\frac{1}{2}$ in., which would reduce the rotation to less than a fifth. In only one specimen—in the collection on view in the Royal College of Surgeons—were the divergent fissures curved; here the bullet had traversed the body of the third lumbar vertebra first, and must have had some altogether exceptional twist imparted to it. The question was thus reduced to one of forward velocity. This was well shown in the liver by the fact that in perforations caused by shell fragments at low velocity a patulous tunnel alone resulted. The same difference was beautifully demonstrated in Horsley's casts, where the distal half was only of the calibre of the bullet, the explosive or dilating effect being limited to the proximal. In the case of the clay, the ready entrance of air from behind allowed of its cavitation; in the liver, where this was out of the question, the cavitation was represented by radial fissuring produced by the passage of the wave through an incompressible semisolid medium. In hollow organs the production of explosive effects depended upon their contents, other things being equal. Such effects from rifle bullets were not observed in the stomach or intestines by reason of the compressible air and gas which they contained; nor in the lung, for the same reason. The contusion, unattended with breach of surface, found, not rarely, in such organs, was possible from their extreme mobility and compressibility. The longitudinal wounds produced at times in the intestine by intact bullets were explained by the wall having been struck axially. In the case of the bladder, the contents of which were incompressible, explosive results were now and then encountered. In the Collection there was a bladder perforated by a rifle bullet which entered through the buttock without fracturing bone, and eventually escaped above the pubes; in the posterior wall of the bladder was an entry admitting the finger; the anterior wall (exit) was rent from top to bottom. The speaker had obtained similar explosive results by firing through ox bladders distended with water, a service rifle being used at 20 feet. The result was a simple hydrodynamic one, and due to the wave imparted to a mobile and incompressible fluid in a confined space. If the bladder was empty, or only lightly filled, the rending on the far side did not take place. In arteries and veins no hydrodynamic effect was observable, whether in unilateral or bilateral perforation. Its absence was possibly due to the indefinite continuity of fluid above and below the stricken spot and to the remarkable strength of both kinds of vessels. The speaker had been unable to produce either macroscopic or microscopic damage of the inner or middle coats of the human common iliac artery under the highest pressure that could be exerted with a dissecting-room syringe. In regard to the skeleton, the rigidity of the structure concerned was a complicating factor. If the upper part of the shaft of the tibia was compressed over a small area in a vice, however *slowly* the compression was made, extensive comminution and fissuring ensued far beyond the spot compressed. Nevertheless the same rule held: the greater the velocity of the missile the greater the damage.

The classical example of explosive effect was the well-known widespread comminution of the skull when bilaterally perforated by a rifle bullet at close range. The effects due to the gas of explosion had, of course, to be excluded. The results of suicidal shooting were thus liable to lead to false conclusions; a rifle fired into the mouth, with blank cartridge, would produce extensive comminution. This factor was, however, easily eliminated; the speaker had found, too, that sheep skulls with the

brain *in situ* underwent extensive comminution when shot through at 20 ft. with a service rifle, the foramen magnum being freely open. The result was not, properly speaking, hydraulic, but hydrodynamic—that is, it was not due to a generalized and equable internal pressure, but to the sudden impact of the incompressible cerebral substance against the interior of the cranium. A simple experiment, devised by the speaker, would emphasize this. A large, flat-sided “cocoa tin” was shot through in the empty state at 20 ft. with a service rifle; a circular entry and exit of about the diameter of the bullet resulted. A second tin was filled with water and shot through, the lid being removed; the entry was small and circular, the exit widely split, with large triangular flaps of the metal completely everted. The speaker had obtained pronounced explosive effects also in sheep skulls inverted and filled with water, the foramen magnum being freely open; if the skull was shot through in the empty condition, a circular entry and exit alone resulted.

Reviews.

DISEASES OF THE CHEST.

An important work on *Diseases of the Chest*¹ and the principles of their physical diagnosis has been written by three assistant professors of the University of Pennsylvania. The aim of the authors has been “to write a practical book on the physical diagnosis of the heart and lungs in health and disease”; the prognosis and treatment of disease are not considered. The text is divided into four parts. The first, by Professor NORRIS, contains a thorough and very excellent account of the physical examination of the lungs, special attention being given to the acoustics of the various diagnostic methods. Readers of this part of the volume will emerge from it with a vastly clarified appreciation of the physical basis underlying the methods of palpation, percussion, and auscultation as applied to the chest. An intelligent comprehension of the way in which both the normal and the abnormal physical signs in the thorax are generated is a thing hard for medical students to acquire, for the pages devoted to the subject in the textbooks at their disposal are habitually scanty and commonly discrepant. Yet without such an intelligent comprehension the student (and no less the medical practitioner he becomes) is necessarily at a great disadvantage when it comes to the interpretation of the results of his physical examination. For want of such an understanding he is apt to fall back on half-remembered dogmatic statements, things learnt by rote and not fully understood, with the result that the most astounding diagnoses are often attached to chest cases a little out of the common. We do not know of any book in which the exposition of this most important preliminary to the subject of physical diagnosis is so fully or so clearly treated.

Part II, also by Professor Norris, describes the examination of the circulatory system, with physical explanations of the way in which the normal and abnormal sounds that may be heard are produced. Here, as in other parts of the book, British readers will note that some of the terms with which they are familiar are not used in America, or are perhaps used in a sense differing from that to which they are accustomed. For example, the word “rhonchus,” often used on this side of the Atlantic to indicate musical or “dry” adventitious sounds produced in the air passages, does not seem to occur in the book. Again, Professor Norris applies the epithet “exocardial” to murmurs heard in connexion with the large arteries away from the heart, to the exclusion of murmurs produced outside the heart by the movements of the heart itself.

Part III contains an account of the diseases of the bronchi, lungs, pleura, and diaphragm. Part IV deals with the diseases of the pericardium, heart, and aorta. Both these parts are written by Professor LANDIS, and give adequate accounts of the subjects with which they are concerned. Great attention is paid to morbid

anatomy throughout the volume. The authors have endeavoured to teach as far as possible by means of illustrations, many of them photographs of frozen sections from the cadaver previously hardened in formalin. Indeed, the illustrations are one of the most striking features of the book, and form a most valuable and instructive series, well chosen, and well reproduced by the printer. The text is not free from misprints, and it is not too much to say that the authors are sadly to seek in Latin and Greek when it comes to the nomenclature of disease—a minor fault in view of the general excellence and novelty of their volume. The book may be warmly commended to the senior medical student, and it should be in the hands of all his medical instructors.

THE HUNGER COMPLEX.

MR. A. J. CARLSON'S monograph on *The Control of Hunger*² contains a summary of researches made in the Hull Physiological Laboratory of the University of Chicago. Six years ago Cannon and Washburn established by experiments the synchrony of hunger pangs with contractions of the empty stomach, and assumed a causal relation between these phenomena. The work done by Mr. Carlson and his colleagues not only confirms the results of Cannon and Washburn, but demonstrates a close parallelism between the degree of the stomach contractions and the intensity of the hunger sensation. Among the fifty subjects of their investigation one, Mr. F. V., had for twenty years had complete closure of the oesophagus and a gastric fistula permitting direct observation of the interior of the organ as well as the introduction of various appliances for experimental purposes. Stimulation of the gastric mucosa, it was found, produced hunger pangs only in so far as contractions of the organ resulted; in the absence of such contractions the results of the stimulation may be otherwise felt. Hunger is therefore of peripheral origin, and contains elements of kinesthetic sensation as well as of pain. It is analogous to muscular cramp, although differing in quality from that of other organs or the skeletal muscles. Hunger must not be confused with appetite, an independent, and, in a measure, antagonistic complex, for the secretion of gastric juice which may follow the thought, sight, or smell of food at the same time increases appetite and inhibits or diminishes the hunger pangs. Appetite is essentially a sense-reinforced memory of bygone pleasure in food.

The rhythm and strength of the hunger contractions are largely independent of extrinsic nerves. Section of the splanchnic nerves increases them by abolition of inhibitory control; section of the vagi renders the organ hypotonic, but so long as it is empty the alternate contractions and dilatations continue comparatively unchanged. The primary hunger centre is located by Mr. Carlson in the medulla, the sensory nuclei of the vagi. There are grounds for believing that, in common with other pains, that of hunger is also a thalamic function. Cortical processes are probably involved as well.

Some experiments on the effects of bitters commonly used in therapeutics proved that in ordinary doses they have no effect on the gastric tonus or hunger contractions. But it is for their effect upon appetite or secretion that such drugs are employed.

The author is to be congratulated on the production of a work embodying substantial additions to our physiological knowledge. The experimental grounds upon which his conclusions are based are clearly stated, and the book is written in a pleasant and readable style.

NOTES ON BOOKS.

DR. BEATRICE WEBB has written a most useful book of practical hints on the *Health of Working Girls*,³ for the use of welfare supervisors and social workers generally. Now that female labour is employed so very extensively in dangerous yet urgently necessary trades, the need for instruction in these matters is greater than ever. The author is fully competent to write on the subject from the medical point of view, and it appears that she has a first-hand knowledge of the working girl and her ways that

¹ *Diseases of the Chest and the Principles of Physical Diagnosis*. By G. W. Norris, A.B., M.D., and H. R. M. Landis, A.B., M.D., Assistant Professors of Medicine in the University of Pennsylvania; with a chapter on the Electrocardiograph in Heart Disease, by E. B. Krumpholtz, Ph.D., M.D., Assistant Professor of Research Medicine in the University of Pennsylvania. London and Philadelphia: W. B. Saunders Co. 1917. (Roy. 8vo, pp. 782; 413 figures. 36s. net.)

² *The Control of Hunger in Health and Disease*. By A. J. Carlson, Chicago, Illinois: The University of Chicago Press. 1916. (Med. 8vo, pp. 319; 38 figures. 9s. net.)

³ *Health of Working Girls*. By Beatrice Webb, M.D., Ch.B. London: Blackie and Son, Ltd. 1917. (Cr. 8vo, pp. 103. 2s. 6d. net.)

enables her to discourse with the authority of sympathetic comprehension. Her book is in every way excellent.

An address given by Sir THOMAS BARLOW last January to the Incorporated Association of Head Masters on the incidence of venereal disease and its relation to school life and school teaching has been issued as a pamphlet for the use of schoolmasters by the National Council for Combating Venereal Diseases.⁴ After a brief account of the prevalence of venereal diseases, Sir Thomas Barlow insists on the need for grasping the situation as a whole in any attempt to deal with sexual dangers during adolescence. His advice on the teaching of sex hygiene to schoolboys at various ages is based on the belief that elementary biological instruction, while valuable when not overdone, is second in importance to the moral appeal in the widest sense of that term. He is wisely suspicious of those elaborate schemes for teaching sex physiology by which enthusiasts hope to safeguard youth against sexual vice and disease.

Miss VERA WADDINGTON's *What Every Masseuse Should Know*⁵ is a handy little book for the pocket, which should prove very useful to beginners. The clear and accurate line drawings are excellently done, and show graphically the commoner grasps, grips, and movements, while the short descriptions are equally simple and intelligible.

Moxon, when complimented by one of his Guy's colleagues on his large classes, replied: "I don't suppose I give the men better bread-and-butter than you did, but I put a little mustard on the sandwich." In this latter respect Dr. Mercier resembles Moxon, and differs from ordinary medical writers. A review of the first edition of these finished sketches of character⁶ was published last February, and it is not surprising that the author has so soon been afforded the opportunity of revising his essays, and of replying to reviewers' criticisms of his use of the term "artistic temperament" for an unattractive set of qualities. This descriptive title has no classical or authoritative origin, and though Sir Ronald Ross, who suggests "the vain temperament" as more suitable, has the justification that vanity is a large ingredient, it is not all, for heartlessness is even more predominant. The main difference between the man with the artistic temperament and the artist is the latter's possession of that infinite capacity for taking pains which was Carlyle's definition of genius: but though it is an essential it is far from the whole of that rare property. There are many good and shrewd sayings in these pages which no one who enjoys the keen thrust of the author's pen should miss.

⁴ Avenue Chambers, Southampton Row, London, W.C.1. Price 2d.

⁵ *What Every Masseuse Should Know*. By Vera Waddington. With prefatory notes by Sir Rickman Godlee, Bt., K.C.V.O., and Mrs. Annie E. Stewart, and an introduction by Laura M. Fairbairn. London: Methuen and Co., Ltd. 1917. (4½ × 5½, pp. 105; 47 illustrations. 2s. 6d.)

⁶ *Human Temperaments: Studies in Character*. By Charles Mercier, M.D., F.R.C.P. Second edition, revised. London: The Scientific Press, Ltd. 1917. (Post 8vo, pp. 91. 1s. 3d. net.)

THE SUPPLY OF INTOXICANT DRUGS TO MEMBERS OF H.M. FORCES.

In a penal case before the General Medical Council, which was reported in the SUPPLEMENT of December 8th, p. 114, the accused medical practitioner was found guilty of improper dealings with the narcotic drug heroin, and his name was struck off the *Medical Register*. With the general features of the case we do not propose to deal; the report supplies its own comment. The second count of the charge, however, needs a few words of explanation. This referred to the supply of heroin "for an officer and men, members of His Majesty's forces, contrary to Regulation 40 of the Defence of the Realm Regulations, and the Order of the Army Council dated May 11th, 1916." Regulation 40 makes it an offence, *inter alia*, to supply any intoxicant to a member of His Majesty's forces when on duty, or to supply him therewith, when not on duty, with the intent to make him drunk, or less capable of the efficient discharge of his duties. The expression "intoxicant" for the purpose of this regulation includes any intoxicating liquor, and any sedative, narcotic, or stimulant drug or preparation. Further, the Admiralty or Army Council is empowered by the regulation to prohibit or restrict by order the supply of any specified narcotic, or

stimulant drug, or preparation to members of His Majesty's forces. The Army Council accordingly issued on May 11th, 1916, an Order, reproduced below, with which medical practitioners should make themselves familiar:

No person shall sell or supply any article specified in the Schedule to this Order to or for any member of His Majesty's Forces unless ordered for him by a registered medical practitioner on a written prescription, dated and signed by the practitioner with his full name and qualifications, and marked with the words "Not to be repeated," and unless the person so selling or supplying shall mark the prescription with his name and address and the date on which it is dispensed.

Schedule.

Barbitone.	Codeine.
Benzamine lactate.	Diamorphine.
Benzamine hydrochloride.	Indian hemp.
Chloral hydrate.	Opium.
Coca.	Morphine.
Cocaine.	Sulphonal and its homologues.

All other salts, preparations, derivatives, or admixtures prepared therefrom or therewith.

It will be remembered that barbitone is diethyl barbituric acid, which was first introduced under the trade name "veronal." Benzamine lactate is commercially known as eucain lactate, and benzamine hydrochloride is the corresponding salt of eucain. Diamorphine is diacetylmorphine hydrochloride, unofficially known as "heroin." The homologues of sulphonal include trional and tetronal, and presumably also "reversed sulphonal," which is not strictly a homologue of sulphonal, but a metameride. Those who seek further guidance as to the artificial hypnotics which should be regarded as derivatives of barbitone or sulphonal may be referred to an article in the JOURNAL of April 19th, 1913, p. 835, on the chemical and pharmaceutical relationships of these compounds. The phrase "all other salts, derivatives, or admixtures" would probably be interpreted very widely in any case of doubt.

THE VOLUNTARY RATION FOR CHILDREN.

ON December 3rd the Ministry of Food issued to the press a scheme of voluntary rationing applicable to children. The table on the next page gives some details and deductions in extension of those published last week (p. 764.) The figures in brackets in the first column are the "man values" for the different ages adopted by the Royal Society (Food Committee) from the publications of Atwater and his collaborators. This scale takes the ages 14 to 15 and over 16 separately, and we have provisionally introduced 0.8 for the combined group. The proximate principles are computed from the Royal Society's analyses (beef being taken for meat, which somewhat underestimates the calorie value of the ration if pork or bacon is allowed for). The calories required are those based on the assumption of 3,500 for an adult's diet.

So far as young children are concerned, the deficit shown can be readily covered with milk, a pint daily (of energy value slightly exceeding 400 calories) being sufficient. At older ages the same difficulties will arise as in connexion with the diets of adults, potatoes being the only unrationed articles of high energy value. The evidence collected by Rubner¹ points to a very complete utilization of protein by growing animals and the desirability of special attention being devoted to the energetic basis of the dietary. He concluded that in all animals but man about 4,800 calories were needed for the production of a kilogram of body weight in the first stages of growth; in man the requirements were sixfold. The head of a family will be well advised to increase the children's sugar ration at the expense of that of the sedentary adults.

We may add that were a compulsory rationing system to be introduced the ratios that children's diets should bear to those of adults ought to receive much more attention. As Fendler, Stüber, and Burger have recently pointed out,² there are hopelessly discrepancies between the published standards of the chief writers. Thus for a child of 10, reckoning an adult man as 100, Engel reached 57.1, Rubner 49.2, Atwater 60, Zuntz 75, American

¹ Das Wachstumsproblem, etc., Arch. f. Hygiene, lxxvi, 1903, p. 127, etc.

² Arch. f. Hygiene, lxxv, 1916, p. 1, etc.

Children's Rations.

Ages.		Per Head Weekly.								Grams per Head Daily.			Calories Daily.	Cereal Ratio.	Calories Required.	Deficit.		
		Bread.		Meat.		Cereals.		Fat.		Sugar.		Protein.					Fat.	Carbo- hydrates.
		lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.							
0-5 (0.4) ...	...	3	0	1	0	0	6	0	6	0	8	27.5	34.7	153.5	1,064	55.6	1,400	336
6-8 (0.5) ...	...	3	8	1	8	0	8	0	8	0	8	35.6	47.8	176.4	1,314	53.6	1,750	436
9-12 (0.6) ...	...	4	8	2	0	0	10	0	10	0	8	46.4	61.3	216.8	1,649	54.6	2,100	451
13-18 (0.8) ...	...	6	0	2	0	0	10	0	10	0	8	54.2	62.4	267.8	1,501	60.7	2,800	899

statistics of households 75, Danish statistics 50 for males and 40 for females. Some observations by Müller on Charlottenburg working-class children (quoted by Fendler, Stüber, and Berger, and relating to the year 1915 or earlier) give for children between 7 and 10 daily calories

varying between 1,585 and 2,118. As the heat values were determined directly with a bomb calorimeter they are not immediately comparable with the usual reductions, being too high. So far as they go, they do not conflict with the assumed standard.

MEDICINE IN INDIA.

A FRESH BLOW TO THE INDIAN MEDICAL SERVICE.

NEARLY ten years ago (in February, 1908) the Madras Government issued a circular interpreting existing orders to mean that all patients who visited a hospital supported from public funds were entitled to gratuitous medical advice irrespective of their circumstances, and nine years ago (in September, 1908) it issued an order stating that limitation of treatment at Government medical institutions to Government officials and to the poor was not in accordance with the intentions or orders of the Government of Madras. The matter was brought to the notice of the British Medical Association, which, in January, 1910, addressed a letter of protest to the Secretary of State, pointing out that the Order was contrary to the policy of the Secretary of State and the Government of India, which was to foster the independent medical profession in India. It also pointed out that if the hospitals provided by the Government of India were intended primarily for the treatment of the sick poor, the Order must lead to abuse, inasmuch as the grant of gratuitous relief, at a hospital, to patients in a position to pay for treatment diminished the amount of time and attention and the expenditure available for those who were suitable objects of charity; the fact that the hospitals were officered by paid Government officials and mainly supported by public funds did not alter their charitable object and scope. The matter received the prolonged consideration of the India Office and the Governor-General, for it was not until three years later (in March, 1913), and only after several further reminders, that the Association was informed by the India Office that the Governor-General in Council had promulgated a resolution making it known that the principle of discrimination between different classes of patients visiting public hospitals in respect of the medical advice afforded them was that towards which all provinces should work. The resolution went on to point out that—

The more important urban centres, where supervision is strongest and the supply of practitioners adequate, afford the best opportunity for an early move in this direction, and especially is this the case with reference to private wards in the larger hospitals. In fact, any patient who can afford to pay for separate accommodation should be charged a reasonable sum in addition for attendance and medicine, and care should be taken not to undersell private nursing homes and chemists' shops, or to compete with private medical men. In rural areas progress may be less rapid and it must be adapted to local conditions, but it is the wish of the Government of India that the object to be secured, namely, that persons should not be treated at the public expense who can afford to pay, should be consistently kept in view and action gradually taken as circumstances permit to attain this end.

The Madras Government ruminated this Order from the Government of India for three years, and then issued an Order (March 11th, 1916) containing rules to govern the levy of fees in State medical institutions in Madras city. With regard to out-patients, it laid down that well-to-do persons should not be given medical advice as out-patients except in cases of emergency, and that if they required the services of a medical officer they were at liberty to

make private arrangements with him for their treatment at his residence or at their own homes. Decision as to whether a person was to receive free medical advice was to be a matter for the medical officer in attendance, who might in any case of doubt require the production of satisfactory evidence.

The next section of the Order went on to lay down that poor in-patients should be treated and dieted free in general wards; other persons were to pay nursing and diet charges, and also a charge for medical advice or operation, except in the case of civil servants, but for a major operation or confinement persons whose incomes exceeded a certain amount were to be charged a fee subject to a maximum of 45 rupees. In-patients in special wards were to be charged according to a sliding scale in proportion to their income, for medical advice and minor operations, and for diet, with extra fees for a major operation or confinement. The medical officer in charge of the case, or if associated with a surgeon, jointly with the surgeon who performed the operation or attended the confinement, should determine the fee to be charged, subject to the prescribed maximum. All the charges, whether for nursing and diet, medical advice, operation or confinement, were to be credited in full to the Government.

This is the manner in which the Madras Government interprets the Order of the Governor-General in Council that "care should be taken not to undersell or to compete with private medical men." By opening its hospital to paying patients the Government directly encourages the paying patient to enter the wards of those hospitals which are established and maintained for the benefit of persons whose earnings would otherwise prevent them from obtaining suitable treatment or operation. So far from refraining from entering into the competition condemned by the Governor-General in Council the Madras Government proposes to make money out of the medical profession by appropriating from members of the medical profession the fees the patient has to pay for their skill.

The effect upon the Indian Medical Service must be as disastrous as upon the independent medical profession in India. The Government of India Act, 1915, which was a consolidating Act, re-enacted the clause which specifically reserved to barristers, physicians, surgeons, and chaplains in the way of their respective profession the right to accept fees. This is one of the inducements held out to young men to enter the Indian Medical Service, and, as has been said, it has been re-enacted and reaffirmed within the last two years; yet we find the Madras Government a few months later making a regulation which stultifies the Act of Parliament. If the maintenance of efficiency in the Indian Medical Service is essential to the interests of the people of India, and if this duty devolves on the Secretary of State and the Government of India, we would invite the Secretary of State for India during his visit to that country to look into the matter in consultation with the Governor-General. We would invite them to look at it from a broad and statesmanlike point of view, sweeping out of the way all petty jealousies and bureaucratic methods of provincial secretariats.

British Medical Journal.

SATURDAY, DECEMBER 15TH, 1917.

THE BIOLOGY OF WATERWORKS.

THERE is a pathology as well as a physiology of the making of food and beverages. In 1856 technical difficulties experienced in the distilling industries of Lille led Pasteur to study fermentation processes. Up to that time Liebig's view that the transformation of sugar into alcohol and carbonic acid was a purely chemical process, and not a vital phenomenon, held the field. In 1857 Pasteur furnished his first proofs that the process of fermentation is directly dependent upon the growth of living organisms. The fruits of these researches marked the beginning of the modern sciences of bacteriology and biochemistry. From the study of fermentation Pasteur passed to investigate the processes of putrefaction, and established that these, too, depend upon the activity of living organisms. In 1862 further fermentation studies satisfied him that the conversion of alcohol into acetic acid was the work of a living organism, and he made practical suggestions for improving the vinegar industry. He next studied side by side the physiology of normal grape fermentation and the pathology of wine diseases. By 1864 he had proved that morbid changes in wine coexisted with the presence and multiplication of microscopic vegetations. Between 1871 and 1876 Pasteur undertook similar investigations into the chemistry, physiology, and pathology of brewing, to the lasting advantage not merely of that industry, but of science.

The pathology of breadstuffs has lately attracted much general attention owing to the difficulty in baking uniformly good loaves from the variable mixture of wheaten flour with other cereals, which is known as Government regulation, or G.R. flour. It is apt to be forgotten that wheat alone of the cereals contains gluten—the colloidal protein substance indispensable to the porosity of bread. Bread baking is attended by risks of infection by low forms of vegetable life leading to such morbid states as "moulding" and "ropiness." The pathology of these changes is not well understood, but the production of rope—which has been the chief trouble with war bread—is favoured by hot weather, by the practice of damping loaves to keep up their weight, and possibly by the greater prevalence of the causative organism, *Bacillus mesentericus*, in the lower grades of imported grain. In passing it is curious to note that the primitive articles of diet and drink—bread, milk, beer, wine, and even water—are each prone to infections, which, from the viscid stringy appearances produced, are alike called "rope." Ropiness of ale was described as long ago as 1547.

The physiology and pathology of drinking water are illustrated in a recent publication by Mr. R. Kirkpatrick on *The Biology of Waterworks*, issued by the Museum of Natural History.¹ Sand filtration dates from 1826, when it was applied by Mr. James Simpson, Consulting Engineer to the Chelsea Water Company, to remove the gross contaminations of the Thames water then supplied to Londoners. It not only did this, but improved the taste and odour.

Simpson did not apparently realize, however, until ten or twelve years later that the slime or skin formed on the surface of the sand played an important part. It was ascertained in time that the filtered water contained a smaller proportion of soluble organic matter than the raw, a fact not to be explained on any theory of mechanical action, and, finally, that bacteria were stopped to the extent of 98 or 99 per cent. The film to which chiefly the filter owes its purifying efficiency begins to be visible in two or three days after the water is run on to a fresh sand bed. It consists of living growing organisms, the most numerous being various species of diatoms which are present at all times of the year. It may contain zoogloea colonies of various kinds of bacteria, and also frequently such representatives of the animal kingdom as amoebae and infusoria. In addition there is a certain amount of organic colloid matter and organic and inorganic particles. Diatoms are one-celled algae, the brownish protoplasm of which contains green chlorophyll. It secretes a siliceous skeleton or "frustule." The "frustule" has a gelatinous covering which sticks to the sand grains and gradually fills in the spaces between them, forming an effective mechanical strainer.

Green algae also grow abundantly in filter reservoirs, flourishing mostly in spring and summer. The most important are *Spirogyra*, which forms masses of unbranched filaments, and *Hydrodictyon*, or water-net, which forms a delicate green network, the meshes bounded by single cells over a quarter of an inch long. Both these green algae are useful, one reason being that they protect the diatom film. They may grow so copiously that when the filter bed is allowed to dry the layer they form can be rolled up, and hence is known as "carpet-weed."

But these mechanical actions are not the end of the story. Simpson noted that "an appearance resembling fermentation" was discernible in the water in contact with the sand. The diatoms and the green algae in the presence of sunlight, by virtue of the chlorophyll both contain, assimilate the carbon of the carbonic acid in the water and liberate oxygen. At this stage the water is troubled and of a brownish tint; if stirred a fine dust can be seen in suspension; this dust consists of diatoms. Bubbles rise to the surface, and Gizolme has recently shown that the gas they contain consists as to 55 or 60 per cent. of oxygen. In a few days the water clears, the diatoms falling, to form first patches and then a continuous layer on the sand. The activity of the algae varies with the quality of the light—that is, with the weather, the time of day, and the season of the year. Gizolme, working with Diénert, has shown that the greater this activity the fewer the *B. coli* in the filtered water.

Useful as are certain species of diatoms, there are others which may give water authorities much trouble. To the growth in certain reservoirs of *Astrionella*, so called because several individuals may be joined into a beautiful star-shaped group, and to another diatom, called *Tabellaria* from its flat square shape, was traced the oily flavour of the water supplied to the west of London in the winter of 1912-13. The taste, which was due to a light oil present in the protoplasm of these species, could be removed by adding a small quantity of potassium permanganate to the water; like other algae, they are very susceptible to traces of copper sulphate, one part in a million being sufficient to stop the growth of *Astrionella*. Certain blue-green algae, the lowest and simplest forms of the group, may also give trouble. They may appear in great numbers in lakes, causing the phenomena called "the breaking of the meres," when the

¹ London: Quaritch and Dulau and Co. 1917. (Price 1s.)

water acquires a green colour. The growth only lasts a few days, but the dead algae impart a foul smell rendering the water temporarily undrinkable. In the summer of 1907 certain London storage reservoirs became infected with an alga, *Oscillatoria*, so that the water looked as though it had been fouled with green paint.

An enemy with which water engineers have sometimes found it very difficult to deal is *Crenothrix*. It does not contain chlorophyll, and although presenting resemblances to the algae it is usually classed with the bacteria. It flourishes both in light and dark, but appears to be typically an organism of subsoil water. It thrives best in water containing iron and organic matter in solution. In mass, as when it forms a matting on stones or water weeds, it has a brown colour, due to the presence of iron in the ferric state in the filaments of which it is composed. It forms spores which are easily spread, and given the conditions favourable to it the nuisance may quickly become very serious; this happened at Cheltenham in 1896, as described by Dr. J. H. Garrett. Water badly infected with this organism becomes red owing to the iron, turbid on account of flakes, and putrid from the decaying protoplasm of the organism. Water pipes may become more or less blocked by a thick deposit containing the remains of the iron bacteria. Liverpool had great trouble from this cause a few years after it began to draw its supply from Lake Vyrnwy, seventy-seven miles away among the Welsh hills. At Oswestry, some eighteen miles from the lake, the water is passed through a sand filter. The amount of water delivered to the filter beds dwindled, and the interior of the pipes was found to be covered with a gelatinous layer containing *Crenothrix*. There was no trouble beyond Oswestry, which confirms the experience of other places, that efficient sand filtration is the best remedy. There are many other organisms, including sponges and polyzoa, which can flourish in reservoirs and water mains, and not only maintain themselves but afford a living to various plants and animals, including worms and small crustacea. The gemmules of sponges and the seed-like bodies (statoblasts) of sponges are arrested by the sand filter, which, as has been pointed out, owes its efficiency mainly to the surface film composed chiefly of diatoms, which do not pass through, but, owing to their gelatinous coating, stick to the sand grains.

The whole story of the sand filter for town water supplies is a curious example of how man may by accident hit upon a method of using a process of Nature to enable him to meet his needs when he becomes aggregated into large communities. It may be supposed that the process, or something like it, must have been at work in shallow lakes, and perhaps in rivers, since the beginning of things—a reflection which may afford the curious matter for speculation.

FOOD RESTRICTIONS FOR THE WELL-TO-DO.

THE discussion carried on recently in the columns of the daily press with respect to conditions prevailing in clubs and the more expensive hotels and restaurants raises issues which the medical practitioner must face both as a citizen and a man of science. So far as general policy is concerned the medical man cannot claim to speak with more confidence than any other educated citizen, but it is obvious to every one that long meals and many courses in restaurants, hotels,

clubs, or private houses, are altogether out of place to-day. They are not necessary for health, but rather inimical to it, especially during this period of mental and emotional stress. They are not expected by guests, and the conscience of many of them is offended thereby. We do not, however, propose to comment upon this aspect of the matter at length, but there are one or two points associated with the general problem which deserve brief reference.

The first is, that however drastically clubs and restaurants are rationed, the immediate additions to the stocks of food available for general consumption will be almost inappreciable. The establishments which have been most criticized in the press cater, generally speaking, for persons whose incomes are not less than £700 a year. The number of such persons cannot be ascertained with accuracy, but, to judge from the evidence submitted to the Select Committee on the Income Tax in 1906, it is doubtful whether there are more than 250,000 in a population of over 35 million "men." Obviously, therefore, merely reducing the personal consumption of food by the wealthy will hardly affect the general situation. It will be well to bear this fact in mind so as to discourage expectations which may have been excited by the rhetorical way in which the question tends to be treated. A more important consequence, apart from the obviously valuable psychological effect of a good example, is the possibility of utilizing the services of restaurant staffs in municipal and factory canteens. One of the qualities by which the expert cook is distinguished from the amateur is the skill with which the former can utilize material either wasted or rendered unappetizing by the latter. This is particularly true with respect to cooking potatoes; when the consumption of potatoes in large quantities is desired, the services of chefs as instructors to municipalities and upon the staffs of works canteens would be valuable.

Although we think nobody has objected to the rationing of clubs and restaurants in explicit terms, some apprehensions seem to exist respecting the requirements of brain workers. The train of thought appears to be as follows: The clients of expensive restaurants and clubs comprise a large proportion of brain workers; intellectual work is very exhausting, and therefore intellectual workers must have a specially nutritious diet. Few results in the physiology of nutrition are better established than that this argument is quite unsound. Atwater¹ made a careful series of measurements upon an individual when resting and when eight hours of the day were spent in severe mental work. The mean heat productions were 2,321 and 2,319 calories respectively per diem. Benedict and Carpenter² have repeated and confirmed this result, which has never been seriously challenged. Popular opinion to the contrary is due to a natural confusion between fatigue consequent upon muscular work and that produced by intellectual work. The physiological substratum of the latter is doubtless an increasing resistance to the passage of impulses within the central nervous system, the development of which in the case of lower level mechanisms and co-ordinated reflexes has been demonstrated by Sherrington in his classical researches. These changes are of very great importance and presumably associated with the degradation of energy to the form of heat, but the quantity of energy transformed is so small that, unlike the change due to muscular work, it does not appreciably affect the general level of

¹ *Experiments on the Metabolism of Matter and Energy in the Human Body*, Washington, 1905.

² *The Influence of Muscular and Mental Work on Metabolism*, Washington, 1909.

metabolism. No doubt those intellectual workers who are restless and irritable, continually pacing up and down their offices or running up and down stairs, will use more calories than when at rest. But it is the associated muscular activity, not the mental work, which is the cause of this. When it is remembered that not particularly brisk walking will raise the rate of metabolism to more than three times its resting value,³ the discouragement of visitors and the reduction in numbers of official conferences and meetings would seem to be a quite useful measure of food economy upon the part of sedentary workers. This at least is clear: that the medical man can authoritatively assure anxious brain workers that they do not need any preferential treatment in the matter of calories.

The practical conclusion which we draw is that the limitation and simplification of restaurant and hotel meals (which the military authorities have tried to enforce amongst officers), and also of private entertaining, should be taken in hand at once. Labour which might be better employed elsewhere would be set free, invidious comparisons between the lots of different social classes would be avoided, and there is no reason to expect that the output of brain work would be diminished in quantity or deteriorated in quality.

THE CREAM ORDER.

THE Cream Order, made by the Food Controller under the Defence of the Realm Regulations, came into force on December 8th and will continue in force until April 30th. The first clause deals with the use and sale of cream and forbids the use of cream except for butter-making or such other purpose as the Food Controller may authorize from time to time. The second clause makes certain exceptions; it provides that the first clause shall not affect "the consumption of fresh cream by children under the age of five years, patients in hospitals and other similar institutions, and invalids or other persons needing cream in the interests of their health." The person who sells or supplies the cream must in all such cases obtain certain documents which he must preserve and produce if required for the inspection of any person authorized in that behalf by the Food Controller or a Food Committee. The document in the case of a child must show its name, age, and address, the maximum amount to be supplied and the person to whom it is supplied; in the case of a hospital or institution, the name and address of the institution and the maximum amount to be supplied; in the case of an invalid or other person needing cream in the interests of health, the name and address of the person, the maximum amount to be supplied, the period of supply, "and the name and address of a duly qualified medical practitioner who has authorized such supply, and the date of such authority." Infringements of the Order are summary offences against the Defence of the Realm Regulations. The Cream Order resembles the Bread Order in that it in effect imposes a new duty on medical practitioners. The experience of the working of the Bread Order is sufficient to prove that the discharge of this duty may sometimes be difficult and irksome. No doubt, if exceptions were to be allowed on grounds of health, they could logically be granted only on the recommendation of a duly qualified medical practitioner, but it was soon found that the Bread Order had been drawn too wide. Too many people were claiming that on grounds of health they must eat white wheaten bread. It was, of course, alleged that the doctors were showing laxity in making recommendations, but those who made this allegation failed to observe that the Bread Order practically placed the doctor in the position of trying to prove a negative, of asserting that

a particular kind of bread which the individual thought would do him good, would not do him good. It was sought to remedy the defect in the Order by two means: The first was to subject all applications for special permits to review by the scientific adviser to the Food Controller, assisted in doubtful cases by a small advisory committee, consisting of Sir Thomas Barlow and Dr. Robert Hutchison; this was in effect, if not in form, to subject the doctor's recommendation to review. The second expedient was the issue of a memorandum¹ addressed to the medical profession setting out a number of disorders which in the judgement of the Food Controller and his advisers could not be ameliorated by substituting white bread for Regulation bread. The applications in the case of the Bread Order were required to be made direct by the invalid to the Ministry of Food, and the net result is that very few people are getting white wheaten bread because the Food Controller decides against nearly all applications on the grounds set out in the memorandum. The procedure under the Cream Order differs inasmuch as the application is to be made by the customer to the dairy direct, and it appears to be open to the dairyman to accede to a request if accompanied by a medical certificate, so that there is no reference to the Food Controller. This difference may, perhaps, be the result of his experience of the White Bread Order, but, if so, we cannot think that the experience has been profitably used. There is, as is well known, a great shortage of butter in many towns; the price is fixed, but, as the shops have little or none for sale, the majority of people cannot obtain it; it appears, however, that many dairymen have got cream and are prepared to supply it. We believe that the cream would be much better employed in butter-making and that the Food Controller would have been wiser to have faced the situation at once. He allows cream to be used for children under five without medical authorization, and we are disposed to think that this exception if not too wide would be at least quite wide enough. So far as we know, cream is seldom ordered by doctors for children, except in the case of bottle-fed infants in order to increase the proportion of fat when it is thought advisable that the milk should be considerably diluted with water. It is not, we believe, commonly ordered for children old enough to take a mixed diet; for them butter can take its place, and most children like bread-and-butter, though many prefer butter and bread. Judging from books of reference and from such inquiries as we have been able to make, we cannot find that cream is often recommended for adults, or for children under five, or for young persons. Though it may sometimes be a useful, it can seldom be a necessary, part of a sick-room dietary. Putting the matter shortly, we are inclined to think that the Food Controller is seeking to place upon the medical profession responsibility which really belongs to him. He has full official information with regard to the amount of cream available and likely to be available during the winter; he clearly considers that it ought to be used almost wholly for butter-making, yet he is giving up all the control he might and ought to exercise over the consumption of cream. We venture to urge that he should have the full courage of his opinion.

THE LABOUR PARTY AND THE MEDICAL PROFESSION.

THE draft constitution of the Labour Party, to be submitted to the conference at Nottingham in January, has now been published. The reason for its issue at the present time is primarily that the various proposals may be duly considered by existing organizations who will give instructions to their delegates, but the draft has a larger interest inasmuch as the scheme has for one of its objects to bring into the party membership "producers by brain" as well as "producers by hand." In that connexion, as we

³ See Zuntz and Schumburg, *Studien zu einer Physiologie des Menschen*, Berlin, 1901, p. 240, etc.

¹ BRITISH MEDICAL JOURNAL, October 20th, 1917, p. 524.

mentioned in our issue of November 10th, p. 626, there has been talk that the Labour candidates to be adopted for the next general election will include some members of the medical profession pledged to support the scheme for a State Medical Service. The draft constitution contemplates a reorganization of the Labour Party so as to avoid the loose representation of various political and social groupings that had made up the conferences hitherto. The intention is that the annual conference as heretofore shall settle the programme of the party, but the delegates will be sent under a new and more ordered plan. Moreover, before an issue is adopted as one of the "planks" of the programme it must obtain the support of two-thirds of the votes given on a card vote. Further, it appears that these definitions of issues are to be made broadly by the conference and that there is to be some reservation allowing room for the exercise of the judgement of the National Executive to adapt these outlines to the circumstances of a general election. This is because the conditions may vary after the decisions of the conference have been taken, and there is also provision to enable the Executive to call a special conference if time allows and if it thinks it desirable. Every Labour candidate will be required to adopt the programme, but will be left free to include in the terms of his address any other proposals not inconsistent therewith. For the new development the most important consideration naturally is the method whereby the conference delegates shall be elected, the more so because the conference in its turn will elect the National Executive according to the old practice. The arrangement shows a desire to go cautiously, which is not surprising, as the financial stability of the party depends upon the trade unions. Thus the elements to form the party conference are defined under four headings. Trade unions and other societies affiliated to the party may send one delegate for each 1,000 members whose fees are paid. Local labour parties will, generally speaking, be reckoned according to parliamentary constituencies, and the intention is that each local labour party shall send one delegate in respect of each parliamentary constituency, and have one vote in respect of that constituency. Central labour parties in divided boroughs will each receive one voting card, and an additional woman delegate may be appointed for each constituency in which the numbers of affiliated and individual women members exceed 500. Trades councils not embodied in the local labour party will be entitled to send one delegate. Members of the National Executive and duly sanctioned parliamentary candidates may attend the conference, but will have no right unless delegated to vote. The proportions of representation in the National Executive are also safeguarded. This Executive is to comprise, in addition to the treasurer, eleven representatives of the affiliated organizations, five representatives of the local labour parties, and four women; the election is to be by ballot vote on the card basis from three lists of nominations, according to the categories mentioned above. The "producers by brain," who may join the Labour Party if the draft scheme be adopted, will of course figure in the local labour parties. It is possible that if the accretions thus made are comparatively few they will be over-represented at the conference; on the other hand, if they enter in large numbers, it would appear that they will be under-represented, and that the constitution in course of time will require revision if it is to reflect the membership of the party. Another point of interest is the scheme for the adoption of parliamentary candidates. The local labour party, which in this sense may be taken presumably to comprehend all the elements already referred to, will need the sanction of the National Executive before it can bring forward a candidate in a constituency. Under the Representation of the People Bill election expenditure by a candidate is limited to 5d. per elector in boroughs and 7d. in counties. Labour Party candidates are to receive financial assistance for election

expenditure from the party funds on the basis of £1 per 1,000 electors when the constituency is a borough and £1 15s. per 1,000 electors when the constituency is a county division. It is assumed in this arrangement that the Representation of the People Bill will be passed into law and hence that the returning officer's expenses will fall upon the State. It is understood, therefore, that the financial assistance from the Labour Party funds will represent about the same amount for a party candidate as hitherto, with, of course, an obvious saving to the party, inasmuch as it will no longer have to find returning officer's fees. The constitution has been drawn up with immense care to make it comprehensive. The new voting basis will, it is expected, reduce the representation of the extremer Socialist bodies. On the other hand, the scheme obviously must bring the individual candidate very much under the control of the "machine."

THE CARE OF THE BLIND.

FOLLOWING the recommendation of the Departmental Committee on the Welfare of the Blind, Mr. Hayes Fisher, President of the Local Government Board, has appointed a committee to advise the Local Government Board on matters relating to the care and supervision of the blind, including any question which may be specially referred to them by the department. The members of this advisory committee number fifteen, with a departmental official as secretary. Several of the members are well known for their interest and experience in work for the welfare of the blind, and two are women. We expected to find two or three ophthalmic surgeons, but of the fifteen not one is a medical man. It seems incredible, for of all people who have information and experience as to the conditions producing and produced by blindness there is no one so well situated as the ophthalmic surgeon. His every-day object is the prevention or amelioration of blindness, and his work brings him into closer acquaintance than any other class with the needs and difficulties of the blind. If there be any "experts" on the "care of the blind" they are to be found amongst the ophthalmic surgeons. Yet the Local Government Board finds no room for them on its advisory committee. Unfortunately for the nation this curious attitude of indifference to competent advice is no new characteristic of the Local Government Board in relation to the affairs of the blind. Forty years ago the Ophthalmological Society, under the presidency of Jonathan Hutchinson, urged the Local Government Board to issue cards of warning against the dangers of ophthalmia neonatorum, but the then President of the Board refused, on the plea that cards would cost money. For years ophthalmic surgeons urged the Local Government Board to make ophthalmia neonatorum a notifiable disease, but the Board did nothing until local action forced its hands. Recently the British Medical Association urged the Board to institute better provision for the treatment of ophthalmia neonatorum in London; it has got fair words, but no deeds as yet. Mr. Hayes Fisher's excuse is that his new committee is for administrative purposes only, and that if and when he desires expert advice he has no doubt of securing it on application as heretofore. No doubt. There is no ophthalmic surgeon so lacking in bowels of mercy as to refuse help for the blind, no matter who may ask. But Mr. Hayes Fisher fails to appreciate the fact that advice must be conditioned by circumstances. To get the best advice of practical application, his medical advisers must know all the circumstances of the question, and they can only do that if they have the opportunity of becoming acquainted with intended developments of the administrative side of the problem by sitting on the committee appointed to deal with it. Mr. Hayes Fisher has got his new "administrative" advisory committee, but it lacks that motive power in preventive medicine which can only come from the medical profession. He has got the gear wheels of a watch, but no mainspring; his gear will go so long as

some finger pushes the wheels and the dust and inertia of his department do not clog it into rigidity. The Local Government Board professes to be unable to understand why it is regarded with suspicion not without a trace of contempt by so many classes of the community. Such action as this in a matter so closely connected with medicine may help to explain the strong objection taken by many experienced members of the medical profession to the suggested conversion of the Local Government Board into the much-desired Ministry of Health.

MILITARY ORTHOPAEDIC CENTRES.

THE Military Orthopaedic Hospital at Shepherd's Bush is generally considered to be the head quarters of military orthopaedics in the British Isles, and a pamphlet¹ describing its organization will be read with interest. It is established in several large blocks, formerly the Hammersmith Infirmary and Workhouse, but the accommodation has been considerably increased, so that it now provides 1,100 beds. In addition, four houses in the neighbourhood have been taken over for convalescent patients. As an auxiliary hospital, it has the Manor House Hospital, Golder's Green, opened on September 29th last, and St. Katherine's Lodge, Regent's Park, maintained entirely by the American Red Cross, acting on behalf of the donors, Mr. and Mrs. Salomon, was opened on October 4th as an annexe for officers. The various forms of treatment carried on at the Shepherd's Bush Hospital are fully described. At present there is a large operating theatre and a small room used as a septic theatre. The number of operations performed is, however, so large—from sixty to seventy a week—that the need of another theatre has been felt, and, at the request of H.M. King Manuel, the Joint War Committee of the British Red Cross Society and the Order of St. John has agreed to provide the requisite money, and a new theatre with accessory rooms is now in course of erection. The electro-therapeutic department, massage department, and hydrotherapeutic department are described and illustrated by photographs, as is also a fine new gymnasium presented by King Manuel and equipped with modern appliances for remedial gymnastics. There is also a plaster department, an x-ray department, a museum, and, finally, a set of curative workshops, which are among the most interesting developments of military orthopaedics. The plans have been carried out under the general direction of Colonel Sir Robert Jones, who is arranging that curative manual treatment shall be introduced into every orthopaedic centre, so that patients can be provided with some light and congenial occupation. The first step at Shepherd's Bush was to ascertain every man's pre-war occupation, and each man is, as far as possible, employed at his old trade, with special regard, of course, to his particular injury. The last point is the fundamental part of the scheme, and every effort has been made to prescribe work which shall have a direct beneficial effect upon the man's injured limb; for instance, a man suffering from adhesions or weak musculature of the foot is put to work at a treadle fretsaw, or sewing machine; in this way results are obtained by natural movement which previously had only been reached by such artificial and uninteresting methods as pedalling a dummy bicycle. The pamphlet contains a set of appendices, giving details and prices of the equipment of the several departments, which will be of service to those who have to organize orthopaedic centres elsewhere. Major Walter Hill, R.A.M.C., the officer in charge, states in a short preface that the pamphlet has been compiled by Private D. H. Eade of the London Regiment, a patient in the hospital, the details of the treatment in the various departments having been supplied by Captain W. R. Bristow, R.A.M.C.,

for the electrical department, Dr. Mennell for the massage department, Dr. Sonntag for the hydrotherapeutic department, and Corporal J. Wilde, R.A.M.C., for the plaster department. There is an introductory note by King Manuel, which may be summed up in the statement that as the Shepherd's Bush Hospital was the mother of military orthopaedic hospitals in this country, so now it aspires to be their model. The success which has been attained is largely due to the great interest King Manuel has taken in all the work, but especially in that of the curative workshops.

THE JERUSALEM MISSION HOSPITAL.

GENERAL ALLENBY'S achievement in capturing Jerusalem from the Turks, which marks an epoch in the history of Christendom, reminds us that for nearly a hundred years a medical mission has been at work in the city of Zion, awaiting patiently the setting of the Moslem crescent. The work of the Jerusalem Medical Mission, belonging to the London Society for Promoting Christianity amongst the Jews, was begun in a small way in 1824 by Dr. Edward Dalton, who died two years later, but the real founder of the mission was Dr. E. Macgowan, a man of remarkable character, through whose endeavours the hospital was opened in 1844. He was followed by Dr. T. Chaplin, who laboured for twenty-five years, and was succeeded by Dr. d'Erf Wheeler, who was head of the mission for a like period. Dr. Wheeler did much to develop the work of the hospital, and obtained new buildings in 1897. In 1893 he was joined by Dr. E. W. G. Masterman, who succeeded him as medical superintendent eight years ago. In recent years a new dispensary and children's wards have been added. Of the multifarious diseases of Palestine which are treated in the mission hospital malaria overshadows all others. All forms of tuberculosis are painfully common, trachoma is rife, and intestinal worms are universal among the poorer classes. The infant death-rate is very high. There is no isolation of the infectious, no enforced vaccination, and no real sanitary system at all. Unlike most medical missions in the East, the medical cases are more numerous than the surgical. Beyond the treatment of the Jewish sick poor the medical staff have the professional care of a considerable mission community in a climate often very trying to Europeans.

GERMAN PSYCHOLOGY UNDER AERIAL BOMBARDMENT.

THE mixture of self-consciousness and pomposity with which a German professor will discuss a subject about which he knows no more than the rest of the world may be very irritating or mildly amusing according to the mood of the reader. Professor Hoche has recently confided to the *Medizinische Klinik* of Berlin the effects of aeroplane attacks on Freiburg in Baden observed by himself and other physicians. Freiburg is a town of 80,000 inhabitants and the first attacks, made with comparatively small bombs, left no strong impressions; but when, from April onwards, larger bombs were used, the nerves of Freiburg suffered more, partly because the safety sought in cellars proved to a certain extent illusory. Hoche states that the effect of a bombardment on the minds of the inhabitants of Freiburg was directly proportional to the loudness of the explosions, and in this connexion remarks that some persons dread thunder more than lightning. The calculation that the chances of being wounded were infinitely smaller for the individual at Freiburg than for the soldier at the front did not prevent an artillery officer who had lived through the battles of the Somme from finding the explosions in Freiburg far more terrifying. This, Hoche thinks, must be due in part to the enforced passivity of the bombarded; in the case of a man who could take an active part in defence the mental strain was relieved. Hence, the greatest sufferers were the most helpless, the bedridden, and patients recently operated on; patients with fever were indifferent. Bombs released at a height of 3,000 to

¹ *Organization and Methods of the Military Orthopaedic Hospital, Shepherd's Bush, London, W. 12.* 1917. London: St. Clement's Press, Ltd. 2s.

4,000 metres travel, Hoche calculates, at an average velocity of only 150 metres a second, but the whistling sound their passage made travelled at the rate of 333 metres, so that the explosion was preceded by a period of tension lasting several seconds. This anticipatory tension had a most injurious effect on the nerves, the most common expressions of fear being chattering of the teeth, pallor, more or less mechanical praying, hysterical laughter, diarrhoea, rapid excretion of urine, and great thirst. The April bombardments did not provide the lunatic asylums with a single new case, a fact which Hoche, who is professor of psychiatry in the University of Freiburg, considers emphasizes the view that the development of insanity is remarkably independent of external factors. The inmates of the Freiburg asylum were little disturbed, and some of them even regarded a bombardment as an agreeable entertainment. Among the sane, insomnia was a common phenomenon, and in some cases, we are told, necessitated change of residence. Cardiac symptoms were often prominent, not in the subjects of organic disease, but in cases of nervous origin, notably in the "thyreo-toxic" group. Increased excretion of sugar, amenorrhoea, vomiting, and attacks of asthma, giddiness, and general weakness were also observed. Persons buried for seconds or hours in the ruins of houses might completely lose count of the lapse of time. They could recall visual but not auditory impressions; they could remember, for instance, seeing the walls falling, but not the sound of the explosion.

PREPARATION OF THE SKIN FOR ANTITETANIC INJECTION.

We hear that a number of cases of abscess have been reported lately following on the subcutaneous injection of antitoxin, and it seems possible that some of them have been due to the insufficiency of the measures taken for the sterilization of the skin. At present tincture of iodine is the favourite antiseptic for this purpose, but the mere painting of the skin with iodine is not sufficient. Dr. Kenneth Goadby, a member of the War Office Committee for the Study of Tetanus, has stated that "the method which has proved to be the most advantageous for the preparation of skin for injection of vaccines and anti-tetanus serum at the Royal Herbert Hospital has been the application of tincture of iodine to the skin surface. A pad soaked in the solution is allowed to remain upon the spot at which the injection is to be performed for five minutes, and immediately after the injection is performed a further application of iodine is made. If ether soap is used for cleansing the skin it should contain 1 in 1,000 mercury biniodide, the skin being thoroughly rubbed for at least a minute, so that the external epithelium is removed and with it any lurking organisms. The iodine method is, however, more simple, and allows of a number of men being prepared for inoculation in rotation. The adoption of this method has quite eliminated the local manifestations of sepsis which occurred in a limited number of cases."

A REUTER'S telegram from Christiania, dated December 10th, states that the Nobel Peace Prize for 1917 has been awarded by the Nobel Committee of the Norwegian Storting to the International Red Cross Committee of Geneva. It was unanimously decided to add the Peace Prize for 1916, which was last year reserved, to the special fund of the Committee. The work done by the Swiss Red Cross from the earliest stage of the war has been beyond all praise, and there is no relaxation in its efforts. It has, we may remember, helped in the distribution of bread to prisoners in Germany, and has given every assistance and a cordial welcome to soldiers who, under international agreement, have been permitted to leave their places of imprisonment for internment under friendly conditions in Switzerland.

Medical Notes in Parliament.

Insurance Amendment Bill.—Few amendments were made in the amending Insurance Bill in its passage through Grand Committee, and these were of a minor character. A subsection was added to Section 41 to provide for the payment of travelling expenses for medical practitioners who have to undertake administrative work. The new section is as follows:

Any travelling expenses incurred by members of any local committee elected under subsection (1) of section thirty-three of the National Insurance Act, 1913, or of any committee elected by medical practitioners under section thirty-two of the said Act in attending meetings of the committee or of any sub-committee thereof, and any expenses incurred by any such members on account of subsistence whilst so attending shall be deemed to be administrative expenses of the committee within the meaning of subsection (2) of the said section thirty-three.

It will be remembered that Clause 32 of the bill contains a provision to enable the Insurance Commissioners to remove the name of any medical practitioner from all or any of the panel lists, and to reinstate. Under the old Act the liability to removal affected one panel only. In Grand Committee the bill was amended so that the new general provision applies not only to medical practitioners, but to "any person, firm, or body corporate, undertaking the supply of drugs, medicines and appliances."

The Proposed Ministry of Health.—Mr. Anderson asked the President of the Local Government Board whether he was in a position to make a statement regarding the proposed Ministry of Health; whether it was intended to introduce legislation, and if so, when; whether an agreed scheme had yet been reached; and what steps were being taken to this end. Mr. Walsh (Parliamentary Secretary to the Local Government Board) said he was sorry he could not give any further reply than those which had already been given on the subject. Sir William Collins: Is there any prospect of a great scheme being arrived at unless and until a further consultation of the various interests of the parties has taken place? Mr. Walsh: That is a matter of policy on which I am unable to speak.

The Army Medical Corps and Hospital Inspections.—Major David Davies asked Mr. Macpherson whether he was aware that when the Territorial Medical Force was founded in 1908, definite specific promises were made concerning such questions as rank, pay, and the character of the work to be undertaken in war to medical men who were invited to join the force; and that, by one of these promises, it was guaranteed that the duties of *à la suite* officers of the Royal Army Medical Corps, Territorial Force, would be in time of war identical with those which they performed in civil life. Major Davies asked, further, whether such officers were now compelled to inspect hospitals already inspected by direct representatives of the War Office, to sit upon medical boards, and to perform other administrative duties which they regarded as a violation of the pledge under which they originally joined the Territorial Medical Force. Mr. Macpherson, in reply to the first part of the question, referred Major Davies to an answer given on November 6th to Mr. Alden (BRITISH MEDICAL JOURNAL, November 10th, p. 628). On the second part of the question, Mr. Macpherson said he was not aware that any of these officers were called upon to inspect hospitals administratively, although they might be required to inspect patients. Sitting on medical boards was purely medical work.

Medical Practitioners in Military Hospitals.—In reply to Mr. Lynd, Mr. Macpherson said that the services of medical officers of the army of the United States were being made use of in the military hospitals at home and abroad, not only to release medical practitioners required for the army, but in order to afford these officers opportunities of acquiring practical military experience with troops under service conditions.

Week-end Leave for Military Medical Men.—Mr. Clough asked whether Army Council Instructions No. A.C.1 1564 of 1917 for grants of leave from Friday to Tuesday on the authority of local commanding officers applied also to officers of the Royal Army Medical Corps; and, if so, would Mr. Macpherson, by circular or otherwise, make this known to all commands. Mr. Macpherson replied that the instructions referred to applied to all officers, including those of the Royal Army Medical Corps, and as these were issued to all concerned no supplementary circular was considered necessary.

The Training of Discharged Soldiers.—Mr. T. Richardson asked what was the number of soldiers discharged from the army in England, Wales, Scotland, and Ireland who were being trained in institutions set going by private philanthropists, such as the Lord Roberts Workshops, St. Dunstan's, the Cowen Home, etc., and how many were being trained in institutions set up by Local Pensions Committees and paid for out of the Imperial Fund. Sir A. Griffith-Boscawen replied that approximately 2,400 discharged soldiers were receiving training, including about 900 at the institutions referred to. Fresh schemes of training were being organized throughout the country, and trade advisory committees were being set up in connexion with the Ministry of Labour to regulate the conditions of training employment, and rates of remuneration in various trades.

THE WAR.

A SAND SLEDGE.

MAJOR W. CAMERON MACAULAY, B.A., M.B.Lond., R.A.M.C.(T.), writes:

A simple sledge for the conveyance of sick and wounded in sandy countries can be improvised easily and quickly from a single sheet of corrugated iron.

An ordinary sheet of corrugated iron, 7 ft. long, is hammered out flat. The sides and one end (back) are bent up at right angles so as to form a tray with sides $3\frac{1}{2}$ in. high. The other end (front) should be turned up in a forward and upward direction to form a quadrant instead of a right angle. This gives the sledge the necessary "lift."

The front is greatly strengthened by being turned up over a five gallon oil drum (Fig. 1). Made according to the foregoing dimensions, the tray will just take an ambulance stretcher, the front handles being at either side of the oil drum and the back handles projecting over the back.

Half-way across the front, at a point just below the horizontal diameter of the drum, a screw hook is passed backwards through the corrugated iron, the drum and a bar of wood $1\frac{1}{2}$ to 2 in. thick and the length of the drum inside. To this hook a few links of chain and a swingle-tree are attached for mule or camel draught (Fig. 1).

In order to allow of riveting, etc., on the inside of the drum, a door should be cut. The upper posterior quadrant of the drum cylinder throughout nearly its whole length is removed and by means of tibbin-band

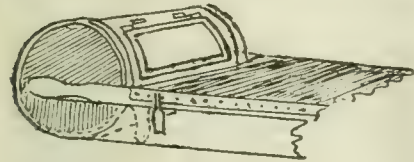


FIG. 2.

flanges and improvised hinges can be replaced. The drum then forms a handy locker for dressings, water bottle, etc. (Fig. 2).

A hood for protecting the patient from sun and dust can be improvised out of sail-cloth, supported by hoops made of tibbin-bands which may be greatly strengthened by slightly arching or bending the width throughout the whole length except where an angle is required. The ends of these loops are further bent round laterally to form a

tube. These latter fit into similar tubes, slightly larger in bore, which are riveted to the upstanding sides of the sledge (Fig. 3). Canvas or stout linen 3 ft. wide is sufficient to cover either the front or rear half of the stretcher and the hoop slots should be so arranged on the sledge as to render either position possible. The end of the hood through which the patient's body passes should be divided down the centre in its lower half and the slit so formed fastened by tapes as required so as to conform to the bulk of the patient.

The whole of the work can be done by a handy man with very few ordinary tools. Rivets can be made from French nails of varying sizes according to requirement, and cut short. The cut ends are burred over

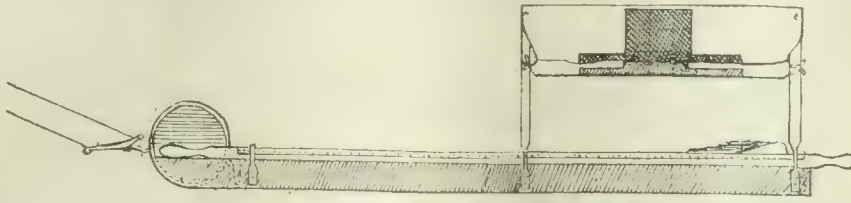


FIG. 1.—Showing side of hood partly rolled up.

with a riveting hammer. If properly made these rivets are very strong.

While not competing with the claims of any more elaborate sledge at present in use, this improvised sledge has some obvious advantages.

These are:

1. It is *simple and practicable*.

An ordinary handy man, without special technical skill and with a few rough tools, can "knock up" a sledge in a day from material generally to be obtained locally.

2. It is *economical* in men, animals, and material. One driver and one animal are sufficient per patient. A sand cart requires two drivers and four animals for two lying patients.

3. It is *comfortable*—by far the most comfortable "ride" of any means of transport at present available in the desert. It is absolutely steady and there is no jarring and very little bumping. It is essentially suitable for severe cases—such as abdominal, spinal, chest, and thigh-fracture cases—

where jarring and bumping are to be minimized. In a bad spinal case a mattress could be substituted for the stretcher.

4. It is *durable*. The sledge bottom does not readily wear out on moving sand, nor does it become heated. The sledge is not intended for prolonged use on hard roads or fixed ground, on which it would doubtless become heated and in time wear through.

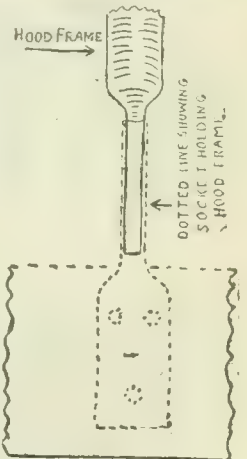


FIG. 3.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

MAJOR G. R. C. CLARKE, R.A.M.C.

Major G. R. C. Clarke, Australian Army Medical Corps, was reported killed in action, in the casualty list published on December 8th.

CAPTAIN J. O'S. BEVERIDGE, R.A.M.C.

Captain James O'Shaughnessy Beveridge, R.A.M.C., was reported as killed in action, in the casualty list published on December 6th. He was educated in Dublin, and graduated M.B., B.Ch., and B.A.O. of the National University of Ireland in 1915. He took a commission as lieutenant in the Special Reserve of the R.A.M.C. on February 2nd, 1914, joined after qualifying, and was promoted to captain after a year's embodied service.

CAPTAIN A. COWE, R.A.M.C.

Captain Archibald Cowe, R.A.M.C., was killed in action on December 2nd, aged 28. He was the son of the late

Archibald Cowe, J.P., and was educated at Watson's College and at Edinburgh University, where he graduated M.B. and Ch.B. in 1913, and, following the award of a King Edward VII British-German studentship, went to Germany, and studied for a year at Freiburg. He took a temporary commission as lieutenant in the R.A.M.C. on February 7th, 1915, and was promoted to captain after a year's service.

CAPTAIN ARTHUR M. FISHER, R.A.M.C.

Captain Fisher, who was reported in our issue of November 3rd, p. 599, as killed in action, graduated at McGill University in 1914, and was attached to the surgical staff of the Royal Victoria Hospital, Montreal. He was one of four Canadian surgeons chosen to join the British forces in the summer of 1915, and was appointed medical officer on a transport running between England and Alexandria. The vessel was torpedoed, but Captain Fisher was saved, although he lost all his personal belongings. Some months later he was invalided to England suffering from an intestinal affection and underwent a serious operation, after which he returned to Canada to recuperate. The following

autumn he returned to England and subsequently to France.

CAPTAIN G. WALKER, M.C., R.A.M.C.

Captain Gideon Walker, M.C., R.A.M.C., was killed in action on November 27th, while attached to a field ambulance, aged 27. He was the youngest son of the late Gideon Walker, and was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1912. He took a temporary commission as lieutenant on September 20th, 1914 and was promoted to captain after a year's service. He gained the Military Cross on November 14th, 1916.

Died of Wounds.

MAJOR T. J. FRIZELLE, A.A.M.C.

Major T. J. Frizelle, Australian Army Medical Corps, died of wounds in a British Red Cross Hospital on December 2nd. He was the eldest son of the late Dr. Thomas Frizelle, of Sydney.

CAPTAIN G. HISLOP, R.A.M.C.

Captain George Hislop, who has died of wounds, was the youngest son of Mr. James Hislop, of Glasgow. He graduated M.B., Ch.B. Glas. in 1913, and obtained a commission early in 1915, being promoted to captain after a year's service. He went with the mounted brigade field ambulance to Gallipoli, and later served in Egypt.

CAPTAIN K. A. MACCUSH, C.A.M.C.

Captain Kenneth Angus MacCush died in November in a French hospital of wounds received while on duty, aged 43. He was born at St. Peters, Nova Scotia, and graduated at Dalhousie University, Halifax, in 1903. Some years later he went to Edinburgh for post-graduate work. He was in practice at Glace Bay, Nova Scotia. He went overseas with the hospital unit supplied by the St. Francis Xavier University, Antigonish, Nova Scotia, and after serving for a short time in a hospital in England proceeded to France.

Lost at Sea.

DR. A. J. T. SWANN.

The Elder-Dempster liner *Apapa* was torpedoed and sunk by a German submarine, with much loss of life, on the morning of December 5th, near Liverpool, on the voyage home from South Africa. Among those reported lost was Dr. Alexander James Thompson Swann, of North Nigeria. He was educated at Glasgow University, where he graduated M.B. and C.M. in 1898, also taking the D.P.H. of the Scottish colleges in 1913. After serving as surgeon to His Majesty's transport *Jelunga*, and as a civil surgeon in the South African war from 1900 to 1902, receiving the medal, and filling the posts of resident assistant medical officer of the Croydon Borough fever hospital and of resident medical officer of the Croydon and Wimbledon joint small-pox hospital, he joined the West African Medical Service, and was on his way home on leave when he lost his life.

Wounded.

Lieut.-Colonel H. W. Carson, R.A.M.C.

Lieut.-Colonel T. M. R. Leonard, West African Medical Staff.

Major J. B. Mackenzie, Australian A.M.C.

Captain J. Alexander, R.A.M.C. (temporary).

Captain T. E. C. Clarke, M.C., R.A.M.C. (T.F.).

Captain C. B. Davies, M.C., R.A.M.C. (temporary).

Captain H. N. Goode, R.A.M.C. (T.F.).

Captain L. J. Hunter, Australian A.M.C.

Captain D. A. Kennedy, R.A.M.C. (temporary).

Captain T. R. Kenworthy, R.A.M.C. (temporary).

Captain W. J. E. Mingie, Canadian A.M.C.

Captain T. Stansfield, R.A.M.C. (temporary).

Lieutenant M. B. Taylor, R.A.M.C. (temporary).

Missing.

Captain R. T. Bruce, R.A.M.C. (T.F.).

DEATHS AMONG SONS OF MEDICAL MEN.

Clarke, Paul Brooks, Lieutenant Canadian Infantry, only son of Dr. W. F. Clarke, of Toronto, killed October 28th, aged 21.

Gilbertson, Graham Sidney, Second Lieutenant Bedfordshire Regiment, son of Dr. J. H. Gilbertson, of Hitchin, killed November 28th, aged 19. He was educated at Hitchin Grammar School and in H.M.S. Worcester, where he was champion swimmer. He passed an examination for the R.N.R. in 1915, but was rejected for colour blindness. He then joined the Inns

of Court O.T.C., got a commission last April, and went to the front in August.

Hains, Cyril L., Lieutenant Royal Air Service, son of the late Dr. Hains, of Totnes, Devon, reported missing on May 26th, now presumed killed on that date, aged 21.

Hall, Geoffrey, M.C., Lieutenant Royal Fusiliers, son of Dr. Edgar A. Hall, of Surbiton, killed about November 24th, aged 20.

Halley, Edward Harland, Lieutenant Royal Field Artillery, attached Trench Mortar Battery, killed in action on November 26th, aged 24, only child of Dr. W. Halley of Fulham Road. He was educated at the Imperial College, Windsor, and at Epsom College. He returned from Singapore, where he was in business, in 1915 to join the army, and obtained his commission. He went to France in August, 1915.

Mann, Alexander David, Second Lieutenant Seaforth Highlanders, youngest son of Dr. Mann, of Fochabers, late of Nairn, killed November 20th, aged 23.

Nevitt, George R., Captain West Yorkshire Regiment, son of the late Mr. J. G. Nevitt, surgeon, of Leeds, killed in action, aged 28. After training in the Leeds University O.T.C. he received his commission in October, 1914, and was promoted to captain in June, 1915. He went to France in December, 1916, and was wounded in February last.

Parnell, Mervyn Edmund, Captain and Adjutant 36th Indian Cavalry, Jacob's Horse, youngest son of Dr. G. C. Parnell, of Forest Hill, died of wounds December 1st, aged 31. He was born on December 23rd, 1885, got his commission in the Gloucester Regiment on January 16th, 1907, was appointed to the Indian Army on March 5th, 1909, became lieutenant on April 16th, 1909, and got his troop during the present war.

MEDICAL STUDENT.

Strettell, William Michael Dashwood Stirling, Lieutenant Highland Light Infantry, attached Royal Flying Corps, killed November 28th, aged 24. He was the only son of the late George W. Strettell of the Indian Forest Service, and when the war began was a medical student at St. Andrews University, where he was a member of the O.T.C. He got his commission in the Highland Light Infantry on August 15th, 1914, was promoted to lieutenant in 1915, and went to France in May, 1915, with the King's Own Scottish Borderers. He was wounded at Ypres, invalided home, and served in the first garrison battalion of the Royal Scots in Lemnos and Egypt. He joined the Royal Flying Corps in the autumn of 1916, and went to the front again on September 29th, 1917.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

MENTIONED IN DISPATCHES.

A DISPATCH from Sir Douglas Haig, dated November 7th, 1917, contains a list of names of officers, ladies, non-commissioned officers, and men serving, or have served, under his command during the period February 26th to midnight, September 20th-21st, 1917, whose distinguished and gallant services and devotion to duty he considers deserving of special mention. The following medical officers are included in the first list; further lists will be issued later, that referring to the medical service on December 24th.

ROYAL NAVY.

Surgeons W. J. McCracken, D.S.O., M.C., and A. G. Williams.

STAFF (ARMY).

Brevet Colonel A. J. MacNab, F.R.C.S., I.M.S.

Lieut.-Colonel T. A. Granger, M.B., I.M.S.

Captain G. W. Ellis, R.A.M.C.

ATTACHED ROYAL FLYING CORPS.

Temporary Lieutenant (temporary Major) J. L. Birley, M.B., R.A.M.C.

One quartermaster-sergeant and one sergeant of the Royal Marine Medical Unit are also mentioned.

NOTES.

THE names of Major (temporary Lieut.-Colonel) B. H. V. Dunbar, D.S.O., M.D., R.A.M.C., and Captain J. A. Davies, R.A.M.C. (T.F.), serving with the British Forces in Italy, have been brought to the notice of the Secretary of State for War for distinguished service in the field.

The Croix de Guerre has been awarded by the French Government to Lieutenant R. J. Helsby, R.A.M.C., of Bangor, in recognition of valuable services rendered to French soldiers during an emergency resulting from an enemy attack in France.

THE Senior Military Medical Association has been founded in order to give doctors who by reason of age, physical defects, or teaching obligations are unable to join the American Medical Reserve Corps the opportunity of giving part or whole time service in their own towns or elsewhere in the United States. Dr. W. W. Keen of Philadelphia, who served as an army surgeon in the civil war, is the president of the association.

Scotland.

THE Glasgow and West of Scotland Radium Committee (212, West George Street, Glasgow) announces that practically the whole of the radium has been fractionated, and that there has been an increasing demand for it. At the present time it is being used to the full capacity, and there has for the last six months been a waiting list of applications for preparations of various kinds. The Committee has sufficient funds to meet present requirements.

THE CURE AND CARE OF CANCER.

The late Mr. George Fisher Melville, advocate of Edinburgh, who died last July, has bequeathed a sum estimated at about a quarter of a million to trustees to be devoted to the cure and care of cancer. It is considered that the deed is so widely drawn that the money can be used either for the purposes of the foundation of a school of research, or a hospital, or both. The money does not become immediately available for this purpose, as the testator left annuities to his wife, cousins, and certain friends and servants. He directs that "the whole is to be kept and accumulated till the whole of the beneficiaries are dead, and the residue is to be devoted to the cure and care of cancer."

ORTHOPAEDIC TREATMENT OF DISABLED MEN.

On December 6th the Minister of Pensions formally opened the Orthopaedic Institute established at Glasgow, by agreement with the Joint Disablement Committee for the South-West of Scotland, including the counties of Lanark, Renfrew, Dumbarton, Argyll, Bute, Ayr, Stirling, Kinross, Wigton, Kirkcudbright, and Dumfries. The centre is for the benefit of discharged sailors and soldiers who have ceased to be in-patients of military hospitals. The patients will be men recommended for treatment as out-patients, also men in training for a new occupation, or who may be engaged at their ordinary work; they will leave their training or occupation for the time required each day for treatment. The centre is equipped with radiant heat baths and electrical appliances. A similar centre was opened in Aberdeen a month ago, and another is being established at Dundee. The Ministry of Pensions has formally approved the arrangement between the corporation of Edinburgh and the Joint Disablement Committee for South-East Scotland for the provision of an orthopaedic centre at Tynecastle, Edinburgh, for the treatment of disabled soldiers and sailors. Tenders have been accepted for the erection of the building.

MEDICAL BENEFIT IN SCOTLAND.

Mr. W. M. Marshall, Clerk to the County of Lanark Insurance Committee, in a pamphlet of less than fifty pages has succeeded in conveying in an interesting manner an astonishing amount of information as to the administration of medical benefit in Scotland. As secretary of the Scottish Association of Insurance Committees he has exceptional opportunities of knowing the work of the various areas, and though on occasion he has not spared criticism of the panel practitioners, his desire to be fair all round is evident. There are, he states, fifty-six Insurance Committees in Scotland, each dealing with a suitable area, as contrasted with 309 public health authorities, many of which are too small to carry out any important measures of health. One of the greatest difficulties with which the committees have to deal is the enormous number of removals of insured persons. In Glasgow, for example, in 1916 there were 42,051 names added to the list of insured persons and 48,336 removed. He gives strong grounds for the view that it would have been impossible for medical benefit to have been administered by the approved societies, considering their great number and the difficulty which free choice of doctor entails. Referring to the treatment given by the panel practitioners, it is satisfactory that during the four years of the working of the Act only one case has occurred where a practitioner's name had to be removed from the panel for negligence or careless treatment, and sufficient particulars are given to show that the treatment actually given includes not merely minor ailments, as was stated by the Fabian Committee, but often the most serious forms of illness. The report of the

Fabian Committee is characterized as "a travesty of the actual position." Details are given as to the relative proportion of visits to consultations at the surgery in towns and country districts. In Edinburgh, for example, the number of consultations is twice as great as the number of visits, while in the county of Midlothian the visits exceed the consultations by 50 per cent. The hardships of the country doctors are vividly depicted, and figures are given to prove that in equity to the country doctor some readjustment of the terms of service are necessary. Dealing with certification, it is satisfactory to learn that though a certain amount of carelessness on the part of a few doctors has caused trouble, the number of complaints from approved societies is remarkably low. The vagaries of the Drug Fund in different districts are described in detail, though Aberdeen is said to be almost the only area where the demands on the fund have been so high as to endanger its solvency. The difficult problem of providing an adequate service for the Highlands and Islands is discussed at some length, and it appears that out of the sum of £42,000 provided by Parliament for this special purpose the actual expenditure in 1916 was only about £20,000, as, owing to war conditions, it has not been possible to give full effect to the schemes proposed. A final chapter deals with the supplementary services proposed, such as the provision of specialists and consultants, the extension of nursing facilities, hospital accommodation, and laboratories for research, all intended to complete the scheme of medical benefit. Here again war conditions have interfered with the measures proposed, but considering the conditions, the author concludes that, on the whole, medical benefit, as provided under the Act, has been not merely satisfactory but of enormous benefit to the insured workers. The pamphlet is undoubtedly a valuable contribution to the study of the administration of the Insurance Acts in Scotland, and provides a large amount of information not otherwise easily obtainable.

Ireland.

ULSTER MEDICAL SOCIETY.

THE third meeting of the session was held in the Medical Institute, Belfast, on December 6th, with the President, Dr. W. D. Donnan (Holywood), in the chair. Dr. J. E. MacIlwaine read a paper on a clinical study of some functional disorders of the heart which occur in soldiers. Among some 3,000 cases he found about 1,000 of the irritable heart of Da Costa. Dealing with the etiology, he could not assign any one of the usual causes. Major Houston had examined the urine in 100 cases and found nothing wrong bacteriologically. Trauma, gassing, tobacco, hyperthyroidism were all passed in review, and the psychology of the patient and the disturbed and perverted functioning of the sympathetic nervous system were considered. Numerous examples and cases were given. Dr. W. Calwell said that the paper was so full, giving evidence not only of large experience but also of research, that it would not be fair to take up the criticism on such an important subject in the short time left at the disposal of the meeting that night. He proposed that the discussion be adjourned. This was seconded by Professor Lindsay and passed. Mr. E. B. Turner (London) gave a short address on what had been done in England by the National Council for Combating Venereal Diseases. He said that the Local Government Boards of England and Scotland had both, after some pressure, consulted the medical profession in the preparation of their schemes, and he was glad that the Board for Ireland was going to do the same. There was no use in formulating a cut and dried scheme and thrusting it upon the profession. Professor Lindsay proposed a hearty vote of thanks to Mr. Turner for his address, and as vice-chairman of the local council gave an account of what had been done. The motion was seconded by Professor Sir John Byers, supported by Dr. Bailie, M.O.H. Belfast, and passed with acclamation. There is a strong fear in many of the country districts that the county councils will adopt schemes which will be unworkable without the discussion with the local profession now recommended by all the Local Government Boards, and it is felt that measures should be taken to ensure practical schemes.

Canada.

A RESEARCH FOUNDATION IN PREVENTIVE MEDICINE.

MENTION has already been made in the *JOURNAL* of the work being carried on in the antitoxin laboratories of the University of Toronto under the direction of Major J. G. Fitzgerald. Some months ago a large farm was given to the university by Colonel Albert Gooderham for the purpose of research in preventive medicine and the preparation of serums and vaccines, and the Connaught laboratories which have been established on the farm were officially opened by the Governor-General on October 25th. Sir William Hearst, the Premier of the Province of Ontario, announced the establishment of the first research foundation in preventive medicine in Canada. At the next session of the Legislature an endowment fund of 75,000 dols. would be voted for research in preventive medicine. The income would be devoted entirely to research as the Connaught laboratories are self-supporting. A further announcement was made that a sum of 25,000 dols. was available from another source, and that the income derived from that also would be devoted to research. The research work undertaken will be along the lines of that done at the Pasteur Institute in Paris, the Lister Institute in London, and the Rockefeller Institute in New York.

MEDICINE AND THE STATE.

In his presidential address before the Toronto Academy of Medicine, Dr. D. J. Gibb Wishart made the observation that the failure of the Canadian Government to take advantage of the expert technical knowledge of leading members of the profession stood out with greater clearness in comparison with the steps taken by the Government of the United States to avail itself of the assistance of authorities in every branch of medicine. With one exception, when the Medical Council of Canada was invited to offer some suggestions, not one of the medical associations, universities, or scientific bodies had been consulted by the Government or the Department of Militia. The passage of the Military Service Act had raised many problems in which it would seem that the intelligent co-operation and advice of leaders of the medical profession would be of service—for instance, the number of army surgeons that the country could supply, the provision of adequate medical attention for the civilian population, the exemption or non-exemption of medical students, and the utilization to the best advantage, either at home or overseas, of the services of men of high professional training or ability. The Canadian Medical Association, at its annual meeting, had passed a resolution to the effect that the entire profession should be mobilized. The great and increasing demands of the war made it important that this should be done. The lack of organization had had a deterrent effect upon the proper presentation of medical opinion in Canada. The Ontario Medical Association had been labouring for some years to evolve a plan which would improve this state of affairs, and it was hoped that the organization would be completed very soon. The work of the Army Medical Service had been handicapped by the relatively low rank with which medical officers served; a low estimate had been placed upon the service as a result of defective legislation which ought to have been remedied long ago. Efficiency alone should be considered, and the advice of the members of the profession who had gained experience through service should be sought. In discussing the effect of the war upon medicine, Dr. Wishart said that military discipline had taught the relative insignificance of the individual as compared to the good of the greater number. The results achieved in the field of preventive medicine prepared the way for State control. The sign of the times was that the day of the competitive physician and surgeon was over, and that, as his training was now paid for largely by the State, his employer hereafter might be the same body. It was probable that teachers in final and clinical subjects in the future would be whole-time men paid by the State at a salary commensurate with their responsibility.

Commenting editorially on Dr. Wishart's address, the *Canadian Medical Association Journal* gives the following as three demands made by the profession of the authorities at Ottawa:

1. A seat upon the militia council for the surgeon-general.

2. The appointment of a permanent surgeon-general whom the profession can trust and respect.

3. The appointment of an advisory committee to the surgeon-general of the leaders of the profession, nominated by the Dominion and provincial associations and by the universities.

THE VANCOUVER MILITARY HOSPITAL.

The Vancouver Military Hospital, which was opened by the Lieutenant-Governor of the province of British Columbia in September, is an annex to the Vancouver General Hospital. It contains accommodation for 320 returned soldiers. A sum of 60,000 dols. was subscribed by the people of Vancouver to pay for the building and equipment of the institution; the beds and bedding were supplied by the Military Hospitals Commission.

Correspondence.

INTRAVENOUS INJECTIONS OF GUM IN LOW BLOOD PRESSURE.

SIR,—In your valuable article in the *JOURNAL* of December 8th last there is a slight misreading of a statement made by me in an article in the *Archives médicales belges*. In that article I point out that a 6 to 7 per cent. solution of gum has a viscosity and a colloidal osmotic pressure equal to those of blood. Accordingly, if the best effect in replacing blood lost by hæmorrhage is to be obtained, solutions of this strength should be used. There is no doubt, however, that the addition of only 2 per cent. confers properties greatly superior to those of any solution containing salts alone. At the time of my visit to the casualty clearing stations this solution was being used. Hesitation was felt in using solutions of a greater strength since they had not been successful in one or two apparently hopeless cases. But the stronger solutions have now come into more general use.

In a large series of experiments on cats I have found that solutions of 5 per cent. or above can always be depended upon to restore permanently the low arterial pressure due to loss of blood. If the loss has not been great, 4 per cent. is frequently successful, and sometimes even 2.5 per cent. The height to which the pressure is raised by a given quantity of solution depends on its strength, as also does the length of time during which it can be relied upon to maintain the pressure. A report presented to the Shock Investigation Committee is now in the press, and the solution recommended there is one containing 6 per cent. of gum and, as salt necessary to make the solution isotonic with the blood corpuscles, 2 per cent. of sodium bicarbonate. The latter is added, in place of the usual sodium chloride, in order to combat the diminution of alkaline reserve usually met with in shock, a condition exaggerated by operation.

The impression might be conveyed by the sentence in your article that 2 per cent. gum or the 2.5 per cent. gelatin of Hogan's solution is all that is necessary. This would, I think, be unfortunate.—I am, etc.,

London, W.C.1, Dec. 10th.

W. M. BAYLISS.

TROPICAL MEDICINE AND HYGIENE.

SIR,—On referring to my article on British contributions to tropical medicine in your issue of July 28th I regret to find that I made two somewhat serious omissions. I failed to mention Dr. H. G. Waters's work (1909) on bronchial spirochaetosis in epidemic form in India. Another omission I must apologize for, inasmuch as I failed to mention work of Dr. Dutton and his associate Dr. J. L. Todd, which in a measure anticipated some of Sir William Leishman's observations on the development of the spirochaete of tick fever in *Ornithodoros moubata*. I regret the omission all the more as Dr. Dutton fell a victim to relapsing fever contracted in the course of his work on that disease in Central Africa.

Probably I made other omissions. The extent of the subject and the exigencies of space must be my apology.—I am, etc.,

London, W., Dec. 11th.

PATRICK MANSON,

THE VALUE OF THE SANATORIUM.

SIR,—If your leading article of December 8th be right, that the general outcome of the recent discussion at the Medical Society on the value and limitations of sanatorium treatment is that, from the public point of view, sanatorium treatment has proved a failure, I would crave a little space to record an emphatic dissent from the finding.

Without dwelling on details of the discussion, I should like to underline the view that we are not yet in a position to appraise the value of the sanatorium from the public point of view.

Let us keep the facts in mind. It is little over four years since the publication of the report of the Departmental Committee which was appointed to "report upon the consideration of general policy in respect of the problem of tuberculosis in the United Kingdom in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoriums or other institutions, or otherwise." That report made certain recommendations. In particular, it proposed the adoption throughout the country of a co-ordinated scheme of anti-tuberculosis institutions and measures, which, if they are to be effective, must be mutually interdependent. The sanatorium was recommended as *one* element in a co-ordinated plan. The report formulated the functions of the sanatorium proper in relation to the reception and treatment of early cases of tuberculosis, and likewise defined the functions of the other elements in a co-ordinated scheme of operations.

But how have things worked out? In the first place there was delay, from one cause or another, in framing local schemes, when such had not existed previously. There was a good deal of fumbling—innocent and perverse—with regard to what constituted a sanatorium, with inevitable drifting in wrong directions. The sanatorium was frequently allowed to become a dumping ground for every sort of case, the undesirable (incurable) being especially in evidence. The recommendation of the Departmental Committee that such cases should have hospital treatment (as opposed to sanatorium treatment in the strict sense) was commonly lost sight of. The result has been hopeless confusion, the piling up of long waiting lists, and the blocking of sanatoriums against suitable cases, until, in many instances, the suitable have perforce lapsed into the unsuitable. In this way an interminably vicious circle has been established.

Add to this the world crisis. The war has been made the apology for difficulties of every kind. Even schemes which were getting under way have been badly crippled. Sanatoriums specially erected for the treatment of tuberculosis have been transferred to war purposes, and buildings which had been planned or were being erected for the purpose have been held up. The outcome is that in few centres has an effective antituberculosis scheme been put in operation. In many cases there is hardly the skeleton of an organization.

In the midst of the welter and confusion men are asked for an opinion as to the value and limitations of the sanatorium. The immense significance of sanatorium treatment to individual tuberculous persons is acknowledged by the great majority of those who have been in a position to judge of practical results. The value of the sanatorium is emphasized when contrasted with the hopelessness of presanatorium treatment.

It is another business to pass from the obvious advantage in individual cases, and attempt to estimate the larger results for the country. The larger results of what? Of the imperfect—often half-hearted—adoption of a programme of antituberculosis measures, and the interruption and disorganization of the programme almost before its inception. And this in relation not to a short, well-defined, infection such as enteric or plague, but to an infection whose infinitely variable course we are just beginning to understand, and whose duration from start to finish is to be measured for the most part by years.

In the scheme of antituberculosis measures the sanatorium was established to effect a special purpose in the campaign—namely, the treatment of early and curable cases. It was not projected "for the patching up of damaged lives." Its use for the latter class has been the result of incredible muddling on the part of persons who, without the training or patience to understand the issues,

have adopted the easy creed that one man's guess is as good as another's. Hence confusion worse confounded.

I agree with you that "other means" (than the sanatorium) "must be found for the diminution of the case incidence and the lowering of the death-rate." Surely no student of tuberculosis seriously looked to the sanatorium for these results, save as late and indirect consequences. They will slowly accrue from year to year. They will definitely affect the situation, in proportion as the great object lesson of the sanatorium is carried into the homes of the people and comes to mould our policy and practice in relation to housing (using the term to include the arrangements which ought to prevail where men congregate in groups under cover).

The vital problems presented by tuberculosis will be solved in proportion as its protean character is rightly apprehended. The complex issues involved must first be disentangled and clarified. The natural history of an infection which may kill in a few weeks or—with alternating recessions and exacerbations—may last a long lifetime without killing, calls for more consideration than it commonly gets in the medical schools. In framing schemes of prevention and treatment each element must be precisely adapted to its given purpose. The several elements must be correlated with care, and there must be no cross purposes. The organization and administration of measures and institutions for the prevention and control of tuberculosis require knowledge, experience, and skill. These will come with the development of operations and the better training of our students. Meantime it is hardly fair to complain of the failure of machinery to do work for which it was not projected, nor very sound to demand the adoption of other machinery when the prescribed machinery—far from having failed—has not been given a trial.—I am, etc.

Edinburgh, Dec. 10th.

R. W. PHILIP.

SIR,—That the sanatorium treatment of tuberculosis in this country has disappointed the exaggerated hopes expressed during its inception need surprise no one. Years ago Walther of Nordrach discontinued his sanatorium for poor persons because, as he told me, he found it useless, since they practically always relapsed on returning home. The true *preventive* treatment of tuberculosis is proper housing, wages, and conditions of work, and there is no cheap short cut.

But I feel sure that sanatorium treatment as a *curative* measure might have done more for us than it has. It has been proved to the hilt that our prevalent rain-bearing winds increase phthisis mortality amongst populations exposed to them, and, with much probability, that they are injurious to phthisis patients. Yet how much care has been taken in this country to choose sites for sanatoriums where they are sheltered from these winds? I am not at all surprised that the results in some of the sanatoriums erected during the last two decades have been disappointing. Indeed, I should be greatly surprised if they had not. The Germans, who recognized and used the discovery of an Englishman (Dr. MacCormac of Belfast), made no such mistake in their use of open air. Görbersdorf in Silesia, where Brehmer built his sanatorium in 1862—the first of their ventures—lies in a well-sheltered valley. Nordrach in the Black Forest, where Walther misled his English visitors with the myth that he laid no stress on climate, stands in a very sheltered valley which he had carefully chosen after months of search, as he admitted to me. On the other hand, the Falkenstein sanatorium, looking out west and south from the slopes of the Taunus, was not a success.

I am no believer in the German "legend." A visit to Berlin on the occasion of Koch's tuberculin fiasco in 1890 dissipated my delusions as to Teutonic superhumanity. But, besides their wonderful industry and self-advertisement, the Germans have a faculty of which we, whose contributions to civilization have been so vastly greater, might well partake—namely, perceptiveness. It took us more than fifty years to perceive the value of open air in phthisis. May one hope that in another fifty we will perceive the effect of exposure to strong rainy wind?

If we built our sanatoriums, as we ought to do, on quickly drying soil, under moderate rainfall, in pure, dustless, fogless air, with abundant sunshine and protection from wind, particularly from rainy wind, and at least a quarter

of a mile inland from the sea, selecting preferably a district of known low phthisis mortality, our results, I am confident, would be much better than they are, and we should not now be in danger of running from one extreme of opinion to another. Sanatoriums, I am convinced, are valuable where properly situated. Where wrongly situated, I believe they may be worse than useless.

One other word. Some time ago I tried to discover the effect on sanatorium statistics of the sanatorium site. I had to give up the inquiry. For I found so many cases were regarded as cured consumption in which, bacilli having never being discovered, the diagnosis, in my opinion, remained in doubt, and that in many sanatoriums exact statistics were not obtainable.—I am, etc.,

Exeter, Dec. 8th.

W. GORDON.

SIR.—In your leader (p. 767) summing up the expert opinions expressed at the Medical Society discussion you say that "it would seem that sanatorium treatment from the public point of view has proved to be a failure, although it has rendered very material service to individuals."

Doubtless this is a very fair statement of the case; but still not really fair to sanatorium treatment as such. At present the after-care of the patient is the difficulty, and the immediate result of treatment is judged by that, which is hardly fair, as important considerations are omitted.

In Wales and Monmouthshire the work of the Welsh National Memorial Association, which administers sanatorium benefit, has been much hampered by the following difficulties:

About 40 per cent. of tuberculosis cases never come to the notice of the tuberculosis officers.

The vast bulk of the public and a small proportion of the medical profession do not trouble to distinguish between hospital and sanatorium cases.

Some insurance committees and medical attendants are insistent on sending hospital cases to sanatoriums, thereby placing the tuberculosis officer and sanatorium superintendent in a difficult position. Hospital cases, acute and advanced, are then expected to do as well as the proper early case.

The advanced case which has, perhaps, done remarkably well and come out robust in health, with his tuberculosis in a sealed condition, is expected to take up the threads of his previous existence, with every circumstance tending to interfere with his leading the disciplinary life which he led at the sanatorium.

The exigencies of the war have interfered with the general work of the Association, and this is doubtless true of similar agencies in the rest of the United Kingdom. It is, however, very encouraging to receive very many letters from thankful patients who have "joined up" and done well in the army and navy, or have settled down into busy public life.

Sanatorium treatment should not wholly be condemned if "peradventure ten persons only are saved." Doubtless a successful State medical service will greatly assist in solving this as well as many other medical problems.—I am, etc.,

Newport (Mon.), Dec. 8th.

J. LEWIS THOMAS.

HOW IS THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS TO BE MADE?

SIR.—One cannot take exception to the desire of the Medical and Panel Committees of Manchester if they felt the need to revise their knowledge of the physical signs of pulmonary lesions, but when they publish their joint deliberations in the form of a memorandum which, with all its up-to-dateness, contains nothing which cannot be found in any medical textbook, and when its apology contains assertions which reflect anything but credit on their colleagues, what end have they in view? If they think that there are practitioners who do not keep in touch with the literature of their profession, do they really believe that they do any good by seeking to buttonhole those men through the Insurance Committee? Incidentally, it always appears to be some third person who requires the assistance. In Halifax the same thing happens. I have been informed that the Halifax Panel Committee regarded it as

a "most excellent memorandum," and advised its publication. Evidently our local committee does not require it, or how do they know that it is a most excellent memorandum? Did that criticism not demand knowledge based upon experience? Yet they advised the Insurance Committee to publish it, evidently for the benefit of their colleagues. If one resents this pharisaical attitude, can one be much blamed?

If the opinion of the Manchester Committees is correct, and if one accepts the need of this memorandum—and one would be justified in doing so—as an indication of the average practitioner's professional knowledge, then there will be little occasion to comment if the general public show little confidence in the profession.

I would feel sorry if Dr. Sutherland regarded my letter in any way as an attack on his qualifications as a tuberculosis officer; but, speaking generally, one must not lose sight of the fact that appointments as tuberculosis officers under the insurance scheme do not qualify those men to be recognized as tuberculosis experts. To be an expert one requires to be as conversant with the beginnings of a disease as with its later stages, and in view of their position as tuberculosis officers, their experience in the difficult problems of the earlier symptoms must be limited. It may be that the more capable the general practitioner becomes the greater will be the field of usefulness of the officers; but it is obvious that the more capable the general practitioner becomes the less need will there be to call in the "expert."

This point of view is of importance because of the present tendency to multiply the "experts," and it is hard to say whether ultimately it will be any easier for the practitioner to diagnose the particular "expert" required for his patient than it is at present to diagnose the particular disease from which the patient is suffering.

In regard to the letter of Dr. Lachlan Grant, it was not my intention to commence a discussion on the early symptoms of pulmonary tuberculosis. I hope as a general practitioner I am no more interested in the need for the early diagnosis of pulmonary lesions than in the need for the early diagnosis of many other diseases. There was no intention to give expression to these thoughts if the memorandum had not called for a protest.—I am, etc.,

Halifax, Dec. 9th.

A. GARVIE.

THE RESERVE POWER OF THE HEART.

SIR.—The report upon soldiers returned as cases of "disordered action of the heart" of the Medical Research Committee in England has recently been supplemented by reports of the detailed clinical studies made by members of the staff, contained in No. 4, Vol. VI, of *Heart*. The most striking features of these excellent and very detailed studies are, first, the negative conclusions as to the etiology and pathology of this syndrome, and, secondly, the positive conclusion that graduated exercises cure a large proportion of the patients.

These patients show certain symptoms which, to our mind, are most significant—breathlessness and blood pressure and pulse reactions to exercise. The authors state that:

The response of the respiratory rate to exercise is a very exaggerated one.

Again:

None of our patients are capable of such effort (that is, amounts of work healthy young adults are capable of); equal distress and similar pulse rates and systolic pressure are produced by smaller amounts of work or work done more slowly. It is clear that if we chose a given amount of work as a stimulus and apply the stimulus to healthy controls and to our patients, the latter react to the stimulus in an exaggerated fashion. The pulse rate rises much higher than in controls, and the high rate is longer sustained, the blood pressure rises higher and the raised pressure is longer sustained than in controls; the summit of the blood pressure is not delayed,* however; breathlessness, fatigue, and palpitation are also much more in evidence.

It seems to us very clear that the patients who presented the above symptoms were suffering from a decreased cardiac reserve power. The fact that so many of them were cured

* The summit was not delayed because the authors in each experiment stopped increasing the work just as they were about to reach a "delayed rise." The controls were given from one-third to four times more work than the patients (comparing the maximum amounts given). Had the authors been a little more persistent they would have found the "summit of maximal pressure is delayed" exactly as they found it was in normal patients, and with decidedly less work.

by graduated exercises affords additional and convincing proof. The neurotic symptoms which were often present are not necessarily a sequence of the decreased cardiac reserve power, but probably are simply a concomitant. Very possibly they are caused by the same factors which produced the decrease in cardiac reserve power.

We frequently see these patients with decreased cardiac reserve power in civil life, and graduated exercises cure them. One half of the patients described in the report dated the onset of symptoms a number of years back. Infections of various kinds contracted during service immediately preceded the onset of symptoms in another large group. The cardiac reserve power is always lowered after any infection of moderate severity. Anyone who has indulged in exercise too soon after a sojourn in bed with fever can appreciate the truth of this statement. The report takes cognizance of this etiological factor when it states that "convalescent treatment should be more prolonged than is often the case; a graduated system of re-training seems most desirable."

A group of patients is described who suffered from precordial pain, and in many instances hyperaesthesia of the chest wall, both accentuated by exercise. The circulatory reactions of this group to exercise are not given except in one instance, probably because it was inadvisable to carry out exercise experiments on account of their effect upon the pain. These patients are quite rare in civil life, and their subsequent histories would be of much value.

Objections may be made of our use of the term "cardiac reserve power." The heart's total capacity is made up of two component parts: one, the smaller, comprises the power expended in furnishing the requirements of the metabolism with the body at rest; the other, by far the larger, is utilized when physical work is performed. It is this potentially large component which is called into action by graduated exercises. Any expression which describes a definite function of a bodily organ has a perfectly legitimate use. In this instance the term "cardiac reserve power" denotes a most important function of the heart the variations of which are matters of personal experience to every man who has gone through a course of physical training. Our inability to measure the heart's reserve power directly is not a reason for ignoring its existence.

When the reserve power is impaired, not from organic disease of the heart but from any one of numerous causes, there is presented a characteristic clinical picture which to our mind the authors of the report have described quite accurately. The neurotic symptoms from which these patients suffer do not alter the significance of the respiratory and circulatory reactions to work or the significance of the curative effect of graduated exercises.—I am, etc.,

THEODORE B. BARRINGER, jun.,

Associate Attending Physician, New York Hospital.
New York, U.S.A., Oct. 23rd.

LAY RADIOGRAPHERS AND ELECTRO-THERAPEUTISTS.

SIR,—Radiography and radiotherapy have now been used over a sufficiently lengthy period (twenty-one years) for us to be able to form a just estimate of their true value as aids to diagnosis and treatment.

The prophecies made in the early days as to their ultimate value have been more than surpassed and to-day they stand higher than ever in the estimation of the profession as a whole. It is quite unnecessary to dilate upon their usefulness, and it suffices to say that modern war surgery largely owes its success to the knowledge afforded by the application of the *x* rays.

Notwithstanding all this, the teaching of radiography has no place in the medical curriculum, and we are informed that in many of our largest general hospitals the *x*-ray departments are run entirely by laymen, some of whom are actually engaged in private *x*-ray work on their own account. Is it not time that the staffs of these hospitals be enlightened as to the great wrong they are doing to the large body of their professional brethren who have specialized in this branch of work?

The state of things as set forth by Dr. Christopher Kempster (p. 778) is deplorable, and can only exist as an example of the irresponsible and thoughtless attitude adopted by some members of the profession.

It is evident that these unqualified radiographers who

practise on their own account must either be supported by the members of the medical profession, or they are giving advice and treatment, therefore constituting themselves unqualified practitioners.

Ten or twelve years back we were told that a surgeon who had to rely upon the *x* rays for his diagnosis was unworthy of the name, and students were advised not to attend the *x*-ray department as they might learn to rely upon the rays rather than upon their own personal judgement. Nowadays it may be said with absolute truth that a surgeon who does not apply the *x* rays in suitable cases is negligent and has not the best interests of his patient at heart. Surely it is now time that the radiographer was accorded his proper position and that the important branch of medical work was protected.

As regards the lay practice of electro-theraputists, the late Dr. Lewis Jones spent the greater part of his life in the attempt to raise this practice to its proper position, and to rescue it from the hands of the unqualified. In this attempt he was to a great extent successful, but at the present time it appears that there is a retrograde movement, to counteract which requires the joint efforts of the profession.

I can only trust that the British Medical Association will see its way at once to render the practice of radiography by laymen a matter of impossibility, and that the teaching of radiography will be made a compulsory part of medical education.—I am, etc.,

Birmingham, Dec. 10th.

J. HALL-EDWARDS.

SIR,—“Electro-therapist,” in his letter to the JOURNAL of December 1st, does not further his case very appreciably when he states that “lay bodies are more intelligent and conscientious than the profession” and that “the mass of the profession does not act professionally.” His own position in aiding the granting of certificates of competency in medical electricity (a branch of medicine strictly belonging to the medical profession) hardly puts him in a position to criticize his professional brethren. One would think from the tone of “Electro-therapist’s” letter that these lay societies are doing this from a philanthropic point of view. Let the profession take warning and stop this practice of electro-therapeutics by unqualified persons, and let those who are upholding this unqualified practice take heed before it is too late.—I am, etc.,

December 1st.

ELECTRO-THERAPEUTIST.

MIDWIVES (IRELAND) BILL.

SIR,—Dr. Power’s objection (p. 740) to the Midwives Bill (Ireland), as far as I can see, is concerned about a certain number of unqualified women at present practising as midwives, and who, under the Irish bill as well as under the English and Scottish bills, may be admitted to the register without examination.

It appears to me to be extraordinary that the legislators should be so careful of the vested interests of people who are carrying on an illicit trade to the detriment of the community. But if they be so anxious about them, why not put in operation Clause 21? Let the county councils advance these women the money necessary to get them a qualification. But let it be distinctly conveyed in the Act that from the very commencement no woman’s name shall be placed on the register except after examination and approval by the Board’s examiners. This, I think, will meet Dr. Power’s objection.

To my mind the most objectionable feature in the bill is the introduction into Clause 22 of a proviso, namely, “Unless the patient is entitled to medical relief under Section 9 of the Poor Relief (Ireland) Act, 1851.” Now there are paupers in England and Scotland and Wales, and medical officers paid to attend them. The amount of maternity benefit payable to the parturient woman is the same all over the United Kingdom. The Local Government Boards in England and Scotland have not considered it necessary to introduce such a proviso as this. Why should the Irish Local Government Board think it necessary to penalize Irish dispensary doctors, who are admittedly the worst paid and the hardest worked members of the community?

I will give one instance in my own practice of how this works out; I could give many others, and every dispensary

doctor in this county and every other county whom I have consulted on this matter could give any number of similar cases. About a fortnight ago I was called on a red ticket to attend a midwifery case six miles from my residence. On going there I found the district midwife in charge. I found it to be a perfectly natural labour, progressing rapidly and easily. I asked the midwife why she sent for me. She said she did not send for me; that she told the patient and her friends that a doctor was not necessary. I asked the husband why he fetched me all that way when the midwife told him there was no necessity. He said that "as there was a doctor paid to attend he did not see why he should not have him." This I consider a gross abuse of medical charity which should not be possible under the projected bill. If this man had to pay out of the maternity benefit (which is given him by the State for that very purpose) a small fee—say 10s., or even 5s.—he would not have put me to the expense and hardship of a twelve-mile drive. The fee should not be prohibitive in cases of necessity, and this can be secured by the Local Government Board retaining the power to fix it.—I am, etc.,

Graigue, co. Kilkenny, Dec. 3rd.

D. WALSH.

MEDICAL CERTIFICATES FOR RECRUITS.

SIR,—In the JOURNAL of December 1st, p. 742, Mr. F. Brinsley-Harper, as a member of the Appeal Tribunal for London and of the Russian Tribunal, has written a letter upon medical certificates. The suggestion put forward will no doubt be read by a large number of the profession who are a safeguard against men attempting to get relief when they are not entitled to the same.

I can assure Mr. F. Brinsley-Harper that there is no necessity for him to remind members of the profession that they have a duty to the State, and I resent his suggestion. No profession has made a greater sacrifice than the medical during the past three and a half years, and its members are fully aware of their duty in this respect without any reminder from him.

Mr. Brinsley-Harper carefully avoids any reference to the other side of the question—as to the attitude of some tribunals to the profession. For instance, I quote one case, and I know it is not an isolated one. A man came to me and I gave him a statement as to his definite malady, and it must have been quite obvious to any one that he was not fit for a soldier in any form. The man was a bootmaker and was asked at the tribunal the following questions: (1) How much have you paid for this certificate? (2) Do you make the doctor's boots? I trust this kind of attitude has now ceased.

Personally I have refused many certificates as soon as I was satisfied that the object of the application was to avoid service and there was nothing radically wrong with the man. On the other hand, when I have found a definite defect I have not given a formal certificate but a short history of the case, with no expression as to fitness or not for service, considering it was not my business.

If occasion arises I shall diligently observe Mr. Brinsley-Harper's suggestions, and I thank him for them.—I am, etc.,

Chichester, Dec. 3rd.

ARTHUR M. BARFORD.

SIR,—The note in the BRITISH MEDICAL JOURNAL of December 8th, p. 770, is one of vital importance to the honour of the medical profession no less than to the welfare of the general public. There is a very simple way of reaching these individuals without appearing to lecture the profession as a whole. And I venture to think that if the General Medical Council has a sound basis for its suspicions, the profession as a whole will uphold any action it cares to take to remove this blot.

This opens the other question, namely, the protection of the general public. Unwittingly a patient may be sent to one of these at present unknown "undesirables," and if he appears before a medical board he may fall under the suspicion of being party to a fraud. Is it not hard lines on the unfortunate patient? He is not aware that the consultant's name is under a cloud. His own case may be perfectly genuine, but for the foregoing reason he is prejudged.

I have at present a patient who was sent by another doctor to see a consultant who is one of the suspected,

and the patient, whose case is perfectly genuine, is suffering.—I am, etc.,

London, W., Dec. 9th.

A. MACBETH ELLIOT, M.D.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—I am sorry to reopen this question, which I opened in the BRITISH MEDICAL JOURNAL of July 14th last, and which was discussed by others in following issues, but after reading Army Council Instruction (1715) in the JOURNAL of December 8th I am constrained to do so.

The result of this concession is *nil* to men in my position; it is worse, because it is, in my opinion, grossly unfair to many brave and patriotic students who joined the army at the outbreak of war, without waiting to be asked or waiting to be taken.

Many of these lads were below the age at which they have subsequently been conscripted; many of them were in the front line trenches at an age at which they are not even now compelled to join up.

To explain what I mean I take the case of my own son. At 16½ years he became a medical student and joined the O.T.C. of his university. Less than one year afterwards war broke out, and by the time he was 17½ he held a commission in an infantry battalion, and when just 18 he was in the trenches in Flanders, where he has been ever since, except for a time when he was invalided home with shell shock. Now, except from a sporting and patriotic instinct he need not have left his studies for another year, and then he would have been a second-year student instead of a first-year man, and would have now reaped the benefit of this new concession. Well may one ask in what way his patriotism has paid him—he has gained nothing and perhaps lost everything. In a letter in the JOURNAL of August 25th Dr. J. A. Ainscow wrote: "Most of the students, to their honour, required no urging. Those who sat tight and were blind and deaf to their country's call are now enjoying the benefits conferred upon them by the patriotism of others."

It will soon be three and a half years since my son opened a medical book. I divine there are many students scattered up and down the lines in an exactly similar position, and there are many possibly crippled for life, as well as those who have made the great sacrifice, and for whom concessions have come too late; but I would like to ask your readers if they think this right. Are these first-year students I speak of to have no consideration whatsoever? Are they to remain in the ranks till they are all killed or crippled, or for the duration of the war? I plead for nothing but fair play all round. If this latest army concession is considered to be so, then I have nothing to complain about.—I am, etc.,

December 8th.

"AUX ABSENTS LES OS."

THE REMUNERATION OF RURAL PRACTITIONERS UNDER THE INSURANCE ACTS.

SIR,—Now that most of the County Insurance Committees have completed the final settlement for the year 1916 with the panel practitioners, I have been watching for criticisms on it.

I live in Somerset and also work on a fringe of Wiltshire, and have a panel in both counties, but the Wilts one is very small, and I am practically in touch with all my patients on my panel. On analysing my list for last year I find it was inflated about 2.5 per cent., and I had 11.5 per cent. deducted from the guaranteed 9s. per head, leaving me 9 per cent. short in payment of work actually done. In Somerset the insurance officials had a scrutiny of my list in the middle of the year, and the deductions omitted by them I made good. In the statement of the final settlement I have 6.20 per cent. of the average of the numbers agreed on each quarter deducted, and on this reduced number I only received 7s. 8½d. a head; calculated on the numbers agreed on in the quarterly lists it only amounts to 7s. 2½d., or 1s. 9½d. less than the agreed sum. Would any other body of Government officials or any trade union continue to work under such conditions?

There is another aspect of this question which affects the position of the rural practitioner. Before the war a large number of the young people of the working classes living in the country, being dissatisfied with their life and

work had migrated into the towns, leaving our panels with an abnormal proportion of older patients. The town worker has many opportunities of learning different kinds of work, and goes from place to place where work is plentiful and wages good, but the agricultural labourer knows only one kind of work, and has to keep to it, and does not move about so much. It is therefore pretty certain that the panel lists are more inflated in the towns than in the country, and the 19.9 per cent. deducted from our payments in Somerset partly goes into the pockets of the town practitioners. As long as the county committees pay on a percentage basis so long will the interests of the urban and rural practitioner be antagonistic. The difference in the return for the work in the two cases has also to be considered. The town practitioner with a list of anything from one to four thousand or more patients can see twenty or more patients in an hour, using an infinitesimal quantity of petrol or none at all. We in the country may spend an hour or more in visiting one or two patients and use a gallon or more of petrol. Again, the fees for dispensing were fixed before the war, and still hold good, and the chemists who dispense for panels in the towns revise their prices every month. Who in the country can now dispense for panel patients except at a loss? We in the country are hampered with higher wages, dearer petrol, dearer drugs, and greater expenses in car repairs, and the town doctors have little or none of these expenses, for some keep no cars, and the mileage of those that do is small and is run on the best of roads. While they have the largest lists, the greatest percentage of inflation, and can do the work with the least expenditure of time and money, they not only get fully paid for all the work they are responsible for, but they get some of the fees earned by others.—I am, etc.,

Beckington, Bath, Nov. 21st.

W. G. EVANS.

"REFRESHMENT HOUSE" EXPERIMENT IN CARLISLE.

SIR,—The drink question, directly or indirectly, perhaps more than any other single factor, profoundly affects the health and well-being of the community.

I learn from Dr. Barnes's letter in your issue of October 20th that there has been a steady decrease of convictions for drunkenness in the city of Carlisle as the result of the activities of the Liquor Control Board. The various kinds of activities were specified by Dr. Barnes in a previous letter in the JOURNAL for June 9th, and would take too much space to repeat here.

Of seven items it appears to me that the reforms included in five of them could have been brought about equally as well through legislation not involving State management. The other two items may perhaps claim to have State management as their *fons et origo*. One has reference to elimination of adventitious aids to the sale of drink. One advocate of the Carlisle system, however, has stated that the motto of the Control Board seemed to be to make the public-house as "beautiful" as possible. Do not such beautiful adjuncts, then, act as "adventitious aids," and supply young people with better excuses for frequenting the public-house?

Allied to this is the encouragement of the sale of food and non-intoxicants. It appears to me that it would be Socialism carried very far and a confession of impotence for the State to become rivals on a huge scale to private caterers as the only plan for discouraging the use of intoxicants.

With regard to the other consideration—the most plausible of all the arguments for State management—namely, the abolition of direct interest in the sale of intoxicants, I will grant that its immediate effect may be calculated to decrease convictions, but at what cost? At the cost of involving our guardian State in direct responsibility for providing facilities (by the manufacture and sale of "Government ale" and other innumerable varieties and brands of intoxicating beverages) for making people drunk.

Is it right—morally right—for the State (and every citizen of us would be a party to it), by adopting or nationalizing the traffic, to make a single mother's son drunk?

It is bad enough that the State should have tolerated the traffic so long, without its further becoming directly responsible for traffic in a drink that Lord Rosebery and Mr. Lloyd George have by implication termed the country's

Fatal Allurer, Cruel Strangler, Strongest Enemy, and, as we may add, Abiding Traitor, and not only that of this country but of humanity at large.

In the moral sphere a good end never justifies evil means. If we cannot immediately abolish the traffic (though the capital of America has done this, at least for the duration of the war), let us gradually circumvent and restrict it by clean methods.

Nationalize railways, sugar, milk, and other beneficial things if you will, but do not nationalize the drink traffic any more than you would adopt gambling houses, opium dens, or brothels.—I am, etc.,

E. LLOYD OWEN, M.D., D.P.H.,

Medical Officer of Health for South Carmarvonshire.

Criccieth, Nov. 5th.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS.

SIR,—Dr. Moffat's letter (November 3rd, p. 604) does not contribute anything material to our knowledge of the subject.

He thinks it amusing that I should act as Castellani's champion, seeing that in 1903 the latter acted "most unreasonably" in not allowing Sir David Bruce to tell me of the important discovery he had made. I have forgiven him for this, and, in common with Sir Patrick Manson, the late Professor Ehrlich, and others, I have endeavoured for several years to procure for Castellani justice and the due recognition of the importance of the great discovery made by him in regard to sleeping sickness.

There are several misstatements in Dr. Moffat's letter which considerably impair its value as evidence. (1) I did not in my letter claim to know the "entire history of the proceedings." (2) He states that I know "nothing whatever" in regard to the delicate negotiations and consultations which took place during the first few days after our arrival in Entebbe. That is incorrect, and he is doing Sir David Bruce, who was the head of the Commission, a disservice by even suggesting that such was the case. (3) The patient in whom Dr. Baker found trypanosomes shortly before our arrival was not suffering from sleeping sickness but from "trypanosome fever," and did not develop signs of sleeping sickness till nearly a year later. (4) Castellani's report—whether written by Sir David Bruce, as Dr. Moffat says it was, or by Castellani himself, as the latter has assured me is the case—is published by the Royal Society in Castellani's name, and is not therefore an "interim report on the work of the Commission," to quote Dr. Moffat's words; nor does the report, as he says it does, embody the results of the investigations of Castellani and of the whole Commission, for I did not participate in the work upon which the report is based.

Dr. Moffat's statements concerning Castellani's attitude towards the streptococcus and the trypanosome are at variance with the facts as published in Castellani's report, the last paragraph of which I reproduced in my previous letter. That Castellani did attribute great importance to his discovery of the trypanosome in sleeping sickness is, I maintain, proved by his very attitude, which Dr. Moffat calls most unreasonable, inasmuch as he would only reveal it on condition that I was not told at the time.

In conclusion, the discovery of the cause of sleeping sickness, like most important discoveries, is the outcome of the investigations of several observers. The names to be mentioned in connexion with it are, in chronological order, Forde, Dutton, Castellani, and Bruce and Nabarro, but by far the most important share of the credit must be given to Castellani. Sir David Bruce, in the paragraph in the Further Report on Sleeping Sickness in Uganda, p. 5, which I have quoted on a previous occasion, wrote:

This most interesting discovery of Dr. Castellani's [namely, of the presence of trypanosomes in the cerebro-spinal fluid of sleeping sickness patients], which was due to his introduction of the method of centrifuging the cerebro-spinal fluid in his search for his streptococcus, has been of the utmost possible value to the present Commission. It put them at once on the right track, and led to the rapid and easy elucidation of the etiology of this hitherto mysterious disease. Without a knowledge of his observation they might have worked for months in the dark, and, in truth, they might even have returned to England still ignorant as to the true cause of the disease.

Surely no stronger evidence in support of my contention could be furnished than Bruce's own words.—I am, etc.,

London, W., Dec. 3rd.

DAVID NABARRO.

army and settled in practice in Montreal, and in the following year took the degrees of M.D., C.M. at McGill University. He was for some years surgeon of the 3rd Victoria Rifles, and saw service with that regiment during the Fenian outbreak. Shortly afterwards he was promoted to be a medical staff officer of the militia of Canada.

In 1869 Dr. Girdwood was appointed lecturer in practical chemistry in the Faculty of Medicine, McGill University; in 1872 he became professor of practical chemistry, and two years later professor of chemistry. When he retired from this chair in 1902 he was named Emeritus Professor of Chemistry. He was surgeon to the Montreal Dispensary and to the General Hospital, and later became consulting surgeon to these institutions, and to the Children's Memorial Hospital. He was also consulting physician in the x-ray department of the Royal Victoria Hospital, Montreal, and chief medical officer of the Canadian Pacific Railway. Dr. Girdwood occupied a number of other important positions, among them the presidency of the Roentgen Society of America, and the vice-presidency of the Canadian Branch of the Society of Chemical Industry. He was a Fellow of the Chemical Society and of the Chemical Institute of Great Britain. He was also one of the original Fellows of the Royal Society of Canada, which was organized in 1882.

Dr. Girdwood will be remembered as a conspicuous figure among the scientific men of Canada during the last quarter of the nineteenth century—an example of the all-round scientist that will become rarer in this age of specialization; for, though fundamentally a chemist, he had a sound knowledge of medicine, surgery, medical jurisprudence, botany, physics, and microscopical technique, including photomicrography. The Rodgers and Girdwood method of detecting strychnine was devised by Dr. Girdwood and Dr. Rodgers of London, and it was Dr. Girdwood also who first applied reagents for the detection of forgeries, counterfeits, and the identification of handwriting. He was one of the first to apply the stereoscopic principles to x-ray prints.

By the death of Dr. JAMES HOLMES MORRISON the British Medical Association has lost an old and loyal member. Dr. Morrison was a native of Dunning, a village in Perthshire, where he was born seventy-five years ago. He took the diplomas of L.F.P.S.Glas. in 1865 and L.R.C.P.Edin. in 1866, proceeded to the degree of M.D. in 1869, and subsequently obtained the Fellowship of the Royal College of Surgeons of Edinburgh in 1884. For many years he practised in Perth and at one time held many local appointments, and in addition was Surgeon-Captain of the 4th V.B. Royal Highlanders. Dr. Morrison joined the British Medical Association in 1875 and was one of the prime movers in the formation of the Perthshire Branch in 1888, when the members of the old Perthshire Medical Association petitioned the Council to be recognized as a Branch of the British Medical Association. He was a regular attendant at the annual meetings of the Association. Some years ago he removed to practise in London, afterwards settling in Dover, where he actively worked down to the time of his death. He was a well known freemason, a captain of the National Reserves at Dover, and took a keen interest in all public affairs.

LIEUT.-COLONEL WILLIAM DICK, R.A.M.C.(retired), died very suddenly at Ealing on November 12th. He was born on April 6th, 1856, educated at Edinburgh University, where he graduated M.B. and C.M. with honours in 1877, also taking the diploma of L.R.C.P.Edin. in the same year, and subsequently studied in Paris. He also took the F.R.C.S.Edin. in 1884, and the D.P.H.Victoria in 1889. Entering the army as surgeon on February 4th, 1882, he became surgeon-major on February 4th, 1894, and lieutenant-colonel on February 4th, 1902, retiring on April 6th, 1911. He served in the Sudan campaign of 1885, being present at the battle of Abu Klea, and receiving the medal and star. For nine years he was assistant professor and afterwards professor of military surgery at the Army Medical School, Netley, and was in charge of the surgical division of the Royal Victoria Hospital, Netley, during the South African war. Last year he served for some time as president of the Recruiting Medical Board at Bury, till failing health caused him to resign.

DR. T. S. SPROULE, who died suddenly at Markdale, Ontario, on November 10th, was a member of the Canadian Senate, and from November, 1911, to December, 1915, Speaker of the House of Commons. He was generally recognized as leader of the Orange Party, and was Grand Master of the Loyal Orange Association of British America. He was of Irish parentage, and was born on October 25th, 1843, in the province of Ontario. Dr. Sproule graduated in medicine from the Victoria University, Toronto, in 1868, and, after practising for a few years in other places, finally settled at Markdale.

Medical News.

THE library and offices of the Royal Society of Medicine will be closed on December 24th, 25th, and 26th.

THE Home Secretary has appointed Dr. A. H. Norris, Chief Inspector of Reformatory and Industrial Schools, to be chairman of the Juvenile Organizations Committee.

THE Royal Dental Hospital has received a donation of 100 guineas from Messrs. Barnato Brothers in memory of the late Mrs. Kate Joel.

AT University College, Gower Street, on Tuesday next, at 5.15 p.m., Major Sir Filippo de Filippi, K.C.I.E., will deliver a public lecture, illustrated by lantern slides, on the sanitary services of the Italian army.

THE Minister of Pensions has appointed Captain Herbert Lund, Senior Surgeon to the Salford Royal Hospital, and Dr. J. H. Taylor (Salford) to be medical referees for the Manchester and Salford districts respectively.

AT the meeting of the Royal Statistical Society to be held on December 18th at 5.15 p.m., at the Surveyors' Institution, 12, Great George Street, S.W., Sir R. Henry Rew will read a paper on the prospects of the world's food supplies after the war.

THE Vice-Chancellor of the University of Cambridge has received from Mrs. King, of Worthing, an offer of £1,000 5 per cent. war stock for the purpose of founding in the university a scholarship for research work on fevers, in memory of her daughter, a member of a voluntary aid detachment, who died of cerebro-spinal meningitis while on active service.

AT the last meeting of the Royal Microscopical Society a report was presented on biological work (with slides) compiled from letters received from Dr. A. E. Lechmere, lecturer in mycology in the University of Bristol, and Mr. Michael S. Pease, B.A.Cantab., both of whom are interned in Ruhleben camp.

AMONG the lectures to be given at the Royal Institution after Christmas are three by Dr. Arthur Keith, Fullerton Professor of Physiology, on the problems of British anthropology; and two by Dr. Leonard Hill, one on the stifling of children's health, and the other on the climatic adaptation of black and white men.

THE Abdulla Company, makers of cigarettes, has again this year produced a war almanac and presented 20,000 copies for sale for the benefit of the British Red Cross Society (1s., post free 1s. 4d.). It consists of a sheet for each month, with an illustration; half of the illustrations are well printed in colours. They all refer to athletics or outdoor sports. Mr. Lionel Edwards has two striking coloured drawings of hunting and polo respectively; Mr. Padday, of yachting, and Mr. Hatherell, a black-and-white sketch of lawn tennis, which gracefully recalls days before the war.

A MEETING of the West London Medico-Chirurgical Society was held at the West London Hospital on December 7th, Dr. A. J. Rice-Oxley in the chair, when papers were read on (1) methods of detecting simulated deafness, by Mr. Richard Lake, (2) methods of detecting simulated blindness, by Mr. Percy Dunn. An interesting discussion followed, members of the R.A.M.C. present stating that these forms of malingering were very uncommon in the British army. The meeting was largely attended, some sixty members and visitors being present.

AN Imperial Decree was issued on June 1st, 1917, constituting a Ministry of Public Health and Social Welfare for Austria. It is to supervise the care of war invalids, to combat war diseases, and to centralize pre-existing, unco-ordinated departments of public health and sociology. It is to have the care also of the dependants of fallen soldiers, infant welfare, housing, and insurance. Though the

medical profession is to be liberally represented, the first Minister, Dr. Baernreither, is not a medical man. One of the most important problems to be solved by the new Ministry is the future of the numerous war hospitals, which have cost much labour and money.

A NEW order regulating the supply and consumption of bread was issued in France on December 5th. Three categories of consumers are recognized. In the first category are included manual workers in heavy trades, agricultural workers, and persons of very small means; males over 16 will be entitled to 600 grams of bread a day (21 oz.), and females over the same age to 500 grams (17½ oz.). In the second category, in which males will be entitled to 400 grams (14 oz.) and females to 300 grams (10½ oz.), are included workers in light trades and persons of small means. Persons in the third category, which includes all other men and women, and children under 16, are entitled to 200 grams a day (7 oz.). The maximum allowance of 600 grams is equal to about 9½ lb. a week, and thus more than a pound higher than the British maximum. The order only applies in certain districts, but in them bread cards, which will be personal and non-transferable, will be issued. The card will entitle the holder to a book of tickets sufficient for a month. Each ticket will entitle the holder to purchase 100 grams of bread. If preferred, a bread ticket may be used to obtain an equivalent amount of flour. There is no exception on the score of health.

WE referred three weeks ago to the proceedings taken by the police against Edward Yeates, F.R.C.S.I., on the charge of wearing military uniform without lawful authority. It was explained that he had been a medical officer in the New Zealand Expeditionary Force and that he denied the validity of a notification in the *New Zealand Gazette* stating that his appointment had been cancelled at his own request. The case was resumed on November 26th, when General G. S. Richardson, commanding the New Zealand forces in the United Kingdom, said that he had nothing to do with the prosecution, which arose out of a dispute with the New Zealand Defence Department, the defendant taking the view that if he discontinued wearing uniform he would prejudice his claim for redress. The magistrate at Bow Street, in giving his decision on December 5th, held that he was bound by the notification in the *New Zealand Gazette*, and asked the defendant to give an undertaking that he would no longer wear uniform. This the defendant declined to do, having engaged for the whole period of the war. The magistrate said that, while recognizing that this was not an instance of an impostor wearing uniform without authority and also the defendant's past services, he must impose a fine of twenty-five guineas and ten guineas costs, or in default imprisonment for thirty-six days. We are informed that the defendant on December 12th gave notice of appeal.

Letters, Notes, and Answers.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subjects to which special departments of the BRITISH MEDICAL JOURNAL are devoted will be found under their respective headings.

QUERIES.

S. asks for experiences in the use of cuprase in carcinoma of the stomach, the manner of its use, and the precautions which should be taken.

LETTERS, NOTES, ETC.

THE Court of Criminal appeal, on December 10th and 11th, heard the appeals of Dr. G. H. Bishop and B. G. Grantway against their conviction at the Central Criminal Court of being concerned in a conspiracy to defeat the provisions of

the Military Service Acts by enabling persons liable to military service to avoid that liability. The appeals were dismissed.

"COLLOSOL COCAINE."

MR. L. STROUD (Crookes Collosols, Ltd.) writes: On p. 744 of your issue of December 1st you publish a letter from the Secretary, Medical Research Committee, with reference to the above preparation, which infers that my letter appearing in your issue of November 24th may "be misunderstood as indicating that the Medical Research Committee or any members of their staff undertake the examination of proprietary remedies at the request of the makers." No reason is given for such inference, nor can any such inference be read into my remarks. As a fact the examination was undertaken at the instigation of Dr. Dale, whose request for samples and information to assist him was conveyed in a letter addressed by Dr. Dale to me personally.

The distinction between the undertaking of the examination of "proprietary" remedies at the request of the makers and at the request of Dr. Dale may be of import, but the following comment, indicating that Crookes Collosols, Limited, used information of a confidential nature "to publish their own statement in such a manner that any part of it could even mistakenly be attributed to" Dr. Dale, contains an unwarranted imputation, and also assumes an ambiguity which is inconsistent with phraseological interpretation. Our sole object in writing the letter you published on November 24th was to take the earliest opportunity of rectifying an error into which we had been led, and we trust that you will allow us space to make public all errors which bacteriological or clinical test prove to have been made in mere laboratory experiment and preparation. May we take this opportunity of stating that clinical tests by eminent authorities show that collosol quinine has no effect upon the parasite of malaria? Other failures we shall readily report, but no evidence has been supplied us yet to override the published reports on collosol cocaine by Professors Hewlett and Simpson and Dr. John Eyre, nor the reports received on clinical results.

Since the secretary of the Medical Research Committee refers your readers to the article by Drs. Barger and Dale and Miss Durham on collosol cocaine which appeared in the *Lancet* on December 1st, I would add that a reply has been sent to that journal.

A BOGUS DOCTOR.

WALTER HENRY RANKIN was sentenced by the Recorder, at the Central Criminal Court, on December 11th, to eighteen months' hard labour on the charge of obtaining £10 16s. by false pretences from Dr. Duncan of Homerton, and of causing false entries to be made in the register of deaths. The prisoner, who held no medical qualifications, had posed as a medical man, and in that capacity practised for a period as locum tenent to a doctor in the North of London. He subsequently set up in practice on his own account. On his arrest he was found to be in possession of two forged medical diplomas. The prisoner was stated to have acted several times as ship's surgeon on liners under the pretence that he was a Canadian medical man.

CONFIRMATION OF A RADIOGRAPHIC DIAGNOSIS.

MR. GEORGE GUNN, M.D., F.R.C.S.E. (Neston, Cheshire), writes: A man, aged 65, has had trouble at the root of the right lung for some time, considered to be due to fibroid tuberculous growth, though frequent examinations of the sputum were always negative. Dr. Thurstan Holland of Liverpool, who was asked to take a radiograph of the chest, reported that there was a very definite shadow around the root of the lung, spreading upwards along the main bronchus of the upper lobe. From the position, outline, and density of this shadow Dr. Holland came to the conclusion that there was a neoplasm present. A fortnight ago the patient had a violent attack of coughing and brought up a small hard mass about the size of a kidney bean. The Clinical Research Association report: "This is a portion of a new growth having the structure of carcinoma. It is composed of branching epithelial ingrowths and papillary outgrowths; it looks as if it must have originated in squamous epithelium."

VINCENT'S ANGINA AMONG THE TROOPS IN FRANCE.

A Correction.

WE regret that, owing to a clerical error, the name of the writer of the article on this subject (BRITISH MEDICAL JOURNAL, November 24th, p. 685) was incorrectly printed. The author is Captain R. C. Douty, R.A.M.C.

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An Address

ON

SOME POINTS ARISING IN NERVE INJURIES.

BY

H. S. SOUTTAR, B.M., M.Ch.Oxon., F.R.C.S. Eng.,

TEMPORARY MAJOR R.A.M.C.; SENIOR SURGEON, BRITISH RED CROSS HOSPITAL, NETLEY; ASSISTANT SURGEON, LONDON AND WEST LONDON HOSPITALS.

THERE are few more striking features of the surgery of the present war than the number of nerve injuries which occur. To neurologists this should not have come as a surprise, for we owe a great part of our knowledge of the injuries of nerves to the classical work of Head and Sherren, much of which was carried out at Netley on cases from the South African war. But to many of our profession these injuries open up a field with which they were previously almost entirely unacquainted, which they had always relegated to the specialist physician or to the surgeon with an interest in that direction. Amongst the latter I must class myself, for it was my good fortune to come under the influence of Henry Head and to learn from him something of the fascination of the subject and of its great practical importance. At the present time this can scarcely be exaggerated, and I venture to think there is no subject about which it is more essential that we should all have a practical working knowledge. Before the war these cases were by no means uncommon, but they were largely overlooked. To-day they are numerous, they are sure to fall into the hands of all of us, and upon our personal skill the whole future of the individual may depend.

I propose to keep entirely to the practical aspect of the subject and to avoid all theoretical considerations. In a field so recently extended there is obviously room for wide difference of experience, and you may find that what I have to say often appears to be at variance with the expressed views of others. My own experience is founded upon the observation of some two hundred cases at Netley Red Cross Hospital, in addition to a large number seen before the war, and it seems better that I should give you a clear picture of the views held by my colleagues and myself than that I should invite confusion by attempting to harmonize these with views of which you may read elsewhere.

THE INJURY PRIMARY.

In every case that we have so far seen the injury to the nerve has appeared to us to be primary—that is to say, to be either the direct and immediate result of the wound, or of some supervening condition such as an aneurysm, or of some necessary surgical interference. In no case have we been able to discover evidence of a steadily increasing block, the result of strangulation of an uninjured nerve by fibrous tissue or callus, and we are driven to the conclusion that the very wide acceptance which has been given to this idea is the result of errors of observation. It is by no means easy for the surgeon to recognize with certainty a nerve injury in a man recently wounded, and it is quite unnecessary that he should do so until a later stage. But I have had opportunities of seeing wounds at every stage, and I am strongly of opinion that in the vast majority of cases the nerve is implicated in the primary wound.

This view is borne out by the conditions which are later found on exploration, where one almost always finds a gross injury to the nerve. The nerve may be totally severed, with the formation of end bulbs, or a portion only may be replaced by dense fibrous tissue. But in the latter case careful examination will show that some fibres at least were totally severed. The fact that complete spontaneous recovery may sometimes occur is readily explained when we recollect that one-third of the fibres of any nerve may in general be destroyed, without any permanent loss of function.

The injury being primary, it is possible to diagnose the condition at an early stage and to institute at once suitable treatment. As a result contractures can be prevented, muscles can be kept in good condition, joints can be kept free, and the whole limb can be brought to such a point that when the time does come for the nerve to regenerate,

whether by itself or with the assistance of the surgeon, it can do so under perfect conditions and with the best possible prospect of success. Of this success the foundation is an early diagnosis, and it is to this that I would next direct your attention.

DIAGNOSTIC FEATURES.

The features upon which we depend may be grouped under four headings—sensory, trophic, motor, and electrical—and these we must consider separately. In each group the changes which occur are immensely complex and require prolonged study for their proper appreciation. But all that need be recognized for the purpose of diagnosis is extremely simple and can be grasped by a little observation.

A. Sensory.

To investigate the sensory changes we only require a pin and a small piece of cotton-wool, or preferably a small soft brush. It is well to start with the brush, as the patient may regard the pin with suspicion, but in most cases the outline of loss to the gentle prick or stroke of a pin will be the better defined. It will be a little smaller than the area of loss to touch, and both will follow the whole or a portion of the cutaneous distribution of the nerve. Occasionally we may find that the area, instead of being anaesthetic, is exquisitely sensitive, and that the lightest stroke of a pin is intolerable. This indicates an injury to the nerve which has not been sufficient to destroy its conductivity, but has set up an interstitial neuritis. Such conditions may be extremely difficult to treat.

The area supplied by the ulnar is very constant, including the little and half the ring fingers, and the ulnar border of the hand. The median area is sometimes very small, and may be limited to the index and middle fingers, but it usually extends on to the corresponding portion of the palm and base of the thumb, while it always includes the dorsum of the two distal segments of the two fingers mentioned. The musculo-spiral area is a minute one on the back of the hand at the base of the thumb, for the external cutaneous branches of this nerve almost always escape.

In the leg the external popliteal area includes the dorsum of the foot and extends up the outer side of the leg for about two-thirds of the distance to the knee. The internal popliteal supplies the sole of the foot and the heel. If the sciatic trunk is injured the calf may also be anaesthetic.

A knowledge of these few areas is sufficient for at least 90 per cent. of the cases which arise, remembering that each individual varies. At each examination the area of sensory change must be mapped out with the most painstaking accuracy, for it is upon the progress of these changes that the whole prognosis and treatment of the case may turn. Accurate charts must be kept and checked every few weeks, for though the diagnosis of a nerve injury may be rapid and easy the discovery of its degree and the proof of its recovery are difficult and laborious.

B. Trophic.

Trophic changes occur in the cutaneous tissues of the same area, but they are far more marked in partial and irritative lesions than in those where division of the nerve is complete. The most striking feature is a glossiness of the skin, with disappearance of the normal folds and ridges, the part becoming, as Head remarks, "expressionless." The skin may be very dry and covered with a branny desquamation, mapping out the area, but sometimes sweating is increased, and the beads of sweat on the glossy skin give a very striking appearance. In other cases the whole surface is sodden and offensive, and is covered by a thick layer of cutaneous debris.

Vascular changes are very evident, and the skin is cyanosed or deep red in colour. The appearance suggests a feeble resistance to trauma, but actual ulceration rarely occurs except as the result of direct injury, such as an unnoticed burn or the friction of a boot. Such lesions heal slowly if protected, but in the foot the skin around an ulcer may become so thickened that healing is very tedious.

The deeper tissues share in the general atrophy, and the fingers become slender and shrunken, and even the bones lose their lime salts.

* Read to the Southern Branch of the British Medical Association, November, 1917.

These trophic changes are always present in some degree, but they are only really striking in partial and irritative lesions, where they may be accompanied by excruciating pain of an intense burning nature, and a tenderness so severe that the slightest touch is intolerable.

C. Motor.

On the motor side there will be diminution or total loss of voluntary power in the muscles supplied by the nerve, but it is often by no means easy to demonstrate clearly what muscles are involved. On the one hand, the action of paralysed muscles may be imitated by means of other groups: on the other hand, the pain of a fracture, or some other cause, may render totally inactive a group of muscles which are really intact. Thus, in a complete lesion of the musculo-spiral the whole of the extensor muscles of the forearm are paralysed, but extension of the two interphalangeal joints of the fingers can be carried out perfectly by means of the lumbricals. In the same lesion the grasp is very weak, the reason being that for a proper grasp extension of the wrist is essential. From the first circumstance it is common to see lesions of this nerve overlooked, while from the second I have actually seen them diagnosed as cases of median paralysis.

In the case of each nerve there are certain critical movements familiarity with which is important. The musculo-spiral can alone produce extension of the wrist and of the proximal joints of the fingers. Only the median can flex the index finger, and only the ulnar the little finger. Lesions of these two nerves in the forearm may, however, cause confusion, as it is not always easy to unravel the intrinsic muscles of the hand. The median alone can produce opposition of the thumb, with the rotation of that digit which this movement involves. The ulnar supplies the short but thick adductors of the thumb, and by means of the interossei can approximate and spread the extended fingers.

In the leg matters are far more simple, for the external popliteal elevates and everts the foot, whilst the internal popliteal depresses it. Errors are only likely to arise here from a contracture of the calf which interferes with the action of one or the other group of muscles, or from the possible flexor action of the peronei.

In any case of doubt the best plan is to grasp the suspected muscle and to actually feel whether or not it contracts with voluntary effort, though even here the contraction of underlying groups may be very deceptive.

The attitude of the affected limb is often characteristic, but I can only refer to the partial claw hand of ulnar paralysis affecting the little and ring fingers, and of median paralysis affecting the index; to the drop-wrist and intorted thumb of musculo-spiral lesions, and to the drop-foot and steppage gait of lesions of the external popliteal.

D. Electrical.

The electrical reactions as carried out by an expert are complex, but for most purposes they may be reduced to very simple proportions. All that is required is a small induction coil and a group of cells, or any other source of faradic and galvanic currents, with some means of adjusting them. The limb is first thoroughly soaked with warm water, and a large pad connected with one pole is placed in contact with some neutral point. A small pad connected with the other pole is used to investigate the action of each separate muscle group. The normal muscles give a quick response to each form of current, far quicker than any voluntary contraction, the response being most easily obtained at the motor points, near the entry of the nerve. If a motor nerve has been divided, the reactions of the muscles will not at first be altered, but after ten days, the nerve fibres in the muscle having degenerated, the reaction of degeneration will occur. In this condition there is no response at all to faradism, whilst to galvanism the muscle responds with a characteristic slow undulatory contraction, like the slow movement of a worm. The motor points have lost their value, and the muscle responds best to a longitudinal current, along the direction of its fibres. As recovery occurs this contraction quickens, and this is one of the first phenomena observed. It ultimately becomes normal, but it is only after the return of voluntary power that the response to faradism returns.

These simple details are all that are required for the diagnosis of any ordinary case of nerve injury. To carry them out accurately is tedious and laborious, but it is essential for success. The expert will, of course, learn to tell at a glance which nerve is affected, but only by the most painstaking work will he be able to tell the exact condition which is present, or to discover the appropriate treatment. The investigation must be carried out not once but many times if the course of the case is to be followed with any approach to accuracy. But if sufficient trouble is taken we can by these means trace exactly the recovery of a case, state definitely the further period required, and modify the treatment to the precise conditions which are present.

TREATMENT.

From the point of view of the ultimate utility of the limb, a nerve injury overshadows in importance any other damage that may have occurred. A badly united fracture or a clumsy scar are mere trifles compared with an unhealed nerve. It is therefore essential that the treatment of the case should be directed to the repair of the nerve from the earliest moment at which the case is seen. I would impress upon you that operation is only an incident in the treatment, and that it must be preceded and followed by months of work, of which the technique is even more elaborate than that of the theatre. It is so much the custom to divide up the subject into diagnosis, operation, after-treatment, that one is apt to forget that it is just as easy before operation as after to maintain the nutrition of the muscles and the skin, and to preserve the flexibility of joints, and that it may be necessary to go on doing this for months or even years before the nerve awakens from its long sleep and deigns to take up the work itself. I shall therefore first speak of the treatment of the limb, and afterwards turn to the repair of the nerve.

When the limb is first seen there is probably a large septic wound with a fracture, and these must of course at first be the principal considerations. But even here it is easy so to arrange splints that paralysed muscles are relaxed, and that if joints should become stiff they will do so in useful positions. The way not to do it is well exemplified by a wrist sling in the case of a fractured humerus with an injured musculo-spiral, and by a Mitteldorpf's triangle in a high fracture of the same bone. Yet one has often seen both.

Our physical treatment is carried out as a definite routine in a special department under the charge of Captain Twining, R.A.M.C., to whose care its success is largely due. It is grouped in four sections—massage, exercises, whirlpool baths, and electrical—each with its appropriate staff, and when their treatment is in full swing most patients will pay a daily visit to each section.

Massage.

The first treatment which can be adopted is massage, and to it must be given the premier place throughout. It should be started at the earliest possible moment, and splints should be so arranged that as much as possible of the limb can be reached. But even if only a very small area is available it should not be neglected. Massage provides a gentle exercise for the muscles; it gets rid of their waste products, it keeps the skin in condition, and it maintains the circulation and the general nutrition of the limb. The masseuse can preserve the mobility of the joints, and prevent the formation of adhesions, and indeed can in many ways neutralize the results of prolonged inactivity.

Exercises.

When gross damage to the limb has been more or less repaired, wounds healed and bones united, movements, active and passive, on a larger scale may be attempted. For this purpose many ingenious machines have been devised, following the ideas of Zander. The central idea in the best of these is that the patient does gentle work on a machine which includes either a pendulum or a flywheel, the inertia of which always tends to carry the movement a little further. By this means any adhesions which may have formed in joints, or between muscles and tendons, can be gradually broken down and a wide range of movement obtained, whilst the non-paralysed muscles are fully exercised, and regain their normal power.

Whirlpool Baths.

A new form of treatment has lately come into favour in the form of the whirlpool bath. The idea started in France as the "eau courante," but it has been greatly developed in England. The principle is that the limb is surrounded by a stream of rapidly-moving water at as high a temperature as can be comfortably borne, about 110° F. The result is a rapid absorption of heat by the limb, the blood flow in which is in consequence greatly accelerated, whilst at the same time it is subjected to a continuous gentle massage by the moving water. The sensations of the patient are very pleasant, pain is often relieved, and the feeling of stiffness rapidly disappears. The limb is kept in the bath for twenty minutes, at the end of which time it will be found that the skin and muscles have become soft and supple, and that a remarkable relaxation of contracted muscles and ligaments has taken place. Both to appearance and manipulation the limb has improved to a degree that is quite astonishing, and the work of the masseuse is facilitated to an extent that can only be appreciated by experience. We find, in fact, that twenty minutes in the whirlpool bath, followed by ten minutes' massage, is better in its results than thirty minutes devoted to the older form of treatment. The economy in skilled work can be seen at a glance, and, as a matter of fact, the capacity of our massage department has by this simple means been trebled.

Electrical.

The last section of our physical department is the electrical, and I must confess that my ideas as to the value of this method have been revolutionized. We now regard it as at least equal in value to the methods which I have already mentioned, and as having peculiar possibilities of its own. We use two forms of current—galvanic and sinusoidal. The latter is used through the medium of baths, and probably acts chiefly on the vascular channels, for it is never used in sufficient strength to provoke contraction of muscle. The paralysed muscles will, of course, only respond to the galvanic stimulus. This is arranged by means of a metronome to come at regular intervals of two or three seconds, or the small moist pad which forms the electrode is slowly stroked up and down the limb, the muscles responding in turn by a gentle wave of contraction. In many cases the patient is left to do this for himself, which not only releases the nurse but also stimulates the patient's interest in the progress of his own limb, a very important factor in success.

In the intervals between treatment every precaution must be taken to keep the limb warm, protect atrophic skin from injury, to keep paralysed muscles relaxed, and to prevent the development of contractures. A stretched muscle will never recover its function, and in such lesions as drop-wrist and drop-foot an apparatus must be worn which will over-correct these deformities.

This may be taken as a general outline of the treatment we adopt in all cases, though of course variations are often required. We find that the combination works well, each item supplying its own special quota to the whole. The routine is less fatiguing to the staff, whilst the patient finds the passage from one department to another less irksome than the devotion of a longer time to one form of treatment. In fact he comes to regard his treatment as a pleasant occupation for a good part of the day, an important consideration when it must extend over many months before recovery can be expected. The improvement in the limbs is most striking, and we pride ourselves on their almost normal appearance. The skin is supple, the muscles well nourished, and the joints free. The result is the comfort of the patient and the rapid recovery of the nerve.

Operations.

I have left till the last the consideration of operative treatment, partly because I wished to lay stress upon other aspects of the subject and partly because the technique of these operations is very special and should only be attempted in centres where there is an opportunity of gaining a wide experience of the peculiar difficulties involved. The first essential to success is an accurate and intimate knowledge of anatomy, for without it one may wander hopelessly in the masses of scar tissue which all but obliterate the landmarks. Of course, no operation can be undertaken until all risk of sepsis has gone—that is to say, until the wound has been soundly healed for

at least six weeks, or, where bone is involved, for a still longer period.

The suture of a divided nerve where the gap is small and there are no complications is simplicity itself. The nerve is completely freed for some inches above and below the point of injury, where it will be found to be replaced by a mass of fibrous tissue, possibly containing a more or less complete end bulb. The nerve itself must never be handled, but the fibrous part can be held in forceps while a fine catgut suture is passed through the nerve above and below the point of injury. The damaged portion is then resected until all fibrous tissue has been removed and nerve fibres can be clearly seen in both the cut ends. The catgut suture is then drawn tight and the gap closed without any handling of the nerve whatever. A few additional sutures may be required in the larger nerves to close the sheath, but it is upon the first suture that we depend for strength. I am quite unable to see that it can do any harm. It merely separates the fibres of the nerve without cutting them, while it gives a firm and substantial union between the ends.

If there were no further difficulties in nerve suture it would be one of the simplest of operations. Unfortunately, such simple cases rarely occur. In the first place, it may be extremely difficult to find the nerve ends at all, and it may be necessary to start at quite a distant point in order to discover them. In fact, I always begin now with a long incision, and only approach the damaged part when I have isolated the nerve on both sides. In the case of a nerve whose course is so complex as that of the musculo-spiral the difficulties of such a proceeding will be obvious.

The ends being found and cleared, there may be so large a gap that it can only be bridged by artifice. Where it is physically possible the ends are brought together and united by direct suture, for no other method can give such certain results. In most cases it can be accomplished by very wide freeing of the nerve, the vascular supply of which is always ample to allow of this, and by placing the limb in a suitable position. Thus, in the case of the sciatic it is possible to obtain direct suture after the resection of three inches, if the knee is flexed and the hip extended. In one case, where three inches of both median and ulnar had been blown away in the right upper arm, I resected that length of the humerus with complete success, both nerves recovering.

Where there is a large gap there is usually a large end bulb on the proximal end. In this case one may take advantage of a flap operation which I devised to meet the difficulty, and from which we have obtained excellent results. A flap is turned down as far as the bulb, which forms a sort of hinge. The terminal half of the bulb is now amputated, and the raw surface, on which the majority of the fibres must appear cut across, is folded over itself and sutured. In this way the living fibres are preserved to almost their extreme point, and a living scaffold is provided for their downgrowth, which still retains its blood supply. The results of this method have been surprisingly good, and the recovery of one case was, in fact, the most rapid in our records.

In other cases the only way to bridge the gap is by the introduction of a graft, and for this the radial nerve is useful. It is of small diameter, but it can usually be doubled, whilst its removal leaves, as a rule, no disability. I have never used any other material, such as catgut or animal nerve, and I am doubtful as to their utility. Autogenous grafts are undoubtedly preferable.

Perhaps the most attractive of all methods, in a case otherwise impossible, is cross-grafting. This has given brilliant results in animal experiments, and I can see no reason for the wholesale condemnation to which it has been subjected. It can certainly be done without permanent damage to the healthy nerve, for it is possible to divide one-third of the fibres of the median, for example, without any permanent disability whatever. I have done it on three occasions for the benefit of the musculo-spiral, and though they are somewhat recent cases I feel confident from their progress that they will be successful. At the same time it is a method which must at present be regarded with great reserve and only adopted in very special cases.

CONCLUSION.

I trust that in my attempt to give a clear outline of the subject the dogmatic manner in which I have stated my

case may be pardoned. To have adopted any other attitude in such a short communication would have been to invite confusion. My object was not to assert the correctness of any particular views, but to bring home to you the importance of the subject to all of us. I hope you will now agree with me that every medical man, even if he has no time to devote to their study, should at least be alive to the importance of nerve injuries and to the possibilities of their cure.

"MYALGIA": ITS DIAGNOSIS IN FORWARD AREAS.

BY CAPTAIN FRANCIS B. CHAVASSE, M.C. R.A.M.C.,
B.A. OXON., M.R.C.S., L.R.C.P.

Introductory.

THE term "myalgia," originally introduced in order to rescue a certain class of case from the heading "rheumatism," shows a tendency under the conditions of diagnosis which obtain in forward areas to be expanded so as to hold almost as much as the term "rheumatism" itself.

In view of the importance of accurate diagnosis in these cases, both from the point of view of treatment and from the point of view of economy in man power—that a man may be allocated early to work suited to his physical powers—inquiry was made to ascertain the extent, and the directions, in which it might be possible to improve the diagnosis "myalgia" (as generally made) by the application of simple and rapid criteria suitable to the difficulties which attend diagnosis in the front line.

And further, inquiry was made into the leading symptoms of myalgia as seen by the regimental medical officer, in order to provide a basis on which, after the exclusion of conditions likely to be confounded with it, the diagnosis "myalgia" might rapidly and reasonably be made, and (an important point) the severity of the case judged.

The importance of accurate diagnosis at the outset of a patient's journey towards rear areas is enhanced by the great weight which any diagnosis once made carries with it; and the reluctance of a medical officer in a rear area to change the diagnosis—forgetful of the fact that it may have been made in a shell hole. And another reason why the diagnosis myalgia is seldom corrected is that myalgia, by reason of the intangibility of its symptoms and the opportunity it affords to malingerers, has got a bad name, and is generally regarded as a nuisance rather than as a problem.

The observations on account of which follows were conducted at a field ambulance over a period of three months, and with a front line battalion over a period of twelve months. A few cases necessary to complete the series were seen at a casualty clearing station.

I. Differential Diagnosis.

The application of the rough and rapid diagnostic criteria shown below to 200 cases reaching field ambulance and casualty clearing station diagnosed myalgia resulted in an improvement of the diagnosis in 60 cases, excluding those newly diagnosed "neuralgia," and in 108 cases including the new diagnosis neuralgia (that is, in more than one half)—as shown in the accompanying table.

Pyrexial Conditions: P.U.O., etc. (19 cases=9.5 per cent.).—In almost all cases the pyrexia was in the evening only. It is noticeable, especially in winter and when for any reason it is difficult to keep the troops warm, that a patient may have an evening temperature as high as 102° and yet be subnormal at the sick parade early next morning. Hence the pyrexial nature of the condition is easily overlooked, unless there is an unofficial evening sick parade or some such arrangement.

Post-pyrexial Conditions (19 cases=9.5 per cent.).—In the majority of cases the patient was able to state that he had been in hospital a short time previously (within five weeks) and that "it said P.U.O. on the card." Patients appear to take a most painstaking interest in their cards.) In a few cases only the pyrexial nature of the forerunning illness had to be judged by the patient's history of his symptoms—headache, sweating, etc.

The predominant features of these post-pyrexial pains are (i) that they are present in an aggravated degree when

Table showing the Result of an Attempt to Improve the Diagnosis in 200 Cases Diagnosed "Myalgia."

New Diagnosis.	Criteria Applied.	No. of Cases.
Pyrexial conditions	Pyrexia (usually evening only)	19
Post pyrexial conditions	History of "P.U.O.," or trench fever, within previous 5 weeks, with more or less continuous pain since	
Neuralgia*	Pain, aggravated when patient is lying down, warm, and perfectly still	12
Ostalgia*	Ditto. Tenderness over shins	5
Unspecified	Pain on movement. Stiffness aggravated after rest	2
Arthritis	Creaking	
Osteo-arthritis	Palpable bony deformity	3
Rheumatoid arthritis	Periarticular infiltration	6
Unspecified	—	7
Sciatica	Kernig's sign. Nerve tenderness	4
Neuralgia†	Pain, aggravated when patient is lying down, warm, and perfectly motionless	46
Muscular stiffness following considerable exertion	History	2
Gout	Joint signs	1
Muscular cramps	History	1
Total		108

* Usually accompanied by pain on movement.

† Previous history of "P.U.O." or trench fever, in 21 cases occurring from 5 weeks to 1 year previously.

the patient is warm in bed and lying motionless, and (ii) that they are referred to the shin bones in many cases, there being in a few cases actual tenderness over the subcutaneous surface of the tibia. True myalgic pains, in marked contrast to this, are absent at complete rest but aggravated after rest, until the stiffness, which has increased during rest, has worked off.

Pyrexial and post-pyrexial conditions (19 cases each) thus account for 38 of the 108 cases in which the diagnosis "myalgia" was susceptible of improvement. The importance of the alteration is seen as soon as the question of treatment is raised; the treatment of myalgia by massage, liniments, Turkish baths, etc., being definitely contraindicated in pyrexial conditions, and hardly the best for post-pyrexial neuralgia and ostalgia, in which delayed convalescence seems to be the main factor.

Arthritis (16 cases = 8 per cent.: osteo-arthritis 1.5 per cent., rheumatoid arthritis 3 per cent., unspecified 3.5 per cent.).—The joints affected were mainly knees. A few shoulders were included in the series and one hip. The preponderance of knees is probably largely due to easy diagnosis. There is no doubt that a skilled diagnostician, especially if unhampered by time, would be able to take many more cases—especially shoulders, hips, and spines—out of the myalgic abyss.

The figures are considerable enough in themselves, and become more so in view of the fact that the patients were drawn almost exclusively from what in Germany would be termed a "shock" division, and included few above 40 years of age. The arthritis figures for labour battalions and so on would naturally be very much higher.

The importance of detecting the cases is economical. No treatment for "myalgia" makes them fit for winter work in the trenches. They are a burden to field ambulances and to hospitals, and are only a paper asset to their division, but once the condition is recognized there is some chance that suitable employment may be found for the cases.

Sciatica (4 cases = 2 per cent.).—The diagnosis is important from the point of view of treatment; adequate treatment of recurring sciatica being unobtainable at a field ambulance. Occasionally the rough diagnosis "sciatica" is made where "myalgia" would be nearer the mark.

Neuralgia (46 cases = 23 per cent.).—The importance of this distinction is at present mainly scientific. Patients generally classed as myalgics fall broadly into two distinct classes. In the one class there is no pain when the

patient is warm in bed, unless he attempts to move. Rest makes him stiff. This stiffness wears off with gentle movement. There is pain, often described as acute and stabbing, on quick movement. Prolonged exertion precipitates or increases the condition. This is true myalgia. In the other class there is pain of a character which is variously described as "aching," "gnawing," and "throbbing," which is aggravated when the patient is warm in bed, and persists although he be absolutely motionless. He complains of inability to sleep; there is often considerable cutaneous hyperaesthesia. This class of case I have called "neuralgia"; it is very distinct from myalgia.

The 46 cases include 2 cases of severe neuralgia of the feet following exposure, and 5 cases more or less confined to the upper extremity, but the majority followed the usual myalgic distribution—namely, lumbo-sacral and lower extremity.

The curiosities of muscular stiffness following considerable exertion (2 cases = 1 per cent.), gout (1 case = 0.5 per cent.), and muscular cramps (1 case = 0.5 per cent.), complete the 108 cases in which, in a series of 200, the diagnosis myalgia was susceptible of improvement by the application of diagnostic criteria suitable, by reason of their simplicity, to forward areas.

II. Symptoms and Signs of Myalgia.

After the exclusion of the conditions dealt with above under the heading Differential Diagnosis there remains a residue. A number of cases with rheumatic symptoms reporting sick at the medical inspection room of a battalion were examined with a view to determining what are the leading features of myalgia (using the term in a restricted sense) as seen in forward areas. The hope was entertained that a sufficient definition of the condition might be obtained to render diagnosis more certain and rapid.

The question of *malingering* assumed considerable importance in the inquiry. Gross malingering was in my experience uncommon; but the exaggeration of symptoms was very prevalent among those who were in the habit of reporting sick. A lugubrious outlook is common among patients, due as much to their failure to rise above the misery and hardship of their surroundings as to their actual pains. Such patients whose spirit has been damped, even if not actually extinguished, form the considerable majority, I think, of the sick of the army in forward areas, and are clearly unsuited to be the media of a scientific inquiry into which symptoms enter more than physical signs. Nor, under war conditions, may much tempering of the wind be accorded to these "shorn lambs"—at the expense of their more spirited comrades.

Only patients whose mental health had not suffered too severely from the strain of war are represented in the figures which follow. Thus the inquiry was begun in 264 cases. But in 214 of these it was abandoned either owing to another diagnosis being made or owing to the vitiated mental outlook or inferior intelligence of the patient or owing to the slightness of the case. The inquiry was concluded in 50 cases which may be taken as typical of genuine uncomplicated myalgia as seen in forward areas.

The regions affected were as follows: Cervical 1, dorsal 9, intercostal 2, lumbar 36, sacral 28, shoulder 6, arm 1, elbow 1, forearm 1, wrist 0, hand 0, buttock 15; thigh—anterior 7, lateral 23, posterior 34, mesial 10; knee 31; leg—anterior 16, posterior 12, lateral 21; ankle 4, foot 6. An attempt to define more exactly the muscle groups involved by observing the effects of active and passive movement of various groups had to be abandoned owing to the claims of other work.

The distribution is usually symmetrical (36 cases) and is in the majority of cases lumbo-sacral, extending down the lower extremities for a varying distance. The lumbar and sacral pains are by no means always coexistent. In fact the general rule is for the pain to be either lumbar or sacral, the thigh pains being superadded in each case. Occasionally the pains are present in the lower extremities but absent in the lumbar and sacral regions; and the converse is common in convalescence. One case of "stiff neck" occurred in the series and two cases of pleurodynia. No case of pure acute lumbago was seen. In one case the pain was confined to the upper extremity.

Pain is absent when the patient is lying down, warm, and perfectly still (44 cases). This is a marked distinction

from pyrexial, post-pyrexial, and neuralgic conditions. In these the pain is aggravated when the patient is warm in bed.

Rest makes the patient stiffer (46 cases). This stiffness wears off on moving about gently (34). Active contraction and passive hyperextension, especially if quick, cause pain, which is described as sharp rather than dull (45). Cold and damp weather precipitates or aggravates the condition (37). Prolonged exertion (route marching with full pack, digging, etc.) have a like effect (41). Massage is painful (27 cases out of 31) but beneficial (21 cases out of 31). The condition is chronic (previous attacks in 44 cases). The site of the pain is generally identical in successive attacks (29 cases out of 44). The onset is usually sudden (35).

There appears to be no connexion between previous pyrexial attacks and myalgia. But in the case of neuralgia (see Differential Diagnosis above) there would seem to be a definite relationship. The young are not exempt (one case aged 19), but the condition is uncommon under 30 and increasingly common thereafter.

III. Definition of Myalgia.

The practical delimitation of myalgia by more accurate differential diagnosis is, perhaps, more important than its definition in words. But from the foregoing it may be said that myalgia is a chronic condition, precipitated or exacerbated by cold, damp, and fatigue, affecting groups of muscles and characterized by muscular stiffness becoming greater on resting and less with movement, and by pain, absent at complete rest, and sharp on active contraction and passive hyperextension. It is to be distinguished from neuralgia by the facts that in neuralgia the pain is aggravated when the patient is warm and motionless, and that in neuralgia hyperaesthesia of the skin is commonly present.

IV. A Method Found Useful in Forward Areas for Examining Patients Complaining of Rheumatic Pains.

The number of cases of rheumatic pains coming under the notice of the regimental medical officer is large. In my experience he is called upon to give a decision in such cases upwards of 2,000 times in the course of a year in the forward area, the same patient often, of course, reporting sick repeatedly.

Under these circumstances the plan of making a fairly complete examination at the outset and, as an aid to memory, noting the result in an alphabetical book kept for the purpose (or by hieroglyphic in the patient's pay book) has been found to meet the case. It not only saves a vast amount of time in the long run, but provides at once a diagnosis that is as accurate as possible. It prevents the sick parade from becoming a farce, and ensures that justice is done alike to the genuine case and to the "skrimshanker."

The method of examination which follows is necessarily simple and rapid, and takes more notice of symptoms than of physical signs; but it has been found useful in arriving at a fairly accurate diagnosis under conditions which make diagnosis difficult. The method is as follows:

(1) Take the temperature—evening if possible; if not, pay special attention to headache and other feverish symptoms. While taking the temperature note (2) general appearance, (3) apparent age, (4) pupils (especially for the contraction of insomnia), (5) conjunctival anaemia, (6) pulse, (7) respiration. Note also the condition of the tongue. These observations eliminate pyrexial conditions and acute illness generally.

Interrogate the patient as follows: (9) "Where do you get pain?" (10) "Where is it worst?" (11) "When do you notice the pain most?" (12) "Is there any pain when you are lying down, warm, and perfectly still?"

The answers to these questions may suggest arthritis (examine for creaking and gross joint signs); sciatica (examine for Kernig's sign and nerve tenderness); tibial ostalgia (examine for tenderness over the subcutaneous surface); or neuralgia (examine for cutaneous hyperaesthesia and inquire for history of previous pyrexia).

Then proceed: (13) "Is this your first attack?" (14) "How long have you been subject to these attacks?" (15) "What brings them on?" (16) "Do they always affect you in the same place?" (17) "What do you do

for them?" The last question aids in determining the severity of the case.

The attempt should next be made to produce pain by active and passive movement, the patient's appearance being noted the while.

Then ask: (18) "Is the pain sharp or dull?" If he has had rubbing or massage, ask: (19) "Is massage painful?" (20) "Does it do you good?" Proceed to inquire about stiffness by asking, (21) "Does rest make the stiffness greater or less?" (22) Does the stiffness get greater or less when you are up and moving about?" Conclude with some such phrase as (23) "When you move *quickly* you get a sharp stabbing pain. Can you do as much as anybody else if you go slow?"

TREATMENT OF THROMBOSIS.

BY
H. FAIRLEY MARRIS, CAPTAIN R.A.M.C.

VENOUS THROMBOSIS such as occurs in the typhoid group of fevers may be speedily aborted by the intravenous injection of sodium citrate.

During the past two years seventeen cases of venous thrombosis have been under my care, the majority having arisen during the course of an infection bacteriologically proven to be by a member of the enteric group, the remainder occurring during the course of other fevers of obscure origin.

This complication has long been recognized as prolonging convalescence and leading to permanent mischief, such as troublesome swollen limb or the formation of intractable varix.

The signs and symptoms as seen in my series may be briefly described. Rigors were noted in four of the cases. Fever was always present; pain invariably so, on two occasions being so severe that the question of intestinal perforation arose. Swelling of the limb was always present, usually appearing on the third day from onset of the other symptoms. In most of the cases the thrombus could be felt.

Among the enteric cases the distribution was as follows: Left femoral 2, right femoral 1, right and left femorals 1, left iliac 2, right and left iliacs 1.

The remaining three cases occurring during the course of other fevers were: Left femoral 2, right and left popliteals 1.

The earlier cases were treated on the usual lines—namely, locally with anodyne liniments, and internally by the liberal administration of citric acid and a milk-free diet.

The following is the first case treated by the intravenous injection of sodium citrate:

A soldier (Case 1 in the table), aged 19, admitted to hospital on the twenty-third day of his illness, which was subsequently shown to be typhoid fever. The temperature was 101° F., and the pulse 106 per minute. By the thirty-second day the temperature had regained the normal by lysis; the pulse rate, however, was still about 100 per minute.

On the thirty-fourth day the temperature rose to 100° F., and the patient complained of considerable pain in the lower part of the left abdomen. A thrombus was suspected, but nothing could be felt, and measurements round the two lower limbs at the calves gave the same result—namely, 10½ in.

By the thirty-fifth day the left leg was swollen, and on the thirty-seventh day oedema was observed in the right ankle. The swelling in both legs increased rapidly, and by the thirty-ninth day the man was in such agony and the abdomen so rigid that the possibility of an intestinal perforation was considered.

By the fortieth day the thighs resembled bolsters, and the superficial veins on the lower part of the abdomen became so conspicuous that the inferior vena cava appeared to be involved.

I thereupon resolved to try the effect of a 0.5 per cent. solution of sodium citrate in normal saline. Half a pint of this

The last question is a valuable one for testing the patient's mental outlook. It puts him on his mettle. A genuine case answers in the affirmative or with a negative that is obviously reluctant. Cases in which there is unwillingness of the spirit as well as weakness of the flesh are not ashamed to give a negative the tone of which is whining in "war-worn" cases, and impressive, indignant, or sanctimonious in patients who are knowingly exaggerating their symptoms.

If the answers seem to coincide with the definition of myalgia given above, the diagnosis is made and a note registered for future reference as to the degree of the condition, and as to the degree, if any, of exaggeration employed.

solution warmed and sterilized was slowly run into the median basilic vein of the left arm. Twelve hours later the pain had almost gone. The following day a second injection of 8 oz. was given, and by the next morning the temperature had fallen, the patient was free from pain, and the abdomen was quite soft. A speedy recovery took place.

Imperial drink was given before the first injection; thereafter this was suspended. Below are shown a few of the calf measurements taken on the days stated:

Day of Disease.	Right Calf.	Left Calf.
34th	10½ in.	10½ in.
35th	10½ "	12½ "
37th	12½ "	12½ "
40th	13½ "	13½ "
45th	12½ "	12½ "
57th	11 "	11 "
60th. Got up for first time.		
61st	10½ "	10½ "
73rd. No oedema	10½ "	10½ "
74th. Evacuated as a walking case.		

From information received it was learnt that this patient was returned to duty 104 days from the onset of his illness—that is, seventy-four days from the beginning of the thrombosis.

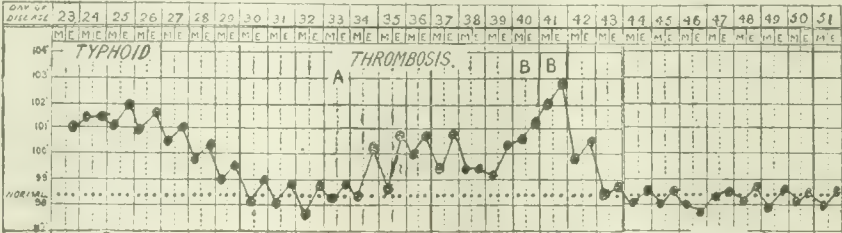
This result was so striking when compared with those cases I had already seen that I decided in future to treat such cases by the oral and intravenous

methods alternately. Limb measurements were taken daily. On two occasions an attempt was made to compare the coagulation time of the blood before and after the injections.

The method used was as follows: a long capillary tube was drawn out and filled with the patient's blood from a finger prick; the tube was then quickly broken into inch-long pieces. Every quarter of a minute one of these was taken and the blood expelled by blowing, until, on account of coagulation, this was no longer possible. In Case No. 4 it was found that the blood could be expelled from only eight of the tubes before the injection, whereas after the injection the blood was readily expelled from twenty-four tubes. The coagulation time of the blood had been changed from two to six minutes.

In the earlier cases the injections were followed by rigors occasionally, which occurred as early as half an hour and as late as three hours afterwards; they were never severe, and were quickly relieved by half an ounce of brandy and hot bottles. With more careful preparation of the citrate solution, using recently distilled water and efficient sterilization, the rigors have not been observed. Rigors are not infrequently observed after intravenous injections of other substances, and this is not an important point.

The following table sufficiently explains itself.



CASE 1.—A = Pain in left iliac fossa. B = Injection of 0.5 per cent. sodium citrate.

VENOUS THROMBOSIS.
Cases of the Enteric Group treated by the Intravenous Injection of 0.5 per cent. Solution of Sodium Citrate.

No.	Age.	Bacteriological Diagnosis.	Site of Thrombosis.	Onset of Thrombosis.	Subsequent Pyrexia after First Injection.	Measurements of Calf (Inches).	Convalescence.*	Treatment.	Subsequent History.
1	19	Typhoid by agglutination	R. and L. iliac, inferior vena cava	33rd day	5 days	37th day: R.12½, L.12½ 41st day: R.10½, L.10½	21 days later	40th day: 10 oz. of 0.5 % sodium citrate intravenously. 41st day: 8 oz. of 0.5 % sodium citrate intravenously. No change in diet. Imperial drink by mouth.	Evacuated to United Kingdom (walking case, no oedema) 35 days after onset of thrombosis; returned to duty 70 days after onset of thrombosis.
2	28	Typhoid; <i>B. typhosus</i> in urine	L. iliac vein	38th day	8 days	38th day: R.11½, L.13 49th day: R.11½, L.11½	19 days	38th day: 8 oz. of 0.5 % sodium citrate intravenously. Mild rigor 3 hour after injection. No change of diet; no citrates by mouth.	Evacuated to United Kingdom (walking case, no oedema) 40 days after onset of thrombosis.
3	27	Typhoid by agglutination	L. femoral	24th day	7 days	25th day: R.10½, L.12½ 44th day: R.10½, L.10½	17 days	25th day: 6 oz. of 0.5 % sodium citrate intravenously. No change in diet; no citrates by mouth. Cragulation time before injection 2 minutes; after injection 6 minutes.	Evacuated to United Kingdom (walking case, no oedema) 24 days after onset of thrombosis; returned to duty 80 days after onset of thrombosis.
4	20	Paratyphoid B bacillus in urine	L. femoral vein	22nd day	8 days	25th day: R.11, L.12½ 44th day: R.11, L.11½	23 days	26th day: 6 oz. of 0.5 % sodium citrate intravenously. Mild rigor 2 hours after injection. No change in diet; no citrates by mouth.	Mental case throughout. Evacuated to United Kingdom (sitting case, no oedema) 32 days after onset of thrombosis.
5	28	Typhoid by agglutination	L. femoral	27th day	11 days	27th day: R.11, L.11½ 49th day: R.11, L.11½	17 days	27th day: 10 oz. of 0.5 % sodium citrate intravenously. 29th day: 7½ oz. of 0.5 % sodium citrate intravenously. Each injection followed by moderately severe rigor 3 hours later. Cragulation time before injection 1½ minutes; after injection 6 minutes. No change in diet; no citrates by mouth.	Evacuated to United Kingdom (walking case, no oedema) 31 days after onset of thrombosis; returned to duty 80 days after onset of thrombosis.
6	26	Paratyphoid B by agglutination	L. femoral	43rd day	9 days	44th day: R.10½, L.12½ 54th day: R.10½, L.10½	14 days	45th day: 5 oz. of 0.5 % sodium citrate intravenously. 46th day: 5 oz. of 0.5 % sodium citrate intravenously. No change in diet; no citrates by mouth.	Evacuated to United Kingdom (walking case, no oedema) 28 days after onset of thrombosis; returned to duty 10 weeks after onset of thrombosis.
7	24	Paratyphoid B isolated from stools	R. femoral L. femoral	46th day	8 days	49th day: R.14, L.12½ 52nd day: R.15½, L.12½ 57th day: R.14½, L.12½ 69th day: R.12½, L.12½	24 days	49th day: 4 oz. of 0.5 % sodium citrate intravenously. 51st day: 10 oz. of 0.5 % sodium citrate intravenously. 55th day: 10 oz. of 0.5 % sodium citrate intravenously.	Evacuated to United Kingdom (sitting case, little oedema) 26 days after onset of thrombosis.
<i>Cases of the Enteric Group treated by the Oral Method.</i>									
8	20	Paratyphoid B isolated from stools	L. femoral	23rd day	10 days	—	19 days	10 gr. citric acid, four times a day; imperial drink ad lib.; no milk	Evacuated to United Kingdom (walking case 29 days after onset of thrombosis; returned to duty 35 days after onset of thrombosis.
9	27	Paratyphoid B isolated from blood	L. femoral	41st day	10 days	—	60 days	10 gr. citric acid, four times a day; imperial drink ad lib.; no milk	Evacuated to United Kingdom (sitting case, much oedema) 60 days after onset of thrombosis.
10	25	Paratyphoid B by agglutination	R. femoral	20th day	19 days	20th day: R.13½, L.12½ 31st day: R.13, L.12½	24 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated to United Kingdom (walking case, no oedema) 35 days after onset of thrombosis; little ile.
11	19	Paratyphoid B isolated from stools	L. iliac	16th day	8 days	—	28 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated to United Kingdom (walking case, no oedema) 31 days after onset of thrombosis.
12	19	Paratyphoid B by agglutination	L. femoral	22nd day	18 days	22nd day: R.10½, L.12½ 44th day: R.10½, L.11½	28 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated to United Kingdom (sitting case, no oedema) 40 days after onset of thrombosis.
13	23	Paratyphoid B by agglutination	L. femoral	24th day	7 days	—	13 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated to United Kingdom (walking case, no oedema) 18 days after onset of thrombosis.
14	23	Paratyphoid A isolated from blood	R. femoral	49th day	15 days	49th day: R.12½, L.10 94th day: R.11½, L.10	94 days	10 gr. citric acid four times daily; imperial drink ad lib.; no milk	Evacuated (stretcher case, much oedema) 94 days after onset of thrombosis.
<i>Cases of other Fevers treated by the Oral Method.</i>									
15	21	P. U. O.; clinically suggested an enteric infection	L. femoral	25th day	10 days	—	16 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated to United Kingdom (sitting case, little oedema) 26 days after onset of thrombosis.
16	22	Clinically suggested typhoid	L. femoral	24th day	3 days	27th day: R.13½, L.14 38th day: R.13½, L.13½	14 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated to United Kingdom (sitting case, little oedema) 17 days after onset of thrombosis.
17	23	P. U. O.	Popliteal R. and L.	19th day	15 days	—	23 days	5 1 citric acid four times daily; imperial drink ad lib.; no milk	Evacuated as walking case, no oedema, 47 days after onset of thrombosis.

* That is when patient first left bed after onset of thrombosis. † 0.5 per cent. sodium citrate in normal saline.

Conclusions.

From the above series of cases it would appear justifiable to conclude that the treatment of thrombosis by this method does quickly arrest the process. From the patient's point of view the almost immediate release from pain was most gratifying.

The comparison of a series of cases is always a difficult matter. To obviate this difficulty cases were treated alternately by the two methods, and so may be considered unselected. In reality the cases treated by the intravenous method were, on the whole, the more serious.

Analysis of the two groups shows that in those treated by the intravenous method the subsequent period of pyrexia was shorter by an average of four days and the onset of convalescence by an average of ten days than in those cases treated by the oral method.

Reference to the table also shows that the average number of days from the onset of thrombosis to evacuation in the cases treated by the intravenous method was thirty days, while in those cases treated by the oral method it was thirty-nine. It will, moreover, be noted that, whereas in the series of seven cases treated by the intravenous method five were evacuated as walking and two as sitting cases, and in one only was there oedema present on discharge; in the oral series of ten cases, only five were evacuated as walking and three as sitting cases, while two had to be sent to England as stretcher cases, and in no fewer than five cases there was a considerable amount of oedema present on discharge.

The known facts concerning the action of citrates on the blood as worked out by Sir Almroth Wright would lead one to expect that it would lengthen the coagulation time, and in my own series this is confirmed by the experiments in the coagulation time before and after the administration of sodium citrate in the course of treatment recorded above.

Moreover, not only is the coagulation time increased, but the tendency of the blood to coagulate is diminished. This, as is commonly known, can be demonstrated *in vitro*. With the application of citrate to the blood in circulation, in which as in the case of thrombosis a clot has formed, the formation of further clot is apparently prevented, and such clot as is already formed would then seem to behave in the same way as a clot may be seen to behave outside the body—that is to say, it rapidly shrinks, with the expression of serum, and so opens up the venous channels.

The circulation is then speedily restored, the clot being ultimately absorbed. The better results obtained by the administration of the citrate intravenously than orally would seem to be dependent upon the more immediate and intimate manner in which the drug is brought into relation with the blood by the former than by the latter method.

Lectures

ON

THE ANATOMICAL AND PHYSIOLOGICAL PRINCIPLES UNDERLYING THE TREATMENT OF INJURIES TO MUSCLES, BONES, AND JOINTS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,
NOVEMBER–DECEMBER, 1917.

BY

PROFESSOR ARTHUR KEITH, M.D., F.R.S.,
CONSERVATOR OF THE MUSEUM.

III. THE PRINCIPLES AND PRACTICE OF HUGH OWEN THOMAS.

MEN could not have approached a common objective by more diverse routes than did Hunter and Hilton on the one hand and H. O. Thomas on the other. Hunter and Hilton worked long and hard in the dissecting and *post-mortem* rooms in the search of facts to guide them in formulating rational means of treatment; they observed the efficacy of their methods in regulated hospital wards and on closely tended private patients. The circumstances amidst which Thomas matured his experience were very different: his field of observation was the steady stream of accident cases drawn, from the dockland of Liverpool, which passed through his surgery; his field of experiment lay in his workroom, where, in workman's

attire, and with the hand of an expert, he wrought the exact form of splint or machine which he desired for the treatment of each particular case that came under his care. Here, then, is a surgeon of a new kind, one who could and did use his knife, but it was his final and fixed opinion, founded on thirty-three years crowded with experiments on orthopaedic cases, that the blacksmith's hammer, deftly used, was, in most cases, a more powerful reparative instrument than the surgeon's knife.

Thomas was born and bred an orthopaedic surgeon. His father, Evan Thomas, had his home and surgery, so Professor Rushton Parker has informed me, at 72, Great Crosshall Street, Liverpool, where, although unqualified, he was the referee of certain workmen's clubs—dock gatesmen, ship's carpenters, boilermakers, and several others. He had five sons: Hugh Owen was the eldest; two others besides him—Richard and Evan—studied and qualified in medicine; as the boys grew up they had to help in the surgery and could not fail to gain a first-hand knowledge of injury and disease. Indeed, it was proposed at one time that Hugh should become his father's apprentice, but the ill state of his health—he never at any period of his life was robust—led to a change of plan. In 1851, at the age of 17, he was apprenticed to his maternal uncle, Dr. Owen Roberts of St. Asaph. In 1855, at the age of 21, he went to Edinburgh to study medicine. Syme and Spence and Simpson were in the heyday of their fame; Goodsir was teaching anatomy; there was then a demonstrator of anatomy newly arrived from London—William Turner. Lister was also there commencing the Edinburgh phase of his great career. But in Thomas's writings there is never an allusion to his life in Edinburgh; only one man seems to have impressed him there, Hughes Bennett. He apparently spent little more than a year in Edinburgh, for in 1857 he was studying at University College, London; of his life and experience in London he never gives us the slightest hint. In 1857, in his 23rd year, he became a Member of this College, and in the following year, still in poor health, he returned to Liverpool, where he spent the thirty-three years of his professional life amongst the accident cases of Liverpool dockland. He began in easy circumstances so far as finance was concerned. Professor Rushton Parker informs me that he had at first a very hard struggle, but ultimately acquired the surgeonships of the various clubs which had been held by his father, and that thus an annual income of at least £500 was assured him. His cases supplied him with all his interests—his cases and his workroom where he designed, modified, and perfected the methods he applied for treatment. He knew and sympathized with the working people; there were many poor and ailing men round him who could ill afford to leave their work and seek treatment on week-days; Thomas established a Sunday clinic for them—he eased his poor patients and enriched his own store of knowledge.

Thus he lived from his twenty-fourth to his fortieth years, his fame during that period being still confined to dockland. In 1874 an event occurred which led to his labours becoming better known. Mr. Parker, police surgeon, had reason to visit Mr. Thomas, who then had his surgery and hospital in Greta Street, in connexion with a case—that of an inspector of police—who was then under Mr. Thomas's care on account of a compound fracture of the leg. Mr. Parker had taken with him his son, Rushton, a young surgeon of 28, with an assured future in the Liverpool School of Medicine. We can learn the effect of that visit from the preface which Thomas wrote for his first important publication on *Diseases of the Hip, Knee, and Ankle Joints, with their Deformities: Treated by a New and Efficient Method* (London: H. K. Lewis. First edition 1875; third edition 1878). It was not actually his first publication, for in 1873 he described a method of using silver wire ligatures for the treatment of compound fractures of the mandible. The ligatures were fixed by a terminal spiral which could be conveniently tightened as the mandibular fragments yielded. He also advocated then a practice adopted in the present war, of removing any tooth situated on the line of fracture, as its presence there always retarded union. Once started as a writer he continued to issue *Contributions to Surgery and Medicine* almost annually until death brought an end to a laborious career, handicapped by indifferent health. He died in 1891 at the age of 57. Even in the manner of publication he emphasized his individuality. His writings

were issued in pamphlet form, designed, one would almost think, for only private circulation. It is because of the means he adopted for publication that his numerous writings are so little known; it is very difficult now to obtain a complete set of Hugh Owen Thomas's works.*

He based his methods of treatment on the axiomatic belief which had served to guide Hunter and Hilton—namely, that the power of repair lies in the living tissues of the body. "The crying evil of our art in these times (1883)," he writes, "is the fact that much of our surgery is too mechanical, our medical practice too chemical, and there is a hankering to interfere, which thwarts the inherent tendency to recovery possessed by all persons not actually dying." Further on, in another passage, he adds: "There are actions which Nature cannot do so well as the artist in charge." Spence, whom he must have listened to in Edinburgh, proclaimed that excision of joints opened up a new world in surgery. In Thomas's opinion the world which excision opened up was one of unnecessarily maimed limbs—limbs which could have been saved, or at least cured equally well, had the surgeon been content to play the patient part of Nature's assistant.

It has been said that Thomas's methods of treatment are not founded on a knowledge of anatomy, physiology, and pathology—the only sure basis for a means of cure. That, in one sense, is true. "Surgery is an experimental science," he states. All his life long he kept making experiments in his methods of treatment, closely observing and carefully recording the results night by night. The conclusion he drew from these years of toil was that the more strictly he observed the principle of rest in the methods of treatment he applied to his cases the better were his results. But it would be a complete misrepresentation of the case were it to be said that his methods were not based on a knowledge of the anatomy and physiology of the human body. "Men admired my splints as if I were a blacksmith," he wrote, "but the principles on which they were framed they never could see." We shall examine those principles in connexion with the hip-joint. Thomas never thought in terms of muscles, but of parts. When in ordinary-day life we excite movements, however perfect our knowledge of anatomy may be, we do not think of the muscles which produce them, but only of the segments of the limb we wish to move. That was the nature of his working knowledge of anatomy. He observed that in all movements of the lower part of the body—in walking, turning, or bending—two joints were correlated in their action, the hip and lumbar dorsal joints of the spine. He saw that a limitation in the movement of the hip could be compensated by an increased action in the lower part of the spine, and on that observation he founded his test for demonstrating and estimating the degree of limitation in the movements of the hip-joint. He realized that the hip-joint could not be fixed, could not be given rest, unless the dorso-lumbar region of the spine were also fixed. Movements of the knee also affected the hip; the knee had also to be fixed to give the hip rest. To fix these joints he invented his hip splint—and fashioned it in such a way that it could be fitted and attached to sound parts of the body and could be so placed that it would assist the weaker groups of contracting muscles against their stronger antagonists. He therefore placed the main supporting bar of his hip splint along the back and prolonged it to fit the flexor aspect of the thigh and leg, bent so as to support these parts and relieve the flexor muscles of the hip from those burdens which disease had thrust upon them. He did not know why, but he did know that these muscles would begin to relax so soon as they found they were relieved of their involuntary burden. But he did much more: he saw that the splint must be perfect in its fit and its effectiveness; he saw that that day after day and week after week, moulding the splint as the muscles relaxed, thus leading the parts down the ladder in ease which they had slowly climbed in pain. He carried out, as it never had been carried out before, in cases of diseased hip-joint, a system of "enforced, uninterrupted, and prolonged rest." "A man," he said, "who understood his principles, would do better with a bandage and broomstick than another could do with an instrument maker's arsenal."

When he came to design his knee splint he utilized his

intimate knowledge of the living human body. Nature has two methods of providing limbs with the degree of rigidity necessary for movement: In vertebrate animals she utilizes an internal or central support; in crustacea and insects a peripheral or ensheathing support. We have no reason to suppose that Thomas borrowed any suggestion from the crab or lobster, yet his knee splint is based on the ensheathing principle exemplified by their limbs. He simplified the sheath design by cutting away all unnecessary parts, leaving only a basal ring, with inner and outer bars to represent the complete sheath. He saw that he had to utilize the natural base of the limb—the prominent and fixed parts of the hip bone—as a fixed foundation for the new skeleton with which he was to supply support to the damaged limb. He therefore left intact the basal ring of the sheath, and, by an exact study of the living parts, moulded the basal ring to the supporting points of the pelvis—the ischial tuberosity and projecting iliac parts of the pelvic basin. He gave his sheath rigidity at its distal or pedal end by uniting the lateral supports. He thus furnished the lower limb with a new temporary external skeleton which relieved all its bones of work and stress, and gave the muscular engines complete rest.

We see him again bring his anatomical knowledge to bear on the shoulder-joint. As at the hip, he realized that in all shoulder movements two joints were involved—the scapulo-thoracic and the scapulo-humeral. It was his recognition of this fact which led him to plan a new means for the treatment of dislocations of the scapulo-humeral or shoulder joint. That joint could not be manipulated with precision until the scapula was fixed. He again utilized a basal ring—a fixed basal ring—against which the scapula could be fixed when the arm was drawn through the ring for the purpose of reducing a dislocation of the shoulder-joint.

His knowledge of the physiology of the human body, like his knowledge of its anatomy, was founded on observations made on his patients. Let me cite one of his statements regarding the behaviour of muscles: "The intelligent muscles, finding their labours no longer needed (after application of hip splint), take a rest until invited to enter again on duty." It is a figurative statement, but, as we shall see when we come to deal with recent discoveries of neurologists, it is essentially true. He observed that whenever a joint became diseased, the muscles round that joint became limited in their range of action; the longer the duration of the disease the greater the limitation; if the range began to increase, then that was a sure sign that repair had commenced. He observed these physiological facts; he did not seek to explain them. He also drew an extremely important deduction from these observations: When a patient is able, voluntarily and without pain, to bring a limb or moving part, which has just been released from enforced rest, back to the point or position in which it had been fixed, then that part is cured; the volitional efforts of the patient will, when that stage is reached, effect a full cure. That is surely applied physiology. "If a muscle manifests a flicker of movement under volition, it will recover its full power," is another instance of physiological observation. He treated muscles as he treated his patients. He relieved the weak and oppressed, and restrained the strong. If the flexors of the elbow were paralysed, he saved them from their overstrong antagonists by keeping the elbow partially flexed; he dorsiflexed the wrist-joint by a special splint to nurse the paralysed extensor muscles of the forearm.

We shall have occasion to refer at a later date to other aspects of his methods of treatment—his means of stimulating repair by injury and by "damming"; his opposition to operative measures for securing union of newly-fractured bones, and above all to his condemnation of every form of passive movement as a means of treatment, particularly of the kind applied by bonesetters.

I have touched only a fringe of his career. If I were asked to state briefly the chief lesson we can learn from him, I would not place first his discovery of a fuller meaning to the word "rest," nor his genius in designing new means of giving rest; but rather his realization that repair can be fostered only by the patient personal application of the surgeon's head and hand, day after day, week after week, month after month, if necessary, year after year. He knew that it takes over twenty years to build up any part of the body; how could a destroyed joint be rebuilt in a night?

*Colonel Sir Robert Jones has presented a complete set to the Library of the Royal College of Surgeons of England.

Reports of Societies.

SURGICAL AND DENTAL TREATMENT OF SEVERE FACIAL INJURIES.

At a meeting of the Medical Society of London on December 3rd, the President, Sir ST. CLAIR THOMSON, being in the chair, Major H. D. GILLIES, R.A.M.C., said that the problem of facial restoration resolved itself into three parts: (1) The provision of the skin covering and soft tissues; (2) the general bony and cartilaginous substructure; (3) the lining membrane of the various cavities involved. The greatest difficulty of the plastic surgeon was the question of contour and substructure. To build up the face it was necessary to use normal tissues set in the most normal way. For small depressed scars of the face local flaps of subcutaneous and fatty tissue in the region of the scar might be turned in to fill up the hollow. If local tissue was not available resort might be made to a free fat graft from the abdominal wall or buttock. A piece of cartilage might be inserted, and in the region of the malar bone a flap from the temporal muscle might be swung down to give contour and expression. For substructure of the nose in rhinoplasty cartilage was pre-eminent. In many cases it was possible to line and support a new nose with the remains of the septum or the turbinates. To rebuild the nasal contour the nasal processes of the superior maxilla, the nasal bones, and even the septal cartilage was being imitated by cartilaginous and bony implantations. In the region of the mouth the loss of the muscles was often a serious drawback to an otherwise successful plastic operation. For that reason it was better to cut the flaps in making the upper and lower lips to include muscles of expression, and he preferred a flap which included the musculature to be found in the naso-labial furrows, which had the added advantage of having its base in the line of the facial artery. When the wound involved the oral cavity, the nasal cavity, or the eye socket, the supply of a lining membrane was a problem of equal importance to either the skin covering or the scaffold, both in obtaining a satisfactory appearance and a good functional result. In the majority of cases involving the mouth he used skin flaps turned inwards when they were available and of no use externally, and he supplemented these by carefully designed mucous flaps. When mucous membrane ran short he used a method of epithelial inlay described by Esser. As an instance, to deepen the sulcus of the lower lip so as to free the lip, an incision is made through the chin from the outside, and deepened until the deep surface of the mucous membrane of the mouth is reached; scar tissue is excised, and the cavity widened along the necessary area. The impression of this cavity is then taken in sterilized dental composition, and this model of the cavity is then covered with a freshly-cut Thiersch graft, preferably in one piece, and inserted into the cavity. The skin is sewn up over this epithelial egg, and at the end of ten days an incision is made through the mucous membrane of the mouth, and the model egg removed through this incision. The most perfect epithelialization of the cavity in which the egg has been lying invariably occurred, and by this means the sulcus is established and the lip freed. This method had brought within surgical reach not only the nose which would not contract when it had been made, but also an eye socket that would hold an artificial eye. Major Gillies then showed pictures of various types of cases. In injuries to the cheek with depressed scars flat flaps were turned in from the lateral aspects of the scar and sewn together over the depression with catgut; the skin was cut on the slant, and carefully united with horsehair. Pictures were shown illustrating the results of operations for injuries to the cheek, upper lips, lower lip, reformation of noses, and the deformity caused by the complete detachment of the superior maxilla from the base of the skull.

Captain KELSEY FRY, R.A.M.C.(T.), read a paper on the restoration of the functions of the mandible. He said that the main objective was the restoration of function, and to obtain this it was necessary to achieve (1) bony union, (2) good articulation, (3) mouth in good condition to wear denture, and (4) ability to open and close the mouth. Mastication was lost from 10 per cent. to 90 per cent. unless bony union was obtained. When there was little or

no loss of bone dental splints were made for the mandible and maxilla, and these having been fixed the fragments were firmly held, and this was maintained for two to three months. When there was moderate loss of bone the technique was the same except that the fragments had to be approximated. When there was extensive loss of bone the soft and hard tissues must be held in good position until surgical treatment was possible. When treatment was entirely surgical the means employed depended upon the amount of bone lost. (1) Freshening, plus periosteal graft, was adopted in those cases where the ends of the bone were in good position and the teeth were present on both fragments which would enable them to be firmly held by a dental splint. (2) Wiring, plus periosteal graft, was employed (a) when the ends of the bone were in good apposition but when there were not the necessary teeth to hold the fragments firmly, and (b) when there was only a small interval between the ends of the two bones and when it was thought that by approximating the ends the function of the mandible would not be lost. Bone slides were also used for these two types of case. Bone grafts were performed where there was a large loss of bone and the other methods could not be adopted. The points to bear in mind were (1) never to make a perforation into the mouth, (2) to give absolute fixity to the graft, (3) to maintain strict surgical asepsis, and (4) to lacerate the soft parts as little as possible.

Mr. PERCIVAL P. COLE said that from the point of view of function the bony lesion was of more importance than the injury to the soft tissues, and therefore its efficient treatment should hold first place. Primary suture should not be undertaken when there was an associated fracture unless the fracture could be dealt with at the same time. It was better to wait until all sepsis had disappeared and the wound was soundly healed before undertaking the necessary operative measures. The importance of cicatricial contraction was in direct proportion to its crippling effect on movement. Treatment was directed, first, to the prevention, and, secondly, to the rectification of such limiting effects. In the case of a cicatrizing wound threatening the movements of any particular joint, the surgeon's endeavour was to maintain the joint in that position which would most effectually conserve the threatened freedom of movement. In the case of opening the mouth this could be prevented by maintaining the jaws in a position of open bite. With regard to operative procedures, the introduction of fresh tissue was frequently called for, and for that the use of doubly epithelialized flaps was indicated. Where there was a large demand for mucous membrane skin made an admirable substitute; its texture was suitable and its extent unlimited. The method of "bringing the parts together" was unsatisfactory and should be abandoned. Pictures were then shown demonstrating the various forms of flaps used. In one case the patient was very hairy; in another the flap was taken from the scalp. In such cases depilation by radiations was carried out very successfully, and facilities for treatment by this method might well be provided at any jaw centre or hospital.

VISUAL LOCALIZATION AND ORIENTATION.

A MEETING of the Section of Ophthalmology of the Royal Society of Medicine was held on December 12th, the President, Mr. WILLIAM LANG, being in the chair. A paper on "Visual localization and orientation" was read by Lieut.-Colonel GORDON HOLMES, C.M.G. After referring to an earlier paper by Colonel Lister and himself, he said he purposed collating observations derived from a long series of cases where disturbance of the fields of vision was due to injuries of the visual cortex. There were a large number of cases of comparatively superficial injuries of the occipital region, and commonly associated with these were found central, and particularly paracentral, scotomata. The position of the scotomata above and below the fixation point, and their shape, were found to present a fair correspondence in lesions affecting similar parts of the cortex in the posterior part of the visual area, and indicated a definite arrangement of the centres of that area. Similarly localization could be elicited for the vertical and horizontal meridians of the fields in the walls, floor, and mesial surfaces of the calcarine fissure. More difficulty attended the location of the periphery of the fields. It

was, he thought, to be found in the anterior part of the visual area, but uncertainty arose owing to injuries of this area being so commonly associated with lesions of the optic radiation. From the sharp definition of the half and quarter area losses of fields it was concluded that the fibres of the radiation were ranged in regular lamellae or series; probably the upper and lower quadrants were distinct bundles separated anatomically. A point of interest lay in recoveries of lost fields. These were seen mainly in hemianopia due to slight injuries of the parietal regions. A daily recovery of field from centre to periphery had been noted. He thought such injuries were of the nature of contusions, possibly associated with oedema, capillary haemorrhages, minute lacerations, changes in the myelin sheaths, and even a molecular disturbance of cells, but there was evidently no permanent anatomical loss. Definite lesions of the occipital cortex were, he believed, irrecoverable; the area was so highly specialized that it seemed scarcely likely an adjoining area could vicariously supply the functions of the lost part.

Summing up his observations, Colonel Gordon Holmes said that we were now in a position to draw certain conclusions regarding the localization and organization of the cortical centres of vision, and on the dissociations and disturbances of visual function that might be produced by lesions of different portions of the brain. All the conclusions could not be regarded as final, but they might at least serve as a working hypothesis for further investigations.

1. The upper half of each retina is represented in the dorsal, and the lower half of each retina in the ventral, part of each visual area.
2. The centre for macular or central vision lies in the most posterior part of the visual areas. Probably on the margins and on the lateral surfaces of the occipital lobes. The macula has not a bilateral representation.
3. The centre for vision subserved by the periphery of the retinae is situated in the anterior portions of the visual areas, and the serial concentric zones of the retinae from the macula to the periphery are probably represented in this order from behind forwards in the visual areas.
4. Those portions of the retinae adjoining their vertical axes are probably represented in dorsal and ventral margins of the visual areas, while that in the neighbourhood of the horizontal axes is projected on to the walls and the floors of the calcarine fissures.
5. Severe lesions of the visual cortex produce complete blindness in the corresponding portions of the visual fields; if they cause incomplete amblyopia, colour vision is generally lost and white objects appear indistinct; or a condition may arise in which only more potent stimuli, such as objects moving abruptly, excite sensations.
6. The defects of vision in the fields of the two eyes are always congruous and superimposable, provided that no disease or injury of the peripheral visual apparatus exists.
7. Lesions of the lateral surfaces of the hemispheres, particularly of the posterior parietal regions, may cause certain disturbances of the higher visual perceptual functions with intact visual sensibility, as loss of visual orientation and localization in space, disturbance of the perception of depth and distance, visual attention loss, and visual agnosia.

Dr. JAMES TAYLOR said the paper read by Colonel Gordon Holmes was so full of matter that it was almost impossible to enter into a discussion until there had been time to read it and think it over. But there was no doubt of the value of the work, and, on the suggestion of the PRESIDENT, a vote of thanks was passed to Colonel Gordon Holmes.

Rebulet.

MILITARY MEDICAL MANUALS.¹

WE have received from the University of London Press the first batch of six volumes containing the English translations of the corresponding number of volumes of the Collection Horizon, the publication of which was commenced by the firm of Masson of Paris about a year ago. In our reviews of the French editions we have almost invariably been able to express a favourable opinion, and in what follows we have introduced references to the reviews. The books are short and practical, and are founded upon the most recent clinical and laboratory

¹ *Military Medical Manuals*. Under the general editorship of Director-General Sir Alfred Keogh, G.C.B. London: University of London Press. The price of each volume is 6s. net, with the exception of that by Carrel and Dehelly, which is 5s. net. The price of the volumes of the French edition is uniformly 4 francs.

experience. Sir Alfred Keogh has written a short general introduction to the whole series, in the course of which he observes that if the surgical problems of modern war can be said not to differ sensibly from those raised in the campaigns of the past, the form in which they have been presented is as different as are the methods of solution. The achievements of the chemist, the physicist, and the biologist have given the military surgeon an advantage in diagnosis and treatment denied to his predecessors, and the effects of these advantages are to be measured by the results which have been obtained. In the early stages of the war the conditions at the front were so uncertain that it was impossible to establish the completely equipped scientific institutions for the treatment of the wounded now available, and progress was hampered until definitive treatment could be undertaken at the early stage now possible.

The first volume of the series, that on *Typhoid Fever and Paratyphoid Fevers*, by Vincent and Muratet (BRITISH MEDICAL JOURNAL, 1916, vol. ii, p. 490) is translated from the second (revised) version of the original by Dr. J. D. Rolleston. The first of the surgical volumes of the series is Broca's *After-effects of Wounds of the Bones and Joints* (BRITISH MEDICAL JOURNAL, 1916, vol. ii, p. 804). A translation has been made by Captain J. Renfrew White, and Major R. C. Elmslie has written a short introduction, in which he emphasizes the necessity for an appreciation of the pathology of the lesions of the bones produced by gunshot injuries as a necessary preliminary to their treatment. In England, he says, we have been to a large extent saved from the misuse of the purely mechanical methods by the co-ordination in the orthopaedic centres of mechanical methods with the surgical work, so that every patient who is undergoing mechanical treatment is at the same time under the observation of a surgeon—an ideal method of organization. The volume on *The Treatment of Infected Wounds*, by Carrel and Dehelly (BRITISH MEDICAL JOURNAL, 1917, vol. i, p. 264), has been translated by Captain Herbert Child, and Sir Anthony Bowlby contributes an introduction, in the course of which he says that whenever the Carrel method has been carried out it has accomplished all that has been claimed for it by its author, and that the whole practice of war surgery has been greatly improved by Dr. Carrel's confidence that antiseptic treatment can sterilize a septic wound if sufficient care and skill are bestowed upon it. This lesson, Sir Anthony Bowlby says, was very necessary. The book, as our readers are aware, contains a detailed statement of the method, and Sir Anthony Bowlby says that the only modification that seems justifiable is the use of the syringe when instillation by gravitation cannot be carried out, as in trains, ships, and many units at the front. The utility of the method, he adds, is not confined to recent wounds, so that those surgeons who are treating the wounded in Great Britain will find the book useful. The volume on *Hysteria or Pithiatism and Reflex Nervous Disorders in War*, by Babinski and Froment (BRITISH MEDICAL JOURNAL, 1917, vol. i, p. 843), has been translated by Dr. J. D. Rolleston, and Dr. E. Farquhar Buzzard contributes a short preface. The volume contains a postscript by the authors in which they reply to some criticisms contained in papers published after the French manuscript was complete. The volume on *The Psychoneuroses of War*, by Roussy and Lhermitte (BRITISH MEDICAL JOURNAL, 1917, vol. ii, p. 361), has been edited by Dr. Aldren Turner, C.B. The volume by Thibierge on *Syphilis and the Army*, (BRITISH MEDICAL JOURNAL, 1917, vol. ii, p. 426), has been edited by Mr. C. F. Marshall, who contributes a brief preface, in which he observes that it is too early yet to determine the fate of the syphilitic treated by the new arsenical preparations, and points out that while energetic initial treatment is the best means of rendering men fit for service in the shortest possible time, the proportion of those who will suffer later on from tertiary or quaternary manifestations, such as aortic disease and aneurysm, tabes and general paralysis, remains to be seen.

VENEREAL DISEASES.

SEVERAL additions to the literature of syphilology have appeared recently, among the most noteworthy being treatises by Lloyd Thompson, Leredde, and Thibierge's book on syphilis and the army, a notice of which has

already appeared. LLOYD THOMPSON'S work² is comprehensive and concise. The first part deals with history, etiology, diagnosis, prognosis, prophylaxis, and treatment. As regards the antiquity of syphilis, the author preserves an open mind. In discussing the various details of laboratory diagnosis, both microbiological and serological, which are well described, the author attaches great importance to the Wassermann reaction, a modification of which he describes. In the chapter on treatment the different methods of administration of mercurial and arsenical preparations receive full attention, including several methods for intravenous injection of salvarsan and neo-salvarsan in dilute and concentrated solutions. The account given of the introduction of salvarsan shows that the author has an insufficient acquaintance with the historical facts, and he may be glad to have his attention drawn to a paper published in this JOURNAL on April 29th, 1916, in which Dr. Benjamin Moore relates the true history. He pointed out that salvarsan and neo-salvarsan are simply derivatives of atoxyl, which was discovered by the French chemist Béchamp in 1863; that the first use of the new arsenical preparations in the treatment of protozoal diseases was made by a Canadian working in a British laboratory; that the chemical nature of atoxyl was shown simultaneously in England and Germany; that Ehrlich and others in Germany "finessed amongst the derivatives to find the compounds best adapted for therapeutic use" and selected salvarsan; and finally that they kept the details of its production secret. All this was done in the characteristic German way without any acknowledgement of the previous discoveries which had led up to the production of salvarsan, which was patented for the commercial benefit of the Fatherland. Fortunately, owing to the war, this drug is now manufactured outside Germany. The remainder of the volume deals with the systematic description of syphilis of the various systems and organs of the body. The book is well illustrated and well written, and we can recommend it as a valuable handbook on the subject.

Dr. LEREDDE,³ a former advocate of intensive mercurial treatment, has produced a treatise which might be entitled the apotheosis of salvarsan. Always an extremist, he has now renounced mercury in favour of exclusive treatment by arseno-benzol. He does not even advise combined treatment; the reasons he gives are that such treatment is based on the assumption that certain spirochaetes may be resistant to arsenic; that this has not been proved in the case of spirochaetes as it has been in the case of certain trypanosomes; and finally, that combined arsenical and mercurial treatment depends on inductions and hypotheses, not on facts, and has no precise experimental or clinical basis, especially in recent syphilis. We were under the impression that mercury was associated with arsenic because it had long been found to have a curative effect on syphilis, while the action of arsenic was still in the experimental stage. Dr. Leredde's method of treatment consists in intravenous injections of neo-arseno-benzol in progressive doses, administered on the average once a week. In a man of 60 kilos weight the first three doses are 0.15, 0.20, and 0.30 gram, subsequent doses being increased by 0.15 to 0.30 gram, according to the indications furnished by the reaction. This treatment is carried out continuously, in primary and secondary syphilis, till the serum reaction is negative and the cerebro-spinal fluid normal. After an interval of three weeks "an injection of reactivation" of 0.45 gram is given, and the cerebro spinal fluid examined in five days. If this is negative, the patient is considered cured; if positive, the course is repeated. In many cases of primary or secondary syphilis ten to fifteen injections are required to produce this result; in one case of primary syphilis mentioned twenty injections were necessary, in doses varying from 0.30 to 1.35 grams. In old cases of syphilis the same treatment is adopted, but intermittently with intervals of not longer than three weeks. The treatment is controlled by examination for arsenic in the urine by Abelin's method. Leredde does not countenance the marriage of syphilitics unless they are "in a state of absolute or

relative sterilization," which he claims can be produced by the above treatment. We venture to regard this as a counsel of perfection and a condition impossible of proof, except by experimental inoculation. He attributes the failures and many of the accidents after treatment by salvarsan to the doses being too small, too infrequent, too irregular, or given at too long intervals. Leredde states that arseno-benzol is less toxic than mercury, and that when administered for a long time it produces fewer accidents than those caused by the prolonged administration of mercury. This statement is open to question, although the accidents due to arseno-benzol are certainly less frequent now than was formerly the case. The chapters on the pathology, microbiology, symptomatology, and sociology of syphilis are adequate, but no reference is made to any of the observers who claim to have described life cycles or spore formation in spirochaetes. Leredde's work will be read with interest by syphilologists, but it can hardly be recommended as a guide for treatment in the present state of our knowledge.

Mr. REGINALD HAYES⁴ has brought out a second edition of his little book on the Aachen treatment of syphilis, the first edition of which was reviewed in this JOURNAL on May 15th, 1915. The Aachen method consists in the inunction of a 33 per cent. mercurial ointment by a skilled rubber under medical supervision, combined with the internal and external use of sulphur waters. This method can be, and is, carried out in this country perfectly well. Mercurial inunction is one of the oldest, and is still probably the most effective, method of mercurial treatment. The reason why it is not more generally used is that it is difficult to carry out without compromising the patient. However, now that there is less secrecy concerning venereal disease, this objection may not carry so much weight. Mr. Hayes does not claim that this treatment does away with any indication for salvarsan, but he gives it the place of honour, and regards salvarsan only as a valuable auxiliary. In fact, the method he adopts consists in a ten weeks' course of inunction, associated with three intravenous injections of full doses of salvarsan. In a fair proportion of cases, he says, the blood test has become negative after this course, and remained so for several years, even after a provocative injection* of salvarsan. We can recommend Mr. Hayes's book as a sound guide to those who wish to carry out this too much neglected form of treatment.

In reading recent books on syphilis it is astonishing to note the divergence of the views expressed. We hear a good deal nowadays of the "modern treatment of syphilis," but while all agree that energetic treatment in the early stages offers the best hope of cure opinions differ widely as to the best method of treatment to adopt. At one extreme is Leredde, who argues that salvarsan is all-important and that mercury should be discarded; at the other extreme is Hayes, who gives mercury the first place, with salvarsan as an auxiliary only; between these two extremes are Thompson and Thibierge, who regard both mercury and salvarsan as essential. In the present state of knowledge, as the ultimate results of salvarsan as regards its power in preventing the later quaternary manifestations of syphilis, such as aortic disease and aneurysm, tabes and general paralysis, have not been ascertained, it would seem that Hayes's view is the soundest. The true efficacy of a drug in the treatment of syphilis lies in this power, not in the rapid healing of chancres, which heal quickly enough under any effective treatment, nor in the rapidity of the supposed disappearance of spirochaetes from the lesions. The latter argument is fallacious, as spirochaetes are not always easy to find, and a negative finding does not prove their absence, and moreover, the possibility of spore formation is ignored. Again, as to the Wassermann reaction, while all agree as to its value in diagnosis when taken in conjunction with clinical evidence, Lloyd Thompson and Leredde regard it as of prime importance as a test of cure and a guide for treatment, but Thibierge considers it of absolutely no value in this connexion. One fact not sufficiently recognized is that the presence of mercury or arsenic in the blood interferes with

² *Syphilis*. By Lloyd Thompson, Ph.B., M.D., Physician to the Syphilis Clinic, Government Free Bath House, etc. Philadelphia and New York: Lea and Febiger. 1916. (Roy. 8vo, pp. 433; 7 plates, 77 figures, 425 dollars.)

³ *Domäne, traitement et prophylaxie de la syphilis*. By E. Leredde. Paris: A. Maloine. 1917. (Roy. 8vo, pp. 481; illustrated. Fr. 14.)

⁴ *The Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods*. By Reginald Hayes, M.R.C.S., etc. Second edition, revised. London: Baillière, Tindall, and Cox. 1917. (Cr. 8vo, pp. viii + 147; 22 figures. 4s. net.)

the reaction. An interval of four weeks should elapse between the cessation of treatment and the test. Hence repeated tests made during the course of treatment are of little or no value.

Mr. FRANK KIDD⁶ has published his lectures on common diseases of the male urethra, with the addition of several appendices. These lectures have already been printed in this JOURNAL. Although somewhat dogmatic the advice given in this book is sound and practical. Some, however, will think that the author is unduly enthusiastic as to the results obtained by urethroscopic treatment. The appendices form an interesting addition to the lectures, and contain notes on illustrative cases, and details for fitting up a room for urethral examination and treatment. The author's evidence before the Royal Commission is added. The book is well illustrated, and can be recommended as a useful guide in the treatment of gonorrhoea and its complications.

NOTES ON BOOKS.

THE small *Handbook of Surgical Operations*, by Mr. CHATTERJI, is, according to the author's foreword, designed to give aid and guidance to students and teachers of surgery. The work deals solely with the actual conduct of operations, and makes no attempt to discuss such questions as preliminary or after treatment. The author does not claim to describe all the methods of performing the various operations, but only those which he himself has found to give the best results—for example, Bassini's is the only operation described for the radical cure of inguinal hernia, and the large anterior flap is the sole method described for amputation through the thigh. Space is wasted in describing such obsolete procedures as Lisfranc's and Chopart's amputation of the foot, and Mr. Chatterji acknowledges that they have nowadays little claim for mention. Many minor but exceedingly useful points are referred to, such as the methods of holding a scalpel, the proper way of making an incision, and the manners of employing sutures and tying knots. The ligature of arteries is dealt with fully, as are also amputations and disarticulations. Excision of bones and joints, tenotomy, operations on nerves, tracheotomy, abdominal operations, and operations on the urethra, penis, and testis are the other procedures described. But, strangely, no mention is made of many common operations, such as osteotomy, operations for varicose veins, varicocele, haemorrhoids, femoral hernia, suppurative and other varieties of peritonitis, osteomyelitis, etc. The important subject of intestinal obstruction is very briefly referred to. The work is well illustrated by a number of black-and-white and coloured plates.

⁶ *Common Diseases of the Male Urethra*. By Frank Kidd, M.B., B.C. Cantab., F.R.C.S. Eng. Being a course of lecture delivered at the London Hospital, with an additional lecture on the Clinical Pathology of Urethritis, by Dr. Philip Panton, Clinical Pathologist, London Hospital. London: Longmans, Green and Co. 1917. (Demy 8vo, pp. vii + 132; illustrated. 5s. net.)

⁷ *A Handbook of Surgical Operations*, designed for the use of students of surgery. By K. K. Chatterji, F.R.C.S.I., Teacher of Descriptive and Operative Surgery, Campbell Medical School, Calcutta: Butterworth and Co. 1916. (Demy 8vo, pp. 238; illustrated. 7s. 6d. net.)

THE HEALTH OF THE SCHOOL CHILD.

IN the JOURNAL of October 6th we noted the publication of the annual report for 1916 of the chief medical officer of the Board of Education,⁸ and discussed the leading points in Sir George Newman's introductory paragraphs on the aims and functions of school hygiene. In the brief space now at our disposal we propose to indicate some of the principal matters dealt with in the body of the report.

The School Medical Service.

War conditions and the demand for medical men for the military service of the country have made a heavy call on the staff of the educational medical services. In the view of the Board, in the event of a temporary curtailment of the school medical service becoming necessary, provision should at any rate be made (a) for the medical inspection of children of all ages who appear to be ailing; and (b) for the maintenance of any treatment at that time being undertaken by the authority.

Inspection on this limited scale is now in vogue in an

⁸ Annual Report of the Chief Medical Officer of the Board of Education, 1916. (Cd. 8746.) H.M. Stationery Office. 1917. To be purchased of all booksellers. Price 1s. net.

increasing number of areas, 92 as against 48 in the last year under review. The total roll of the elementary schools is now 5,306,411. The number medically inspected to December during 1916 was 1,446,448, as against a normal average of 2,000,000. The decline in inspection is about 28 per cent. The work is done by some 1,257 medical officers, not including the 215 medical practitioners who take part in the London school clinics; besides, there are 1,527 school nurses. The limitation of the school medical inspection has drawn teachers into the work of personal observation of the health of their pupils, with beneficial results. Dr. Nash of Norfolk, with this end in view, has published an excellent series of hints to teachers which is reprinted in the report. It might well be circulated to all teachers.

Attention is drawn to the altered character of the work of the school attendance officer. Formerly he was a true pedagogue, and as such a source of fear to the truant. Now he is a veritable scout of the medical service, and is able to furnish valuable information of illness and defect which is greatly to the advantage of parents, children, and the medical service. In this connexion there is necessarily overlapping in the work of the attendance officer and of the school nurse. In some areas there is a tendency to replace the attendance officer by the nurse.

Emphasis is laid on the necessity for co-operation and continuity of agencies, both municipal and voluntary, which busy themselves with infant and child life. Children's care committees should recognize that they are properly a link between agencies having at heart the care of mothers to be and in being, through the midwives, the schools for mothers, and later the infant welfare centres, day nurseries, and classes for mothercraft amongst the elder girls.

Medical inspection is being extended to secondary schools, although, on account of a lessened staff, at a slower rate than in recent years. The need for this is shown in the observations made through the personal hygiene scheme working in the girls' secondary schools in London. In the works of the report—

The desirability of the extension of the school medical service (including medical and dental inspection, medical treatment, and the various branches of school hygiene) to all secondary schools, continuation schools, and schools other than elementary, would seem now to be abundantly established, and it is hoped that in the near future these advantages may be available for children of all classes.

Care and Training of Young Children.

Schools for mothers and day nurseries are increasing in number: there are now 360 for the year 1917, as against 281 in 1916 and 236 in 1915. The day nursery provides primarily for the children of mothers who are obliged to go to work away from home and who wish to ensure the proper care of their children for the whole day. Children from one month to five years are admitted, but most of the children are under three years of age. The attendance is often fairly regular, as mothers have definite days on which they work. A daily charge, usually 4d. to 6d., is made towards the cost of maintenance of the nursery. It is open, as a rule, from 6.30 or 7 a.m. to 6 or 7 p.m., and is closed on Saturday afternoon. It is in charge of a matron assisted by nurses and probationers. The staff are nearly always resident and are responsible for the management of the children and the nurseries, though additional help in the kitchen or laundry may be provided. The more modern nurseries provide some open-air life, in garden, yard, or roof playground. The infants are weighed once a week, and simple records are kept of physical condition. The nurseries are voluntary institutions, but since 1914 the Board has made a maintenance grant of 4d. per child per attendance of not less than nine hours.

Nursery schools have been established in many places by voluntary agencies, taking children from 2 or 3 years of age to 5 or 6. The Board has no control over these, and makes no grants in aid; but it is evidently very sympathetically inclined to them, and a detailed account is given of their working. In these nursery schools is to be found the possible line of reform of the existing infant school, which is too formally planned on the lines of the departments for boys and girls with which they are linked.

Medical Inspection.

The medical inspection of school children has been much restricted by war conditions. Fortunately there was in

1916 a continuance of relatively good health among the children.

Malnutrition and insufficiency of clothing among school children were, in 1916, less than in former years in some areas. It is significant that whilst the health and personal condition of entrants shows little or no betterment, that of the eight years old and leaving children shows a steady improvement. Those school doctors who have been at work on this subject for ten or fifteen years are able to report a substantial improvement in the physical condition of the older children. This is a very important fact.

Uncleanliness is apparently declining in certain areas, both in extent and degree, which is due to the vigorous action taken by the local education authorities and to the response of the parents. The return for London for 1916, where the 'cleanliness survey' is most thoroughly carried out, and where a high standard of cleanliness is required, shows that 25 per cent. of the children are unclean. There has been a serious increase in the number of cases of scabies amongst the children in some parts of the country. Most of the cases could be traced to contact with soldiers home on leave, not only from France, but also from military camps in this country.

Defects of vision still attain high percentages, and attention is again drawn to the constant excess of visual defects amongst girls which never fails to be brought out in the results of medical inspection, and "appears to be a conclusive demonstration that close application to fine work is a potent means of producing defect in childhood." Reports on the effect of cinematograph displays are cited, and in connexion therewith are given lengthy abstracts from a paper by Mr. Bishop Harman published in the *JOURNAL*, February 17th, 1917. The fact that the returns of defect of vision are higher for the year under review than previously "lays upon the local education authorities a large burden of responsibility."

The provision of sanatorium schools for children suffering from tuberculosis is slowly increasing; there are now twenty-four such institutions, as against eighteen in the previous year. The Finance Act of 1911 made available a sum of £1,500,000 for the provision of sanatoriums and other institutions for the treatment of tuberculosis in the United Kingdom. Of this amount £100,000 was earmarked as capital grants for providing sanatorium schools for children. The distribution of these grants rests with the Local Government Board. By agreement with them the Board of Education approve the plans, and carefully consider the arrangements for the education of the children.

Medical Treatment.

From the reports and tables given it appears that about 58 per cent. of the children found defective received treatment. There are 319 local education authorities.

Less than half of the authorities have made any attempt whatever to provide dental treatment, and with one or two exceptions the provision made by 146 authorities is at present wholly inadequate. There are still approximately 190 authorities which have done nothing for minor ailments or defective vision, and 200 have done nothing for diseases of the ears and the throat. Yet for nine years there has been a steady flow of incontrovertible evidence of the prevalence of these maladies, and during the last three years tens of thousands of young working people and of recruits have found themselves unable to render full service to the country owing to dental decay and defective vision, the treatment of which was neglected in childhood.

A hint is given that for the future, in assessing grants by the Board, there will be a stricter scrutiny of the adequacy of medical treatment provided.

Reference is made to the work of the blind schools, and in particular to the report of the Departmental Committee on the Welfare of the Blind, which has recently been reviewed in these columns. The work of the special classes for myopic children is commented on. London has now seven of these classes. Bradford has made an experiment in combining these classes with open-air work.

Open-air Schools.

It is estimated that 10 per cent., or 600,000, of the school children suffer from debility, anaemia, and malnutrition, so that they are stunted and weakly, and unable to derive reasonable benefit from their schooling. For them the best possible treatment is an open-air school.

An article by Professor Leonard Hill on the physiological advantages to be derived by children from an appropriate application of the open-air method of education

is printed on pages 104-106. It will repay study. Many authorities have started classes in the playground of schools and in public parks; the teachers state that "the scholars taking part become brighter, more vigorous, and much more alert, resourceful, and mentally receptive." Associated with this effort are the school journeys to country places, holiday camps, and schools. Between the open-air schools and the sanatorium come the residential open-air schools of recovery, intended mainly for non-tuberculous children. There are now a dozen of these throughout the country.

Physical Education.

One of the lessons which the war has emphasized is the necessity to secure the full personal physical development of the child, not only for his own benefit and happiness, but also from the point of view of his value to the State. One way in which this can be done is by making suitable physical training an effective part of the education of every boy and girl, by getting rid of the old and narrow conception of "drill" in the schools, and by giving the subject and its exponents appropriate recognition and status.

The share of play in education is noted:

It has not been sufficiently realized that play is, after all, a serious business, that beyond a certain point children cannot invent and teach themselves games, and that to secure the utmost usefulness from the time allotted to play children must be actually taught games, though they should subsequently be encouraged to play them in a spirit of freedom, with the minimum of direction from adults.

The grand adventure of make-believe has an educational and physical value of its own. Play centres should be facilitated. The school playgrounds and buildings should be available for these in the winter months, but in the summer activities should be transferred to playing fields. Special appeal is made to local authorities to allocate to children playing fields in parks and other open spaces far more generously than has been done in the past, and not only to provide ground, but also to equip it for the games. Dancing, one of the oldest means of self-expression, is needed to complete the physical education. The whole question of dancing in association with physical training requires fuller investigation and experiment.

Provision of Meals.

The decline in school feeding in 1915 and 1916 is remarkable. Fewer children are being fed to-day at the cost of the State than when the Acts were first put in operation. Before the war the average number of children fed per annum was approximately 150,000. In 1915 it was 422,000; in 1916, 117,000. Immediately on the outbreak of the war the figures rose rapidly, but after October, 1914, they as rapidly declined. The causes of this decline are obvious—there was a great increase in wages associated with a rapid increase in employment.

Control of Juvenile Employment.

The increase in the employment of children and young persons in 1915-17 in munition work and otherwise has demonstrated that many boys and girls are being spoiled physically, mentally, and morally.

It must not be assumed that all employment of such children is physically a disadvantage and to be deprecated. Much depends upon sex and age of the child, its health and strength, its previous training or experience, and its home life; much depends on the condition of employment, the character of the work, its educational or training value, whether indoor or outdoor, the period and length of hours to be worked, the strain and stress involved. . . . It is a question of proper control rather than absolute suppression; of wise selection rather than prohibition.

A mass of evidence from school medical officers is given of the effect of juvenile work, and from this the conclusion is drawn that while gross and immediate physical injury is not occurring as a result of excessive or premature employment, the strain of such employment, combined with schooling, cannot be supported by the child's body without undermining its physique.

The remedy is threefold: (a) No child under 14 should be exempted from education, half-time or whole-time, for purposes of employment for profit; (b) no child attending school should be employed out of school hours except at prescribed times and for prescribed periods; (c) the employment of all young persons from 14 to 18 should come under medical supervision and control.

British Medical Journal.

SATURDAY, DECEMBER 22ND, 1917.

EPIDEMIC CEREBRO-SPINAL MENINGITIS.

SINCE early in the year 1915 we have been living through a scattered epidemic of cerebro-spinal meningitis, and a great deal of bacteriological and epidemiological work on the organism causing the disease and its modes of transmission has been published since that date. Among the most recent of these publications is a collection¹ of *Further Reports on Cerebro-spinal Fever*, issued by the Local Government Board in continuation of its report of 1916. In a preliminary memorandum by the Board's medical officer, Sir Arthur Newsholme, it is pointed out that the meningococcus is a delicate organism incapable of growth or survival at a temperature much below that of the human body. Its habitat is the human nasopharynx, where it may grow readily. It is transmitted from person to person in droplets expelled by forcible expiration from the carrier and inhaled by those in his proximity. It may also be conveyed from mouth to mouth either by direct contact, or, possibly, by some article infected by the mouth of the carrier. There is no evidence of more indirect or more distant modes of transmission.

It must be fully recognized that the meningococcus is a common inhabitant of the nasopharynx, and that its presence there rarely leads to the development of meningitis. Generally it behaves as a harmless saprophyte in non-epidemic periods. Thus Mayer and his colleagues found 158 meningococcus carriers among 9,111 soldiers at Munich in 1910, an epidemic-free period; none of these carriers developed meningitis. The significance of these figures will be appreciated better when it is realized that the meningococcus does not usually persist in the nasopharynx of a carrier for more than two or three weeks; so that a large proportion of the population must harbour the organism at one time or another, even during a non-epidemic season. At the present time the proportion of carriers in England is probably much higher than it was in Munich in 1910. Between March, 1915, and February, 1917, 1,881 persons believed not to have been in contact with cases of cerebro-spinal fever were examined by bacteriologists working for the Board, and 253 of them (13.5 per cent.) were found to be meningococcus carriers. In the three years 1912-14 there were about 300 cases of the disease in England and Wales per annum; the figure rose to 3,702 in 1915; it was 2,199 in 1916, and there were over 1,000 cases among civilians alone during the first six months of 1917. Nearly four-fifths of the cases among civilians occurred at ages under 15, and about 60 per cent. of all the cases arise in the months of March, April, and May.

Not much has been ascertained as to the conditions under which epidemics of the disease arise; there is some resemblance here between influenza, cerebro-spinal fever, and other catarrhal respiratory affections. In fact, it may be generally stated, from the point of view of the epidemiologist, that cerebro-

spinal fever is one of a group of catarrhal diseases, and that it commonly becomes prevalent at or a little after the season of the year and under climatic or other conditions which favour excessive prevalence of influenza, bronchitis, and pneumonia. Its response to these influences, however, is erratic; it is not associated with dry years, or a series of dry years.

When considering the infectivity of the disease we are on surer ground. The risk of infection from a case of cerebro-spinal fever is small, even very small; in the vast majority of instances only one case occurs in an invaded household or military hutment, and sometimes only one case in an invaded locality. Thus among 2,343 cases among civilians in 1915, multiple cases occurred in 150 only of the invaded households. It is exceptional for the infection of a patient to be ascribable to any known case of cerebro-spinal fever; clearly he must have picked up the meningococcus from some carrier, but as the percentage of healthy carriers is as high as 13.5 among members of the general population in populous areas who have apparently had no opportunity of contact with a case of the disease, it seems highly probable that the carriers are more important than the cases in the causation of epidemic cerebro-spinal meningitis. Further, it is pointed out that the sporadic habit of the disease, in point of both time and place, persists in epidemic times. The case rate is not deducible from the carrier rate, and the occurrence of an epidemic cannot be satisfactorily explained as due to an increase in the latter. Evidence is brought forward by five of the contributors to this volume of Reports to show that any microbe possessing the admitted morphological and cultural characters of the meningococcus should be regarded as potentially pathogenic; appeal to agglutination reactions here is held to be superfluous, though differences in these serological reactions may be regarded as having importance in directing the treatment of cerebro-spinal fever by serum-therapy. Major Gordon, as is well known, does not accept this view as to the value of agglutination reactions, and much weight must be given to his opinion.

The further consideration of the healthy meningococcus carriers who are mainly responsible for the occurrence of cases of the disease suggests certain possibilities with regard to its spread. Clearly the carriers are too many to be controlled or quarantined in the ordinary conditions of life. The carrier condition may be of benefit to the individual as a means of acquiring partial immunity to the disease, but it is clearly harmful to the public as increasing the circulation of the meningococcus and facilitating the infection of susceptible persons. Again, some such susceptible persons may be a danger to others by raising the virulence of the nasopharyngeal meningococci to epidemic pitch, and before themselves falling victims to the disease may transmit these more dangerous organisms to other persons. Alternatively, epidemics of the disease may be due to the temporary enhancement of the virulence of endemic strains of meningococci by some conditions still unknown to us. The view that a more virulent strain may have been introduced into this country from Canada early in 1915 is said to be possibly correct but unproven; some military cases of cerebro-spinal fever had occurred in this country before this importation could have taken effect. Can anything be done to lessen the prevalence of cerebro-spinal fever in the future? The infecting agent, as has been stated above, has its habitat in the nasopharynx. It is transmitted from one person to another by such actions as coughing or sneezing without the careful use of the handkerchief;

¹ Reports to the Local Government Board on Public Health and Medical Subjects. New series, No. 114. Pp. vi + 214. H.M. Stationery Office, London. 1917. Price 4s. net.

or, more directly, from mouth to mouth, as in kissing. Sir Arthur Newsholme looks forward to the time when a higher standard of conduct in regard to the spread of all such catarrhal infections will become the rule in social intercourse. Everyone will agree with him that the practice of coughing and sneezing broadcast, now unhappily so common, should be put a stop to in the interest of the public health. As for the prohibition of the more direct method of infection, even the least susceptible of bachelors would think twice before making so unreasonable a suggestion between Christmastide and the New Year.

THE FOOD REQUIREMENTS OF THE SEDENTARY WORKER.

LAST week we gave reasons for thinking that a drastic reduction of the standard of meals in restaurants and also in clubs was psychologically desirable and physiologically correct. We will endeavour to define the scale of living which might be adopted by well-to-do sedentary workers.

Since exact measurements of the amount of muscular work performed by sedentary persons are unobtainable, we can, on experimental grounds alone, proceed no further than to assign as a minimum a daily intake of 1 calorie per kilo and hour—that is, 1,680 calories a day for a man of 70 kilograms (15 stone). The amount required in excess of this must be judged from statistics and controlled by individual experience. Unfortunately, statistical data are especially difficult to interpret when they relate to persons whose incomes enable them, in comparison at least with the hand-working classes, to satisfy their inclinations in the matter of food consumption; custom and the artificial standards of society have to be allowed for. Atwater and his associates concluded that 2,500 calories should suffice for men with very little exercise, and 3,000 for those at light physical work, values which are exceeded by the means found for American professional families in many inquiries.

Most of the European diet studies which had been published before 1902 are collected in R. O. Neumann's paper.¹ His table includes thirty-three observations upon professional men whose diets were found to be sufficient for equilibrium. The mean number of calories a day (reduced to terms of a standard body weight of 70 kilos) was 2,938. Neumann, who was at the time a privatdozent and assistant in the Kiel Institute of Hygiene, provides a valuable series of observations upon himself. The particular importance of these lies in the fact that they represent a continuous study extending over 746 days. In different periods Neumann's calorie intake varied from 1,999 to 2,427 (reduced to terms of 70 kilos body mass; the author's weight was actually between 66 and 67 kilos in the earlier and 71 to 73 in the later experiments). The concluding series, covering eight months' observations, gave a mean of protein 74 grams, fat 106 grams, carbohydrate 164.2 grams, and alcohol (in beer) 5 grams. The total energy value was 1,999 calories. Neumann inferred that sedentary workers like himself might well conform to a standard of about 74 grams of protein, 56 grams of fat, and 360 of carbohydrate, yielding an energy value of 2,300 calories. It would, no doubt, be rash to draw general conclusions from the experience of an individual, even though it covered a considerable period of time, and the proposed value is less than the Atwater standard and *a fortiori* less than the statistical mean, but there are various records, especially the well-known observations of Ranke, which agree substantially with Neumann's

experience. We think that for the sedentary male worker who is able to secure adequate protection from cold and who takes little outdoor exercise a daily ration of 2,500 calories ought to suffice. We are here allowing for the average body weight being rather below 70 kilos and for waste in preparation of food, the former factor reducing and the latter increasing the requirements, as expressed in food purchased.

As we have seen, the voluntary ration allots the sedentary male worker about 1,680 calories, leaving on the proposed basis a deficit of 820 calories to be provided from unrationed articles.

So far as London is concerned, three foods of high energy value must be considered—milk, dried fish, and potatoes. The supply of milk is already below the requirements of the population, and will no doubt be distributed preferentially in the near future. A quarter of a pint daily, providing 102 calories, seems to be a maximum figure for the sedentary male. Dried fish is, on account of transport conditions, more likely to be available in London and in the great northern cities than elsewhere, and a daily provision of 2 to 3 ounces (74 to 111 calories) might be feasible. This leaves some 610 calories to be furnished by potatoes; this represents from 1½ to 2 lb. of potatoes, according to quality, making allowance for waste. It appears to us that all articles of food, other than potatoes, supplied to restaurants and clubs should be rationed on the above scale. The practical difficulty which suggests itself depends on the fact that only a small minority of the customers obtain all their meals in a club or restaurant. A way to surmount this is indicated in Dr. Leonard Hill's memorandum²; it is to ration on meal values. The three principal meals are each allotted the values 0.2778, and tea is reckoned at 0.1666, this being the distribution of daily intake observed in Dr. Hill's inquiry. The method would apply as follows: Suppose in a given restaurant 1,000 lunches, 500 teas, and 1,000 dinners were served in a week. The meal value would be $2000 \times 0.2778 + 500 \times 0.1666 = 639$; that is, the consumption corresponds to the complete rationing of 639 men for one day. On the voluntary ration for sedentary workers this gives 411 lb. of bread, 68½ lb. other cereals, 182½ lb. of meat, 45½ lb. of sugar, and 57 lb. of fats. Managers would, of course, have to arrange their menus to conform to these regulations. Provided potatoes are unrestricted,³ there is not the slightest risk of any persons in the category of sedentary workers who frequent restaurants and clubs going short of food, and the curtailment of the use both of fat and milk which is implied (the allowance of milk by the proposed method of calculation would in the example given be 20 gallons) seems both just and necessary.

A further criticism to which the proposal is subject is that casual light refreshments need special treatment. If no margin is granted for these, the regular clients will not be able to get their proper ration; conversely, if any order for a glass of sherry and biscuits is reckoned as a "lunch," those who take the stated meals will be over-rationed. It ought not to be very difficult to frame a rule to cover these cases, but, so far as our observation goes, they are not really important in the expensive restaurants. Of course, persons who lunch *à la carte* can properly be treated on the meal basis applicable to *table d'hôte* customers.

² No. 19 Health of Munition Workers Committee, revised edition.

³ Attention may be again directed to the excellent utilization of the nitrogen of potato. Thomas (*Arch. f. Phys.*, 1909, pp. 219-302) found 5½ grams of potato nitrogen biologically equivalent to 13 grams of nitrogen from wheaten bread.

¹ *Arch. f. Hygiene*, xl, 1902, p. 1, etc.

The principles developed in the preceding paragraphs have equal applicability to the consumption of tea, coffee, and cocoa, but these articles having little or no energy value, at least in the form ordinarily used, do not require consideration here.

THE WAR FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

A LETTER commending the claims of the War Fund of the Royal Medical Benevolent Fund will be found at p. 842. A general appeal was issued some time ago, but that published to-day is a direct appeal to the members of the British Medical Association in the Divisions, and is made by the principal officers of the Association—the President, the Chairman of Representative Meetings, the Chairman of Council, and the Treasurer. The Fund has been established to help the many medical men who, when called upon to enter the military service of the army or navy, had to leave, often at very short notice, without time to make adequate provision for the continuance and maintenance of their practices during their absence. They have had to face a severe fall in income, even when supplemented by army pay; and standing expenses, such as rent, insurance, the maintenance of a family, and the education of children, have continued. While it is hoped that in a year or two after their return those affected will recover their position, in the interval help is and will be necessary. The appeal is for at least £30,000, for to be effective the grants must be on a liberal scale. Towards this sum about £4,000 was contributed last year. In the subscription lists published during the last five months some large contributions from members of the profession have been announced; there have been several of £500, some of one hundred or fifty guineas, many of twenty, ten, and five guineas, and a large number of smaller sums, but it is a case in which every member of the profession should endeavour to do as much as he can. It is hoped that the appeal through the Divisions of the Association will facilitate the collection, especially of smaller amounts, which, in the grand total, will help to attain the sum it is considered the lowest the profession should provide.

MEDICAL INSURANCE AGENCY AND MEDICAL BENEFIT.

At the meeting of the Committee of the Medical Insurance Agency on November 22nd the chairman, Dr. G. E. Haslip, was able to report that the amount of business transacted had been satisfactory, in spite of the unsettled conditions due to the war. Notwithstanding the restrictions on the use of petrol, and the fact that so many medical men are absent from their practices on military service, the business in insurance of motor cars had continued to grow, members insured through the Agency having found that claims were promptly settled and that the arrangements for repairs in the event of an accident proved highly efficient. This being so, those medical men who have not yet insured through the Agency would be well advised to give it an opportunity of explaining its arrangements and giving quotations. During the absence of the owner cars are insured against fire risk only, and the premium paid is therefore smaller, but it was considered reasonable to expect that when owners returned full policies would be resumed. The amount of life business done at the office was, Dr. Haslip said, a very satisfactory feature, as it showed that the confidence in the advice given by the agency was steadily growing. It was not restricted to any particular office, and before advising on the best form of contract the special circumstances of each case were carefully weighed and considered. The agency affords an example of what can be accomplished by co-operation within the

profession. That policy holders enjoy the advantage of a substantial discount is shown by the fact that since the agency started £6,500 has been allowed to the insured by way of direct benefit, while at the same time they have the satisfaction of knowing that by insuring through this professional agency they confer indirectly substantial financial aid on the funds of medical charities. The amount the agency is able to distribute annually steadily increases as the number of individual members of the profession who insure through it increases. Down to the end of 1916 it had distributed £2,405; at the end of 1917 the amount had risen to £3,405. The amounts paid over in 1917 were to the Royal Medical Benevolent Fund, £300; Royal Medical Benevolent Fund Guild, £200; Epsom College Benevolent Fund, £200; Royal Medical Benevolent Fund Society of Ireland, £40; St. Anne's School for Girls, £50. The total of £1,000 in 1917 is made up by a contribution of 200 guineas to the War Emergency Fund of the Royal Medical Benevolent Fund. Full particulars will be supplied to those interested if they will communicate with the Secretary of the Medical Insurance Agency, 429, Strand, London, W.C.2.

TRENCH FEVER.

THE etiology of trench fever is still obscure, but there is no doubt that it is of an infective nature and that the infection can be transmitted from one person to another. Inquiries into its nature were instituted a couple of years ago; they are still in progress, and it is recognized that it may be imported into this country. The most authoritative paper on the disease is that published in this JOURNAL on February 12th, 1916 (vol. i, p. 225) by McNee, Renshaw, and Brunt. They showed that it can be transmitted from one person to another by whole blood, whether injected intravenously or intramuscularly, but as to how the disease is transmitted in nature there is as yet no definite evidence. The facts seem to point to the conclusion either that it is contagious from man to man, or, what seems more likely, is carried by some common fly or parasite; there is considerable reason for incriminating the louse. Two clinical types of the disease are distinguished, the one a short fever of about a week's duration, followed frequently after a few days by a short single relapse, and the other a longer illness characterized specially by the number, sharpness, and periodicity of the relapses, as is well shown in some of the charts illustrating the paper to which we have referred. In both forms the onset is sudden, sometimes extremely abrupt. The only constant symptoms are headache, especially behind the eyes, followed soon by pain in the legs (trench shins) and in the small of the back. It is practically certain that the two clinical forms are due to the same infection. The incubation period varied from six days in one of the experimental transmissions reported in the paper to twenty-two days. The virus would appear to be contained within the blood corpuscles themselves, whether leucocytes or red cells. The diagnosis is difficult, and at first the cases were considered to be influenza. Trench fever is to be distinguished from influenza mainly by the character of the temperature chart, but also by the bone pain, which is commonly present in the shins but occasionally occurs in other bones, and by the general absence of any catarrhal affection of the air passages. There is some reason to suspect that this disease is the sweating sickness of the old writers, which broke out among the armies in Flanders at the beginning of the eighteenth century. There is strong evidence that the disease was imported into the armies at or near Salonica by troops coming from France, and it is thought possible that the infection may reach this country, or, indeed, that cases may have already occurred among persons brought into close contact with soldiers returned. We, in fact, published two short notes on February 17th, 1917, pp. 221, 222, by Captain R. D. MacGregor, I.M.S., and Captain Jeffrey

Ramsay, R.A.M.C.(T.), in which they described cases they considered to be trench fever, occurring in one instance in a private R.A.M.C., and in others in men from a camp in the north of England. If any of our readers have come across cases which, while presenting a general resemblance to influenza, differ from it in the respects mentioned, brief records will be useful to the inquiry now in progress; they may be sent to Surgeon-General Sir David Bruce, C.B., F.R.S., Chairman, Trench Fever Committee of the War Office, at the Royal Army Medical College, Grosvenor Road, London, S.W.1. The disease might be looked for among the children of soldiers who have been at home on leave from the front.

ADDISON'S DISEASE AND THE WAR.

THE strain of war on the ductless glands has attracted much attention, and hyperthyroidism and later overactivity of all the endocrine glands have been described. As a late result of extreme hypertrophy atrophy is recognized, and clinically Graves's disease may be succeeded by myxoedema; possibly by an analogous process, or perhaps, as F. Ramond and R. François¹ suggest, as the result of overfatigue or of various infective or toxic influences the adrenals falling an easier prey to tuberculosis, Addison's disease is becoming commoner. These authors state that since May, 1917, no fewer than 26 cases of this rare disease have been under their observation. The patients were about 30 years of age, and had been a long time at the front, and therefore much exposed to stress and emotions exciting the adrenals to overactivity. Among the 26 cases 12 were regarded as fully developed cases and 14 as *fruste* or incomplete cases, four of the latter showed hyperthyroidism, and, though the authors would not agree to the view that this diagnosis is sufficient, it therefore appears advisable to exclude them. But even so, 22 cases of Addison's disease in six months is an unheard of experience. A remarkable feature about Addison's disease in war is stated to be that the arterial blood pressure is well maintained until near the fatal termination. All the cases except the four it is proposed to exclude went downhill.

THE WORK OF THE MEDICAL RESEARCH COMMITTEE.

WE have announced the publication of the third annual report of the Medical Research Committee, and have referred on more than one occasion to some of the facts it contains, and may now note some other points. The Mount Vernon building at Hampstead, acquired to serve as the home of the Central Research Institute, was lent by the Committee in 1914 to the War Office for hospital purposes. Early in 1916 it was set aside for the investigation and treatment of cardiac disorders in soldiers. In particular, research was carried out under the direction of Dr. Thomas Lewis into the condition known for military purposes as "D.A.H." (disordered action of the heart), and a memorandum on this subject by Dr. Lewis and his colleagues was published in the *JOURNAL* of September 23rd, 1916. In February last the results of investigations up to that date were summarized in a special report issued by the Committee; the purpose of this report, as we pointed out at the time, was to make available without delay such information upon the pathology and symptomatology of D.A.H., and the best methods of dealing with the cases, as might be of value to the services, and in the selection and training of recruits. During September last the work of the hospital was removed by the War Office from Hampstead, and established at Colchester upon a larger scale. The Mount Vernon buildings and grounds have now been assigned for the use of the Air Board as a hospital for officers of the Royal Flying Corps and the Royal Naval Air Service, and for the study and treatment of the special disabilities due to flying. The report gives

brief accounts of the work of the five departments of the Central Research Institute—bacteriology, biochemistry and pharmacology, applied physiology, statistics, and clinical research. Of the schemes framed by the Committee before the war, some only have been continued in whole or in part. The difficulty in replacing laboratory workers and attendants absent on military service has entailed much laborious routine work even of a menial kind upon the scientific men remaining. Nevertheless, progress has been made with certain grouped researches, including those into the pathology of rickets, and into certain aspects of tuberculosis. Of the other peace-time researches which have been maintained may be mentioned inquiries into the hygienic relations of milk carried out at Birmingham and Reading. But, generally speaking, the main resources of each of the scientific departments of the Central Research Institute have been devoted to special war work. An account is given of the large amount of work undertaken by the Committee in the collection and classification of army medical statistics. The extent of the undertaking may be gathered from the fact that the clerical staff employed upon this task at the British Museum now numbers more than 100. In a memorandum submitted to the Army Council in December, 1916, the Committee proposed that the War Office should bear the actual cost of the routine clerical work, while the Committee should still supply the staff and other resources of its statistical department; this proposal was adopted as from January 1st last. The memorandum pointed out that the card index being compiled by the Committee will have a national importance beyond its military and medical value, since it will provide assistance of a kind not otherwise obtainable for the proper settlement of claims for pensions or allowances. The vast series of records now being collected, classified, and stored in an accessible form will constitute the basis of the statistical handling of the medical history of the war, both for military and scientific purposes; and it will further provide a permanent national register of persons wounded, injured, or ill as a result of military employment during the war. But the value of the work for both purposes is, of course, entirely dependent upon the completeness and accuracy with which the documents concerning patients are compiled in military hospitals. Whilst on this subject, the Committee hints that the records of many home military hospitals leave much to be desired. The system in France has, however, been reorganized with better results, and the index card of the Medical Research Committee, together with the new army field medical card, represent a great advance in the direction of simplification and accessibility of clinical facts.

VOLTAIRE AND MEDICINE.

SOME books never become antiquated or their message stale and commonplace; but their authors are most exceptional, for learning, logic, and clear sight into the future—not very common properties even alone, and rare indeed in combination—are hardly enough to ensure immortality without some attraction such as wit or style. There are few better examples of such an immortal than Voltaire, whose relation to medicine has been appreciatively sketched by Dr. Pearce Bailey¹ of New York. Like other branches of science, medicine owes much to Voltaire's advocacy of *fréedom* from the oppression of fanaticism, tradition, and pretence; he was a sworn enemy of quackery, and certainly did not underestimate its prevalence when he said: "Molière made no mistake in ridiculing physicians, for, for a long time, out of every hundred doctors ninety were quacks." But in spite of its contemporary sterility, he was a loyal defender of medicine and its worthy followers, and continued: "It is just as true that a good doctor can often save life and limb. Men who pass their lives restoring

¹ F. Ramond and R. François, *Bull. et mém. Soc. Méd. des Hôp. de Paris*, 1917, 3^e sér. xli, 1001-1003.

¹ P. Bailey: *Annals of Medical History*, New York, 1917, i, 56-72.

health to others would be superior to all the great ones of the earth, and would resemble divinity." He sent charming verses to J. B. Silva, "who in mastering death has like a god behaved," and to A. M. Tronchin, who did so much to introduce inoculation against small-pox into France. Voltaire vigorously advocated this prophylactic measure, and, when it was opposed and the Paris parliament referred the question of its value to the faculties of theology and medicine, wrote: "You gentlemen, who are the best theologians and the best physicians in Europe, should issue an injunction against small-pox, just as you have against Aristotle's categories, the circulation of the blood, emetics, and quinine." He was much interested in syphilis, or the grand-pox as he called it, distinguished it from leprosy, gave reasons still used at the present time for believing that it came from America, and urged the need for a whole-hearted crusade to stamp out this enemy of all humanity. Thus, much of what he wrote on medical subjects applies to the present day; he anticipated the prophetic teaching that made Pinel immortal as the saviour of the insane, and urged sanitary reforms in the overcrowded Hôtel-Dieu in Paris. Although medical subjects form a comparatively small portion of his extensive works, he unerringly picked out the truth from the conflicting medical systems of his day, and had an accurate knowledge of its scope and terms.

COLD AFFUSION IN FEVER.

SOME time ago Mr. George Alexander, of Cardiff, kindly sent us a copy of a letter by William Salmon, a surgeon of Cowbridge, published in the *Cambrian* of September 20th, 1817. The writer states that as the beneficial effects of the external application of cold water in typhus fever were little known in that part of the country, he thought it would be useful to give publicity to a case in which he employed it successfully. On September 5th he was called to a labourer in the sixth day of the illness, whose symptoms were most alarming. The man had been delirious throughout the preceding night, and at times was so unmanageable that it required two men to keep him in bed. The pulse was 120 to 130, the tongue was parched, dry, and covered with a brown crust, the skin hot and dry, the eyes wild and inflamed, the hands constantly in motion picking the bed-clothes and other things about him; he muttered and talked incoherently to himself. Mr. Salmon, determining to try cold affusion, had him placed upon a stool supported by two men. A third stood on a chair behind him and poured a large pan of cold water fresh from the well over his head and body. He was then wiped dry and immediately put back into bed. In less than ten minutes he became perfectly tranquil, his pulse fell to under 90, he answered correctly every question put to him, and the delirium and other unfavourable symptoms left him. The next morning it was found he had passed a good night, with a gentle perspiration during the whole of it; from that time the fever gradually abated, and at the date of writing he had quite recovered. We give the principal points in Mr. Salmon's letter, as our correspondent states that he sent it at the suggestion of Lieutenant-Colonel Rhys Griffiths, R.A.M.C., of Cardiff, and it is interesting to find such a letter in a lay paper a hundred years ago, but cold affusion was, even in 1817, no new thing. James Currie, in his *Medical Reports*, published in 1797, says¹ that by the judicious application of this treatment fever was generally arrested in its onset or mitigated in its progress and finally subdued. Currie made no claim to be the originator of the method. As early as 1768 it was introduced in the West Indies by Dr. William Wright, of Edinburgh, whose account of his practice was made public in the *London Medical*

Journal for 1786. The use of cold water in febrile affections was familiar to the ancients. Hippocrates recommended it in arthritis and dysentery. Antonius Musa, a young Greek physician, saved the life of Augustus when he was suffering from hepatitis by means of cold baths and drinks. He probably got the idea from his master Asclepiades, who was called the giver of cold water. To Currie, however, are due the first specific directions for the safe application of cold affusion. He was also the first medical writer who insisted on the necessity of thermometric observations in febrile diseases as a guide in their treatment, and under his direction small mercurial thermometers with a movable scale were made for clinical use. No notice was taken of Wright's paper for several years, till at the end of the eighteenth century Gregory of Edinburgh tried cold sponging in fevers with great success. The practice, says Wright, in a letter to Currie written in 1799, was talked of among the students, but adopted by very few of the Edinburgh physicians. It came gradually into use in the United Kingdom, except in London, where for the most part it was received with indifference or disapproval. In the services it found special favour. Currie says that on the whole his endeavours had been successful, and he had encountered little opposition. The water treatment was successfully extended by him to scarlet fever, measles, eruptive small-pox, and many complaints of childhood. He used tepid water when the debility seemed too great to warrant the application of cold. He also found that the shock of the cold affusion was frequently a powerful remedy in tetanus and other convulsive disorders. Currie was a son of the manse, and was born at Kirkpatrick Fleming on May 31st, 1756. He studied medicine at Edinburgh, where he attracted the attention of Cullen, and established himself at Liverpool, where he became very prominent not only as a physician but as a citizen and a political writer. He also gained a considerable literary reputation as the biographer of Robert Burns.

VENEREAL DISEASES.

THE second report of the National Council for Combating Venereal Diseases¹ shows that between June, 1916, and June, 1917, the educational campaign undertaken by the Council made considerable progress, not only in Great Britain, but also in the overseas dominions. A strong branch has been formed in South Africa, and communications have been opened with Canada, Australia, and New Zealand, with the object of forming similar organizations in those dominions. In England the educational work has consisted in giving publicity to the facilities for free diagnosis and treatment in those areas where such provision is made, and in stirring up backward localities to establish facilities. When the Local Government Board informs the Council that a treatment scheme has been approved in any area, the machinery of the Council is placed at the disposal of the local authorities for the purpose of organizing a local educational campaign through the medium of a branch. Such branches have been established in fourteen towns during the year; in Cambridge there is a county committee and there are branches in Ulster and Glasgow. It is noted with regret that a certain number of counties and county boroughs have not yet taken any steps towards providing educational facilities. The action taken by the British Medical Association and the Council to secure legislation making it a penal offence for any person other than a qualified medical practitioner to treat venereal disease has been successful. At the request of the Director-General of the Army Medical Service many lectures were given to soldiers under the auspices of the Council, but much more could be done in this direction if more medical men were available. With regard to the subject of artificial prophylaxis, which was

¹ *Memoir of the Life, Writings, and Correspondence of James Currie, M.D., F.R.S., of Liverpool*. Edited by his son, William Wallace Currie. London, 1831. Vol. i, p. 213 et seq.

¹ London: The National Council for Combating Venereal Diseases, Avenue Chambers, Southampton Row, W.C.1. Price 6d.

brought into prominence through correspondence in the *BRITISH MEDICAL JOURNAL* and elsewhere, it was felt that the Council should define its attitude. The Executive Committee, after considerable discussion, decided that it was undesirable for the Council to take steps in the direction of a campaign in favour of prophylactic teaching. Subsequently the committee passed the two following resolutions expressing the attitude of the majority of those present: (1) That a distinction can be drawn between prophylaxis and early treatment; (2) that at present at least it would be unwise for the National Council to go beyond the proposals of the Royal Commission. The report contains a full account of the second annual meeting held on June 13th, 1917, together with reports of branches and the text of the Venereal Disease Act, 1917.

NATIONAL INSURANCE AND ATTENDANCE ON DEPENDANTS.

THERE is expectation that before this issue is printed the National Health Insurance Amendment Bill will have been passed through the House of Commons, and no great changes in it are likely to be made in the House of Lords. In these circumstances there is every probability that the measure will be placed on the Statute Book before the session is wound up at the end of January or in February. The idea seems to have got about in the Lobby that the Insurance Commissioners contemplated seeking fresh powers under the bill, so as to enable them to embark upon a scheme for medical benefit for the dependants of insured persons. Such a proposal would have gone far beyond what is submitted as an amending measure and nothing more, that is, a measure to vary and improve existing arrangements. It is within common knowledge, however, that an extension of National Insurance on the lines mentioned has its advocates, especially amongst the Insurance Committees. The medical profession would therefore be wise to recognize that some effort may be made to bring forward a project of the kind in the coming session. Assuming that the informal conferences that are understood to be taking place in regard to the framing of a constitution for a Health Ministry do not mature in time for a bill for this purpose to be submitted next session, it is almost certain that Mr. Hayes Fisher will introduce a bill to give the English Local Government Board powers somewhat akin to those already possessed by the Scottish and Irish Local Government Boards in regard to child welfare. These would not, however, be quite the same; the conditions differ. But it may happen that this measure, having for its object fresh provisions, may prove larger in its scope than is at present suggested. Anyhow the matter is one that should be watched.

DISABLED COMBATANTS AND THE FUTURE OF THE RACE.

THE scale of pensions awarded to disabled soldiers and sailors has an important bearing from the eugenic point of view. The permanent men in the navy and army are a picked body, and, though there are many exceptions, the men serving for the period of hostilities were, as a rule, in better physical health than those who remained at home; and, further, the combatants, especially the volunteers, are endowed with mental qualities that should be perpetuated in future generations. There is, therefore, something to be said in favour of so providing for the injured combatant that he should be able to have children. Pensions or compensation are allotted to all disabled men, and, in addition, certain small allowances may be made for each child born of a marriage contracted before the man's discharge. But to the disabled bachelor combatant, as Major Leonard Darwin¹ points out, the State in effect says: "Marry or not, just as you please, but

mind you don't have any children." On racial grounds the statutory commission should have powers to make special grants for educational purposes in order to enable post-war children to be brought up more nearly as they would have been had the father not been injured. Allowances of this kind would necessarily have to be guarded both from improper use and from the risk of propagating hereditary disease, and on the last point medical men would give valuable advice. Wounded men's children would receive this additional assistance without question, but the children of men who enlisted with constitutional defects or were invalided for venereal or tuberculous infection would be on a different footing. It would be advisable to introduce into the official "medical reports on invalided soldiers" some question as to the existence of any family or personal factor which could bear on the disability necessitating discharge. A remarkable example of anomalies of pensions in America was quoted in the discussion of the paper by Mr. W. Howard Hazel, who stated that in 1902 there were still drawing pensions twelve widows of men who fought with George Washington; and, as was noted in our columns in an account of the United States pension system published last year, pensions were still being paid in 1915 to 134 widows in respect of the war of 1812. The explanation offered is not that the longevity of American women is unusual, but that old soldiers of 80 were often married by young women for the sake of the pension they would receive so long as they did not remarry.

THE PSYCHICAL FACTOR IN THERAPEUTICS.

PARAPHRASING Boileau it may be said that:

Tel donne à pleines mains qui ne guérit personne
La manière de donner vaut mieux que ce qu'on donne.

The "manière de donner" counts for a good deal in the treatment of disease. The fact is, all methods of treatment, unless it be the 5 grains of calomel every Saturday night, if they are to prove successful, must comprise a certain dose of "suggestion," a factor the importance of which is perhaps not always sufficiently present in the mind of the prescriber. The more protracted the course of treatment the more imperative the necessity for the maintenance of hopeful expectancy, and this can only be achieved by varying the nature of the drug or the manner of its exhibition at regular intervals. In treating a patient suffering from such a disease as chronic pulmonary tuberculosis, for instance, it is often advisable to vary the prescription every three weeks or so. This presents no difficulty, because remineralizing agents, for example, are legion, and all we have to do is to select an alternative. During one period special attention can be directed to the pulmonary symptoms; during the next period we may seek to improve the general health without, on that account, neglecting the air passages; while during a third period our efforts may be concentrated on diet and digestion. Then, too, the method of administration should be changed from time to time. The exhibition of drugs by the mouth can be discarded in favour of hypodermic, intramuscular, or even intravenous medication, a plan which has the incontestable advantage of giving the stomach rest. Preparations of malt can be alternated with cod liver oil, and the latter can be prescribed in half a dozen different forms. By "ringing the changes" in this way it is possible, without any interruption of the course of treatment, to keep alive in the patient's bosom the spark of hope which alone will continue to render him amenable to the "suggestion" that emanates from every medical adviser who knows his business. This plan of campaign is equally applicable in chronic diseases such as diabetes and cardio-vascular affections: it is, indeed, of special value in the latter class of malady owing to the physical and mental depression with which they are associated. As a matter of fact, the cardio-vascular subject takes a lot of bucking up in contrast with the pulmonary

¹ *The Eugenics Review*, 1917, ix, 1-17.

patient, who only asks to be allowed to practise self-deceit, and is grateful to his doctor for providing the means.

THYMIC DWARFISM.

THE insight recently acquired into the significance of the ductless glands in relation to growth has given a new impetus to the study of dwarfism. Dr. K. H. Krabbe¹ has recently published a case of dwarfism, which he traces to some disorder of the thymus. The patient was a girl born in 1899. When she was admitted to hospital in 1914 myxoedema was diagnosed; then she was demonstrated as a case of pluriglandular insufficiency manifested as progeria. Later this diagnosis was questioned, as the progeria of Hastings Gifford—only a few cases of which have been described—is characterized by senility and a debility not noticeable in this case. There was no family history of interest. She weighed 3.75 kilos at birth, and was breast-fed for the first year. The first tooth appeared in the ninth month, and she began to walk at the age of eighteen months. At this age she was bow-legged, but in spite of this she walked well at the age of 2. Mentally she was, if anything, forward; she attended school at the age of 6. At the age of 15 her height was only 111 cm., and menstruation had not begun. Relatively to the legs, the trunk was long, but as a whole the body looked small and stunted. Her expression was lively and intelligent, and there was no sign of myxoedema in the face, which resembled that of a woman of 40. The hair of the scalp was very scanty, and consisted of fine, silky tufts of a light yellow colour. There was no hair in the axillae or on the pubes. The skin of the hands and arms was somewhat dry and desquamating, whereas there was excessive perspiration from the axillae. Pigmented patches the size of a lentil were scattered over the scalp. The thyroid gland was not enlarged, and the x-ray examination of the cranium and teeth showed no abnormality. The reproductive organs were infantile in September, 1914, but by February, 1916, they had grown appreciably, ovarian extract having been given in the interval for nearly three months. She was also treated with suprarenin and thyroïdin for a short time without any noteworthy effects. Wassermann's reaction was negative, and there was no sign of tetany. After stating that dwarfism and rickets are a constant sequel to thymectomy in various animals, the author points out other features common to these animals and his patient. Deficient growth of hair is, he says, one such feature. His diagnosis of thymic dwarfism is further strengthened by a careful investigation and elimination of the other known causes of dwarfism.

CANCER AND ENVIRONMENT IN ANCIENT GREECE.

Among the interesting articles in *Science Progress* for October there is a short scholarly essay by Mr. Harold P. Cooke of Durham University, entitled "Some historical reflections on cancer."² It is preceded by a brilliant and caustic criticism of English as she is wrote by a classical schoolmaster, from Dr. Charles Mercier's pen; both of these essays should be read, but not in the order in which they come, otherwise the reader may be led to speculate, perhaps perversely, as to the remarkable altruism of the author of the sentence: "While I cannot unfortunately pretend to more intimate knowledge of the ills of the flesh than the generality of men are heirs to, I desire in these papers to put forward some reflections on cancer." (The italic is ours.) Starting with the assurance from the Regius Professor of Physic at Cambridge that the Greek physicians of the period were familiar with cancer, Mr. Cooke tests by an analysis of Plato's works two popular British superstitions—the causation of cancer by meat,

and its special prevalence in the most thickly-wooded districts. These may perhaps not require very serious consideration, but this does not detract from the interesting way in which he arrives at the conclusion that cancer was familiar in a country very largely denuded of trees, among a people mainly subsisting on what may be called a vegetarian diet, and that the later the date assigned to the relevant Hippocratic writings, the more pronounced were the deforestation and consequent shortage of pasture and herds.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE report of the meeting of the Committee of Belgian Doctors' and Pharmacists' Relief Fund, published last week, p. 814, will have prepared our readers for the information that the Committee is about to issue an appeal for contributions to enable the work to be carried on for another year. During the whole of 1917 the Committee has been sending £800 a month to the Medical and Pharmaceutical Committee in Belgium, and it now has less than £800 in hand. The treasurer's account for the five months ending November 30th, together with the certificate of the chartered accountants and auditors, was published last week. We hope to publish the appeal in our next issue, and will only now state that the treasurer is Dr. H. A. Des Voeux, 14, Buckingham Gate, London, S.W.1.

THE HALF-YEARLY INDEXES FOR 1917.

THE usual half-yearly indexes to the JOURNAL, to the EPITOME, and to the SUPPLEMENT, have been prepared, and will be printed. They will, however, not be issued with all copies of the JOURNAL. Any member or subscriber who desires to have one or all three of the indexes can obtain a copy of what he wants post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2. Such copies will be dispatched shortly after the middle of January.

Medical Notes in Parliament.

Service Before Qualification and Seniority After.—In the course of a short debate on December 10th on a naval supplementary estimate for officers and men (an addition not exceeding 50,000) General McCalmont raised a point as to young officers sent home to complete their surgical training. He was told that when they were subsequently offered commissions in the Royal Army Medical Corps they were refused any previous seniority. When a man had served two years in France it was rather ridiculous that he should go out again just as if he were an entirely new officer with no service whatever. He trusted he was correctly informed that the navy did give to such young men, whether they had been in the army or navy, some claim to their previous seniority. Dr. Macnamara took it that General McCalmont's question was whether certain probationers of the Royal Naval Volunteer Reserve who had been demobilized and went back to enter as temporary surgeons got seniority in respect of the probationary service. This time discount as part of the qualifying period they were bound to go through. He added that if a question were put on the paper he would give the precise facts.

Whisky in Hospitals.—On December 11th Mr. Clynes (Parliamentary Secretary to the Minister for Food) said that arrangements had been made for additional supplies of whisky to be provided for hospital patients where the application was accompanied by a medical certificate, but he feared that it would not be practicable to extend this concession to invalids generally.

Enteric Fever in the Army and Navy.—Mr. Chancellor asked how many of the 893 cases of enteric fever referred to in the Local Government Board's Report for 1916-17 were naval; how many of these were inoculated; and how many fatal. Dr. Macnamara replied that the number of cases of enteric fever in the navy in this country during the period referred to—that is, April 1st, 1916, to March 31st, 1917—was 40. One of the patients had been inoculated and survived; 9 cases proved fatal. In reply to a similar question in regard to military cases, Mr. Macpherson said that the information was not available.

¹ *Ugeskrift for Læger*, August 9th, 1917.

² *Science Progress*, 1917, vol. xii, pp. 324-327. Edited by Sir Ronald Ross, K.C.B., F.R.S. London: John Murray.

THE WAR.

GENERAL PRINCIPLES OF THE TREATMENT OF WOUNDS OF WAR.

AN interallied surgical conference attended by delegates from England, Belgium, France, Italy, Japan, Portugal, and Serbia, was held in Paris in March and May, 1917, and subsequent conferences have been attended by delegates from the United States and Russia. The conclusions adopted at the earlier conference were published in French last April, and a translation¹ of those adopted both in March and May has now been published. The first paragraph lays it down that the organization of the medical service should provide for continuity in the treatment of the wounded. The work of the conferences has been largely directed towards the detailed application of this general principle.

On certain points the views have advanced to some extent since the spring, but, speaking generally, the doctrines advocated are identical with those now and for long followed in the British armies in the field, and we propose to note only a few points.

It is advised that patients should be transferred as quickly as possible to casualty clearing stations situated between 11,000 and 22,000 yards (6 to 12 miles) from the front, special operating stations being pushed further forward when required, the surgical attention they receive meanwhile being reduced to a minimum.

The primary closure of wounds is held to be justifiable only when not more than eight hours have elapsed since their infliction, and when circumstances allow of the patient remaining under the observation of the same surgeon for as many as fifteen days. Secondary closure may be performed when clinical sterility of the wound appears to be reached. This should be judged by examination of the discharges in a well equipped bacteriological laboratory. Such a laboratory should be attached to every surgical unit of importance, and the surgeon should do his work in association with the officer in charge of it.

Stress is laid on the necessity of all surgeons having at hand means of discovering and accurately localizing foreign bodies. In front line hospitals x-ray screening methods, and in base hospitals radiograph methods, are considered the most suitable for use.

The exact character of the soil of the locality in which the fighting is taking place is mentioned as having a considerable influence on the frequency with which cases of gas gangrene occur, and the risks of its actual development are shown to diminish in direct proportion to the promptitude and efficiency with which surgical measures are carried out.

The teaching in regard to these measures is in general accordance with current practice, though it does not appear to include an allusion to the important fact that gas gangrene may often be arrested by tracking up an affected muscle right to its insertion, and removing it in its entirety. The paper in which this important circumstance was first made public, by Cuthbert Wallace and his co-workers, appeared in the *BRITISH MEDICAL JOURNAL* last June (p. 725). In cases of gas gangrene for which amputation is deemed imperative, the flush method is advised.

The prevention and treatment of traumatic shock is discussed in considerable detail, much stress being laid on precise observation of the blood pressure. Intravenous injections are advised, but the one mentioned as the best to use (Locke's liquid) is more complicated in its composition than that which recent investigations on our own side in France, and by the Shock Committee in London, appear to have shown to be necessary. In severe cases of true shock without haemorrhage any long operation that may be required must be deferred until the patient has to some extent recovered. Operation should not, however, be deferred when the only procedure in view is a rapid amputation.

Apart from fulminant gas gangrene, the indications for primary amputation are mainly pulverization, crushing, or partial avulsion of a limb, and, especially, rupture of its main blood vessels. The chief indication for secondary

amputations is massive gangrene, either ischaemic or infective, and for late amputations chronic infection and cachexia which does not respond to any form of treatment. In primary amputations the wound should be left widely open, and its situation should correspond as closely as possible with the site of the fracture, the soft parts being simply divided and the bone trimmed or rounded off if necessary. In late amputations the surgeon must be guided by prosthetic considerations, which are considered in detail.

In the section on treatment of fractures stress is laid on the importance from the very beginning of immobilization, to be followed eventually by immobilization *plus* mechanical extension. The best splint is stated to be the Thomas, and all the splints recommended conform to the Thomas principle. Definite immobilization is necessary; the apparatus chosen should allow extension, abduction, and flexion of the limb (splints of the Thomas type; suspension apparatus, such as Sinclair's or the Anglo-American; the apparatus of Delbet or Alquier). Delbet's apparatus allows the patient to walk at a very early date. Nothing is said as to the difficulty of treating compound fractures of the thigh in the neighbourhood of the tuberosity, by any existing splint.

The combination of circumstances which makes it legitimate to attempt the primary closure of a wound leading down to a fractured bone is shown to be rare. Treatment of joints and of arterial injuries is also considered, and it is clear that in regard to the first subject opinion was not unanimous.

Separate sections are devoted to injuries of the nerves, the spinal cord, and wounds of the brain. In head operations local anaesthesia is advised. Cases which have undergone trephining should not be moved under three weeks. Cases in which the dura mater is intact should be left alone. Attempts to remove very small projectiles difficult of access, or large projectiles lying at the base of the skull, or in the ventricles, or in the opposite hemisphere, are not advised as part of any primary operation. The debated question of the treatment of sinus injuries is not mentioned.

With certain exceptions—that is, when the injury is definitely limited to liver or kidney, and there are no symptoms of severe haemorrhage, or when the patient has not come under treatment within thirty-six hours after he has been wounded—laparotomy should be systematically practised.

The section on chest wounds indicates that the surgeons present at this conference were not disposed strongly to favour primary surgical interference in the majority of cases.

The record also includes a note on the desirability of further search being made for antiserums against gas gangrene organisms. Apart from surgical cleansing, the only wound treatments mentioned are Carrel-Dakin solution and the preparation advised by Morison (bipp). The value of both is indicated.

GASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN J. A. EDMOND, R.A.M.C.

Captain John Adamson Edmond, R.A.M.C., was killed in action on December 1st. He was educated at Guy's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1910, and graduated M.B., B.S. Lond. in 1913. After acting as house-surgeon, obstetric resident, and resident medical officer of Bright ward at Guy's, he went into practice in partnership at Catford, also holding the appointment of chief clinical assistant in the ear and throat department at Guy's. He took a temporary commission as lieutenant in the R.A.M.C. in the middle of 1916, and was promoted to captain after a year's service.

CAPTAIN J. N. GRIFFITHS, R.A.M.C.

Captain John Neville Griffiths, R.A.M.C. was killed in action on November 30th, aged 36. He was the son of the late G. Neville Griffiths of Sydney, and of Woorcoowolgen, Casino, Australia, and was educated at Sydney University, where he graduated M.B. in 1905 and Ch.M. in 1911. After filling the posts of resident medical officer of the

¹ H.M. Stationery Office. Price 2d. net.

Women's Hospital, Sydney, and of junior resident medical officer of the public hospital at Perth, Western Australia, he came to England, took the D.P.H. of the London Colleges in 1910, and was appointed honorary assistant physician to the Chelsea Tuberculin Dispensary. He took a temporary commission as lieutenant in the R.A.M.C. on December 1st, 1914, and was promoted to captain after a year's service.

CAPTAIN J. M. MATHESON, R.A.M.C.

Captain James Macdonald Matheson, R.A.M.C., was killed in action on November 30th, aged 29. He was the youngest son of the late William James Matheson of Newton, Novar, Ross-shire, and was educated at the Edinburgh Institution and at Glasgow University, where he graduated M.B. and Ch.B. in 1916. He took a temporary commission as lieutenant in the R.A.M.C. after qualifying, and was promoted to captain after a year's service. He had served for six months in the navy, also in Mesopotamia and in France, and was attached to the Middlesex Regiment when killed.

CAPTAIN C. H. ROBSON, R.A.M.C.

Captain Charles Henry Robson, R.A.M.C., killed in action on December 2nd, was the eldest son of Mr. Alfred Robson of Whitley Bay. He was educated at Newcastle-upon-Tyne and graduated M.B., B.S.Durb. in 1913. He took a commission in the R.A.M.C. soon after the outbreak of war, and saw service in Gallipoli from June, 1915, to August, 1916, and in France from August, 1916, until his death. He leaves a widow.

Died in Service.

CAPTAIN W. J. CORRIDON, I.S.M.D.

Captain William James Corridon, Indian Subordinate Medical Department, was reported as having died on service (probably in Mesopotamia) in the casualty list published on December 14th. He was born on May 29th, 1868, entered the I.S.M.D. from the Calcutta Medical College in 1886, was promoted to the rank of lieutenant and grade of senior assistant surgeon on November 22nd, 1911, and had attained the rank of captain during the war. Before the war began he was in civil employment in the United Provinces, where he held the post of deputy superintendent of the Agra lunatic asylum.

Wounded.

Captain T. F. Craig, R.A.M.C. (temporary).

Captain C. O'Malley, R.A.M.C. (temporary).

Captain W. Robertson, R.A.M.C. (T.F.).

Captain J. M. Robins, R.A.M.C. (T.F.).

Captain A. Stewart, R.A.M.C. (temporary).

Lieutenant R. A. Hosegood, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Harker, George Cuthbert Warburton, Captain London Regiment, younger son of Dr. T. Harker of Bournemouth, late of Sydenham, died of wounds in hospital abroad on December 1st, aged 27. He got his first commission on April 9th, 1915, as second lieutenant in the 12th (County of London) Territorial Battalion of the London Regiment (the Rangers).

Morse, Christopher, Lieutenant Royal Engineers, youngest son of Mr. Thomas H. Morse, F.R.C.S., of Deal, killed December 7th, aged 25. He was born at Norwich in 1892 and educated at Norwich Grammar School, at Haileybury, and at Pembroke College, Cambridge. He got his first commission in the Buffs on September 14th, 1914, and transferred to a tunnelling company of the Royal Engineers in 1915. He had been recommended for the Military Cross.

Naylor, Eric Lewis, Lieutenant South Staffordshire Regiment, elder son of Major A. T. Naylor, R.A.M.C. (T.F.), of Eltham, S.E., killed December 3rd, aged 19. He was educated at Merchant Taylors' School and at London University, where he was in the O.T.C., got his commission in June, 1915, and went to the front in June, 1916.

Reid, Leslie, Second Lieutenant Dragoon Guards, third son of the late Dr. W. S. Reid of Oakley, Kircudbright, killed recently, aged 20. He was educated at Dunstable Grammar School.

Stewart, Vernon R., Lieutenant Royal Flying Corps, elder son of Dr. J. Stewart of Haslingden, recently killed accidentally while flying. He got his first commission in the Army Service Corps on March 12th, 1915.

Taylor, Ian Cleasby, Second Lieutenant Royal Scots, eldest son of Dr. Cleasby Taylor of Berwick-on-Tweed, killed December 4th, aged 21. He was educated at Watson's College, Edinburgh, and before the war was studying engineering in Armstrong's works, at Newcastle-on-Tyne. Enlisting in the Northern Cyclists at the beginning of the war, he got a commission in 1915, and went to the front in October, 1916.

MEDICAL STUDENT.

Boyd, Gavin Hadow, Second Lieutenant King's Royal Rifles, killed in action on December 2nd, aged 19. He was the only son of Mr. Samuel Boyd of Maybole, and was educated at the Maybole Grammar School and Glasgow University, where he was a second year medical student when he joined up.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

A SPECIAL Supplement to the *London Gazette*, issued on December 17th, contained a list of awards for gallantry and distinguished service in the fields. The acts of gallantry for which the decorations have been awarded will be announced in the *London Gazette* as early as practicable. The list contains the following medical officers who receive the awards indicated:

Bar to the Distinguished Service Order.

Temporary Captain (temporary Lieut.-Colonel) Charles Derwent Pye-Smith, D.S.O., M.C., M.B., F.R.C.S., R.A.M.C. (D.S.O. gazetted August 16th, 1917.)

Distinguished Service Order.

Majors Eric Lloyd Hutchinson and Philip Alan Maplestone, A.A.M.C.

Captain William Henry Collins, A.A.M.C.

Temporary Captain William Howard Lister, M.C., R.A.M.C.

Bar to the Military Cross.

Captains Richard Thompson Caesar, M.C., M.D., R.A.M.C. (M.C. gazetted June 18th, 1917), Cyril Jacobs, M.C., M.B., R.A.M.C.S.R. (M.C. gazetted July 18th, 1917).

Temporary Captains John Maitland Forsyth, M.C., R.A.M.C. (M.C. gazetted September 22nd, 1916), David Henry Russell, M.C., M.D., R.A.M.C. (M.C. gazetted August 16th, 1917), Philip Randal Woodhouse, M.C., M.B., R.A.M.C. (M.C. gazetted May 31st, 1916).

Military Cross.

Temporary Surgeon Richard Glyn Morgan, R.M. Battalion.

Captains: Matthew Thomas Ascough, R.A.M.C.; Hartas Foxton, R.A.M.C.; Reginald Douglas Gawn, M.B., R.A.M.C.; Norman Bell Graham, M.B., R.A.M.C. (S.R.); William Baly Jepson, R.A.M.C. (S.R.), attached Devon Regiment; Frederick William Lumsden, N.Z.M.C.; Duncan Macfadyen, R.A.M.C. (S.R.); John McGhie, N.Z.M.C.; James McKay, M.B., R.A.M.C. (S.R.), attached Bedford Regiment; Hugh Agnew Macmillan, M.B., R.A.M.C.; John Pinder, R.A.M.C.; William Jack Scade, M.B., R.A.M.C., attached Highland Light Infantry; Samuel Llewellyn Serpell, N.Z.M.C.; Charles Nixon Smith, M.B., R.A.M.C.; Walter Leonard Smith, A.A.M.C.; Robert Fowler Walker, M.B., R.A.M.C. (S.R.).

Temporary Captains: Everard Cecil Abraham, M.B., R.A.M.C.; William Robert Addis, M.B., R.A.M.C.; Arthur Cecil Barker Biggs, R.A.M.C., attached Suffolk Regiment; George Alexander Birnie, M.B., R.A.M.C.; Robert Briffault, R.A.M.C., attached York and Lancashire Regiment; George Edwin Chissell, R.A.M.C.; Edward James Clark, M.B., R.A.M.C., attached South Staffordshire Regiment; Frederick Pearson Fisher, M.B., R.A.M.C.; Alistair Gordon Forbes, S.A.M.C.; Charles Leslie Grove Powell, R.A.M.C., attached East Surrey Regiment; William Steadman, R.A.M.C.; Frederick Naylor Stewart, M.D., R.A.M.C.; Norman Charles Talbot, M.B., R.A.M.C.; Henry Currie Watson, M.B., R.A.M.C.

Lieutenants: Robert Hector Baxter, N.Z.M.C.; Arthur Robert Hill, M.B., R.A.M.C. (S.R.), attached Gloucestershire Regiment.

Temporary Lieutenants (temporary Captains): William Leonard Eliot Reynolds, R.A.M.C.; Robert Ievers Sullivan, M.D., R.A.M.C.

Temporary Lieutenants: Charles Herbert Booth, R.A.M.C.; Arthur Philip Draper, M.D., R.A.M.C.; Robert Everard Whitting, M.D., R.A.M.C.

One private each of the R.A.M.C. and A.A.M.C. receive a bar to the Military Medal; 7 non-commissioned officers and 40 privates of the R.A.M.C., 8 N.C.O.'s and 22 privates of the A.A.M.C., 6 N.C.O.'s and 10 privates of the N.Z.M.C., and 1 N.C.O. and 1 private of the S.A.M.C. are awarded the Military Medal for bravery in the field. The Meritorious Medal for gallantry in the performance of military duty, and in recognition of valuable services rendered with the armies in the field has been bestowed upon 9 N.C.O.'s and 1 private of the R.A.M.C. and 1 N.C.O. of the C.A.M.C.

FOREIGN DECORATIONS.

The King has granted unrestricted permission to the following medical officers to wear the decorations indicated conferred upon them by the President of the French Republic.

LEGION D'HONNEUR.

Croix de Commandeur.

Surgeon General Sir Hayward Reader Whitehead, K.C.B., F.R.C.S., A.M.S.

Croix d'Officier.

Colonel Stephen Frazer Clark, M.B., R.A.M.C.
Lieut.-Colonels Francis John Brakenridge, C.M.G., R.A.M.C.
Herbert John Martin Bulist, D.S.O., M.B., R.A.M.C.

Croix de Chevalier.

Captain William Lombard Murphy, R.A.M.C.

Croix de Guerre.

Captain (acting Lieut.-Colonel) Alexander Donald Fraser,
D.S.O., M.C., M.B., R.A.M.C.
Temporary Lieutenant William Erling Ord, M.D., R.A.M.C.

The decoration awarded to Lieut.-Colonel Albert Edouard Le Bel, C.A.M.C., announced in the *London Gazette* of June 2nd, 1917, should read, *Croix d'Officier (Légion d'Honneur)*.

England and Wales.

"SERVICE PATIENTS" IN ASYLUMS.

In a circular dated December 12th, on arrangements for the care of sailors and soldiers disabled by mental disorder, the Local Government Board states that, after consultation with the Ministry of Pensions, the Board of Control has issued instructions for the special classification and treatment of cases of this kind. Where a sailor or soldier is discharged directly to an asylum he will, from the date of his admission, be classed as a private patient, and the cost of his maintenance will be paid by the Ministry of Pensions. It will be the duty of the medical superintendent to take up at once the question of the man's eligibility to be classed as a "Service patient," and if so classed he will receive certain further privileges. Service patients will include all cases in which the malady is attributable to (that is, caused or aggravated by) war service. It will also include non-pensionable cases—that is, those in which the malady is not attributable to military or naval service, subject to the limitations (a) that the arrangement shall not extend beyond the period of the war and twelve months afterwards; and (b) that it shall not be applied to men who before enlistment had been treated in asylums. Where the union or parish to which a sailor or soldier belongs cannot be ascertained, or where a man discharged to the care of his friends becomes worse and requires asylum treatment, or where a man discharged on grounds other than those of mental disorder subsequently becomes insane, a summary reception order will have to be obtained for the man's admission into an asylum. In such cases it will be for the superintendent to take immediate action to secure the patient's classification, if eligible, as a Service patient. The proposal that Service patients should wear a semi-military uniform has been abandoned, but suitable private clothing different from that of pauper patients will be provided, and a distinctive badge will be worn on the jacket. Section 55 of the Lunacy Act, 1890, with regard to the sending of patients "on trial," will apply to these cases, but the period of trial should not exceed one month; during absence on trial a maintenance grant will be made to the patient or to his friends. Service patients will be on the legal footing of private patients, and visiting committees will have the power to discharge them. A Service patient whose discharge has been insisted upon by friends against the advice of the medical superintendent cannot on readmission be again classified as a "Service patient" without reference to the Minister of Pensions. Since the main object of the scheme is to secure the happiness and contentment of the patient and to consult the convenience of his friends, facilities will be given for the transfer of patients to the neighbourhood of their families or friends.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A meeting of the Governors and the Council of the King Edward's Hospital Fund for London was held on December 13th, at St. James's Palace, the Speaker of the House of Commons being in the chair. It was announced that the donor of £35,000, who wished to remain anonymous until that day, was Viscount Astor, and the best thanks of the Council were conveyed to him for his generous contribution to the Fund. Including this donation and a final instalment of more than £25,560 received under the bequest of Isabella Countess of Wilton, the total general receipts for the year, less expenses, amounted to £205,781. Lord

Revelstoke, the honorary treasurer, said that it was only because of such large contributions as these that the Fund was able to face with equanimity so large a distribution as £190,000. Sir William Collins, in making the annual statement on behalf of the League of Mercy, said that the contributions from the League to the Fund had last year been raised to £15,000. Sir William Church presented the report of the Distribution Committee, of which he is chairman. In making their awards, the committee have not lost sight of the principle of helping the hospitals which have maintained or improved their position by their own efforts. While making capital grants, the Committee have continued to discourage during the war appeals to the public in aid of building schemes which are not urgent. The number of hospitals applying for grants was again 107. The grant of £5,000 to extinguish the mortgage debt on Charing Cross Hospital enables that institution to begin the new year free of debt. The Speaker, in moving the adoption of the report and awards, read a message of appreciation and encouragement from the King, whose many visits to London hospitals during the year enabled him to estimate the importance of their services to the navy, the army, and to men disabled during the war, while adequately ministering to the ever-growing demands of the civil population.

CENTRAL MIDWIVES BOARD.

A meeting of the Central Midwives Board was held on December 13th, Sir Francis Champneys presiding. Before proceeding to the business of the day the Chairman moved a resolution expressing great regret at the death of Mr. Edward Parker Young, who had been a member of the Board from its start until the end of last March. Dr. W. E. Fothergill, one of the Board's examiners for the Liverpool and Manchester centre, had forwarded criticisms by the examiners of that centre on certain questions set at recent examinations. The Board, in reply, explained the necessity of retaining the use of technical terms, and of including elementary physiology in its syllabus, but it has taken Dr. Fothergill's representations into consideration, and communicated them to the examiners in question. In reply to a letter from Dr. Barwise, M.O.H. Derbyshire, as to the practice adopted in that county in respect of the suspension of midwives, the Board expressed its hope that an understanding would be reached between the local authority and the midwives as to the mode of disinfection authorized, and that the inspector might be sent, if necessary, as soon as the infection becomes known to the authority. Seven women were removed from the midwives' roll on their own application.

RE-EDUCATION OF THE DISABLED.

At a meeting of the Royal Society of Arts on December 12th, under the chairmanship of Sir Alfred Keogh, G.C.B., Lord Charnwood read a paper on technical training for disabled soldiers and sailors. He drew attention to the hopeful fact that among this mass of damaged men there were many cases of latent capacity and character, which, when discovered, developed, and directed, would greatly enrich the life of the community. Down to the end of last September the total number of officers and men discharged from the navy and army as unfit for further service was, he said, about 225,000. While the number of palpably grievous injuries was well within the compass of the community to deal with adequately, there was a constantly growing number of men more or less enfeebled by injuries of very various kinds and uncertain extent, some of whom would certainly improve, while others would get unexpectedly worse. After explaining the administrative system for dealing with the disabled and outlining the policy adopted with regard to training, he said that the real discouragement lay in the fact that few of the great mass of working men discharged from the army wished to be trained. At the present time disabled men, induced by wages which four years ago would have seemed very high, were to a great extent remaining unskilled if they were unskilled before, or were even passing downwards from the skilled to the unskilled ranks. Contraction of industry would come with the end of the war, and some millions of undischarged and unpensioned soldiers would be wanting work. The weight of industrial depression must fall most heavily on the unskilled men. Lord

Charnwood sketched the chief schemes now in operation, or well advanced in preparation, for supplying this national need, beginning with the cases of the blind and deaf, and dwelling particularly on the limbless cases. The primary work of military orthopaedic hospitals was treatment not training, and a good many men discharged from them would benefit greatly by continuance of orthopaedic treatment as out-patients, while others were sure to relapse, in which event they would benefit by a further stay in hospital. Lord Charnwood asked his hearers to help efforts in their own districts to create orthopaedic annexes to general hospitals and to develop industrial classes at the local technical schools in connexion with the curative processes of the hospitals; the training of men at hospitals for the limbless, for instance, was in most cases only the beginning; it had to be carried further in technical centres or in factories and workshops. A note of caution was sounded with regard to the prospects of small holdings. "Agriculture is not the least skilled of occupations, as some seem to think, but the most skilled. Small-holding requires the right soil, the right neighbourhood, the right small-holder. It requires also some capital. Above all, it is a way of life in which a man stakes much on the continuance of his own full strength till he has strong sons to help him."

Sir Alfred Keogh said that the size and importance of the work of technical training for the disabled would continue to increase, and would become more evident during demobilization. Next to winning the war, nothing could be of more moment than the spread of knowledge on this subject, and it was essential that such knowledge should be diffused early. He spoke of the continued need for voluntary effort by the civil population on behalf of the discharged soldier.

SIR WILLIAM BARTIE.

Surgeon-General Sir William Bartie, V.C., K.C.M.G., who graduated M.B.Glasg. in 1880, was entertained at dinner, during a recent visit of inspection to the north, by the North of England Glasgow University Club, at Newcastle. Dr. J. Chalmers of Sunderland presided, and Sir Thomas Oliver, in proposing the toast of "The guest of the evening and Alma Mater," after paying a tribute to the university, said that a man's success was a result of personal efforts and opportunities offered and accepted, and not of training at any particular university. Surgeon-General Bartie, who had won the V.C. at Colono on December 15th, 1899, had proved himself a worthy son of his Alma Mater. He had only last week returned from visiting the Italian front to superintend the organization of the British medical service there. Sir William Bartie in response, said that in all parts of the world—Gallipoli, Egypt, Salonica, France, and Italy—he had met fellow graduates who had added to the lustre of the university. On behalf of the Army Medical Service he acknowledged the enormous work done by civil medical practitioners. Though successful medical administration was not entirely a matter of professional skill, such skill and knowledge must enter largely into the affairs of military medicine. The best results could only be obtained by a combination of professional skill of a high order with administrative capacity of the first class. The whole gamut of the life of the citizen came within the purview of the medical profession, and he hoped that in future it would take a larger share in public administrative work—in public health, in education, in housing, in dietetics, and in the recreations of the community. The toast of "The Allied Forces" was given by Professor Wright Duff, and acknowledged by Lieut.-Colonel Wells Patterson, and that of "The Chairman" by Lieut.-Colonel Bolam, who elicited a felicitous response from Dr. Chalmers.

Ireland.

MIDWIVES (IRELAND) BILL.

DR. JOSEPH POWER, Vice-Chairman of the Irish Poor Law Medical Committee, Mr. C. H. Gick, Secretary of the Irish Medical Association, and Dr. T. Hennessy, Irish Medical Secretary of the British Medical Association, have had an interview with Sir Henry Robinson, Vice-Chairman, and Dr. E. Coey Bigger, Medical Commissioner of the Local

Government Board (Ireland), in connexion with proposals to amend certain clauses in the Irish Midwives Bill. Dr. Power stated that when the Irish Midwives Bill was being drafted representations were made on behalf of the Poor Law medical officers in Ireland, pointing out that since it was apparently the intention of the promoters of the Irish bill to take as their models the English and Scottish Midwives Acts, it would be necessary that Clause I (2) should be so modified as to prevent untrained women calling in the dispensary doctor on a red ticket to supervise their work in accordance with the Act. The bill as at present drafted permitted untrained women to summon dispensary doctors for the purposes of the Act, and though in such circumstances it was no part of the duties of Poor Law medical officers to attend, yet they were expressly precluded from receiving any remuneration under the bill. Sir Henry Robinson agreed that the objections made by Dr. Power appeared to be well founded, and undertook that Clause I (2) would be amended to remove any disabilities imposed by it in its present form on dispensary doctors.

GRADED SCALES OF SALARIES FOR POOR LAW MEDICAL OFFICERS.

At the last meeting of the Lisburn Board of Guardians a communication signed by all the medical officers in the union was received, requesting the Board to consider their memorial, postponed two years ago, in regard to establishing a graded scale. The memorialists pointed out, in support of their appeal, that the war was prolonged beyond expectation, the cost of living and means of locomotion had increased, the great majority of the unions had fixed graded scales, and some had reviewed them for the second time; that Lisburn was the only union in the north that had not adopted such a scheme. After some discussion notice was given to move the rescission of the former resolution with the view of considering this appeal.

Scotland.

GLASGOW MEDICAL MISSIONARY SOCIETY.

At the fiftieth annual meeting of the Glasgow Medical Missionary Society, in the hall of the Royal Faculty of Physicians and Surgeons, on December 12th, Sir Donald MacAlister, who was in the chair, said that of the founders of the society fifty years ago only one, Dr. J. D. MacLaren, survived. The Rev. Dr. Watson emphasized the importance of housing. The report of the medical superintendent of Moncrief Street Dispensary stated that many of the ailments for which treatment was sought were chronic affections due to or aggravated by the unsatisfactory surroundings in which the people lived. More money was now in the hands of a good many of the working classes and there was less evidence of dire poverty, but children were suffering more than usual, especially among the soldiers' families, on account of the mother going out to work.

PATHOLOGY AT DUNDEE.

At a meeting of the governors of the Dundee Royal Infirmary on December 10th it was announced that as a result of a conference between the directors and the University Court of St. Andrews University in regard to the improvement of the pathological department of the infirmary, plans of a new building scheme would be prepared, but it was not thought possible to undertake any building until peace was restored. In consequence of the good results obtained in the treatment of cancer by the use of radium, a further sum of £300 has been expended in its purchase.

WESTERN INFIRMARY, GLASGOW.

The report of the Western Infirmary, Glasgow, for the year ending October 31st, which was considered at the general meeting on November 29th, showed a large deficit between ordinary income and expenditure. The expenditure was over £56,000 and the income not quite £34,000. The deficit, large as it was, was still larger in the previous year. The extraordinary income from legacies and special donations was over £40,000, and owing to this fortunate circumstance it was possible to meet not only the deficit in ordinary income, but to transfer nearly £17,000 to the stock account. The special appeal for the maintenance

fund had yielded £8,500, leaving, with the sum carried forward from the preceding year, a balance of £15,600. The amount of work done by the infirmary was very large; there were over 9,000 in-patients and nearly 24,000 out-patients, both figures being below those of the previous year. The average daily number of in-patients was 547, compared with 540 last year, but the average period of residence of each was rather longer. Of the indoor patients, 1,945 were medical, 6,219 surgical, and 267 gynaecological. The resident staff numbered 344, the non-resident staff 463. Votes of thanks to the medical and surgical staff were adopted on the motion of Lord Inverclyde, seconded by Colonel Roxburgh.

Correspondence.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

An Appeal to Members of the British Medical Association.

SIR,—We wish to enlist the secretaries of every Division of the Association in an effort to raise a large subscription to the War Emergency Fund of the Royal Medical Benevolent Fund.

By its first appeal the Fund raised £4,000. The second appeal has raised another £10,000, the subscriptions having been acknowledged from time to time in the medical journals. But there are many who have not yet subscribed, and the Fund is anxious to raise at least £30,000. We believe it is only necessary to bring the appeal effectively before every member of our profession to secure that the money shall be obtained easily and promptly.

The object of the Fund is stated as follows in the words of the latest appeal issued by the Fund:

This Fund was instituted last year to afford assistance to members of our profession who, in consequence of having joined the medical service of the navy or army, find themselves in temporary difficulties.

Many medical men when called up had to leave on very short notice, without time to make adequate provision for the continuance and maintenance of their practices during their absence. As a result they have had to face a severe fall in income even when supplemented by army pay; while many expenses such as rent, insurance, taxes, family maintenance, and education, could not be reduced. Although in a year or two after their return it may be hoped those affected will recover their position, still in the interval help is and will be necessary, and it is to meet these needs that the War Emergency Fund was established.

To be effective the grants must be made on a liberal scale, and the fund from which they are to be drawn must be a large one. The sum obtained last year was about £4,000. This is quite inadequate, as at least £25,000 will be required, if even a small proportion of those requiring assistance is to be helped. From the wealthier members of the medical profession, it is hoped, substantial sums will be received, but every one should feel it a duty which he owes to his less prosperous colleagues to give the most liberal donation he can afford.

There never was a better opportunity for showing the efficiency and utility of the machinery of the Association, and we sincerely trust that every Division will set to work in friendly rivalry to show what it can do in the way of raising money when it has a cause such as this.

Each Division will, of course, use the method it deems most likely to be effective. Some will no doubt canvass the practitioners in their area personally; some will appeal by means of a circular; others will use both methods. But we hope that no stone will be left unturned to make the result worthy of the Association and of the men on whose behalf the appeal is being made.

The contributions should be sent in at intervals to the Financial Secretary and Business Manager, 429, Strand, W.C.2; by the Secretary of the Division; or by any officer specially appointed for the purpose. Cheques should be made payable to the "War Emergency Fund."

They will be acknowledged in the *BRITISH MEDICAL JOURNAL*, and forwarded to the Treasurer of the Fund.—We are, etc.,

CLIFFORD ALLBUTT,

President.

E. B. TURNER,

Chairman of Representative Meetings.

J. A. MACDONALD,

Chairman of Council.

G. E. HASLIP,

Treasurer.

British Medical Association, Dec. 15th, 1917.

THE THEORY OF IMMUNITY.

SIR,—My thanks are due to Mr. Morley Roberts for drawing attention to the simple theory of immune reactions enunciated in the paper by Moore and Whitley in vol. iv of the *Biochemical Journal* (March, 1909, p. 165). Progress in our knowledge of the biochemistry of immunity will be delayed so long as the modes of thought connoted by the series of *ad hoc* terms first introduced by Ehrlich and since reduplicated by others, are allowed to dominate the clear view that the laws of immunity are the laws of reaction by adsorption in colloidal solution. There is nothing new whatever or ever was in the side-chain theory except the fantastic terms. Side-chains were known, and their influence in modifying chemical reactions were known to workers in pure organic chemistry before the birth of Ehrlich. Many experimental attempts to follow up the effects of variations in the side-chain upon pharmacological action of drugs were made before Ehrlich extended his side-chain theory of immunity into therapeutics.

The pioneer work on immunity which has carried us so far forward in many a domain of pathology and bacteriology was that of Bordet, Gengou, and others of the French school; it was burdened from Germany with the intolerable weight of a useless philosophy of jangling terms for a type of reaction well known in colloidal chemistry. Those who wish to study the energetics of these colloidal systems in greater detail will find some assistance in two series of articles published by the writer in 1906 and 1909,¹ and the conditions of adsorption in colloidal solutions, particularly in the latter series.²

The side-chain theory, as the pure organic chemist understands the term, breaks down completely when attempts are made to press it beyond a certain length in elucidation of the activities of living organisms or their products. The reason is obviously that the reactions are no longer between side groups of single organic molecules with true chemical union of constituent atoms of the two reacting molecules, but between colloidal groups of molecules, or two solution-aggregates each of which contains perhaps as many as sixty molecules.

The reacting galaxy is not a molecule any longer, but a band of molecules, and the union is no longer consummated by a rupture across of atomic linkage, but by surface and electrical affinities in which the attractions are between one colloid group and another as a whole, and not by firm union at two particular points.

All the laws of immune reactions can be illustrated by colloidal systems which are not and never were living, and the preservation of a special set of terms is redundant.

The paper quoted by Mr. Morley Roberts illustrates this by showing the similarity between the reactions of enzymes, whether hydrolyzing or oxidizing, and the reactions of immunology, for example, that the colloidal complex, antigen, complement, and immune body, can be compared with substrate, co-enzyme, enzyme.

Other examples might be multiplied, but one which may appeal to the bacteriologist and assist him in grasping the fundamental likeness of all the reactions in this immense field of colloidal reactions is that which he employs daily when he utilizes a multiple stain to differentiate tissues. The triad here is colloidal substrate varying from tissue to tissue, mordant which may or may not be a colloid, and the dye-stuff which is either colloidal at the outset or becomes so during the reaction. The dyes here give an outward and visible sign of what occurs in immunizing reactions, in differential therapeutic action, in anaesthesia,

¹ Moore, in *Recent Advances in Physiology and Biochemistry*, edited by Leonard Hill. London: Arnold, 1906.

² *Further Advances in Physiology*, *ibid.*, 1909, pp. 1-33.

and in a thousand and one reactions of physico-chemical nature occurring in the body. According to the various types of physical or colloidal aggregation in the minute structure of the tissue, this possesses varying affinities for mordant and dye stuff, and so one constituent takes up one dye, and another is marked out by another dye.

The complement, or coferment, or mordant which appears to cement the two reacting colloidal systems, is often the less highly organized and specific in character, and may in some cases be an inorganic salt, or the acidity or alkalinity of the system determined by the state of balance of hydrogen and hydroxyl ions.

The important point to remember and to continue to investigate is the peculiar lability or reactivity conferred upon the colloidal system as its complexity is increased. This gives it the power of taking up external energy forms from the environment; it may be the energy of light, or chemical energy in simpler organic forms, and building this up in a kind of evolution which forms the living cell's life-history.—I am, etc.,

December 10th.

BENJAMIN MOORE.

PRIMARY EXCISION OF GUNSHOT WOUNDS OF THE ELBOW JOINT.

SIR,—In common with your correspondents in the JOURNAL of November 24th, p. 704, I have read Colonel Mansell Moullin's article on this subject with great interest. But I am strongly impressed with the fact that there is another side to the picture which he draws, and that this is unfavourable to the practice that he advocates.

My own experience has been that primary excision of the elbow-joint performed in the presence of virulent sepsis does either too little or too much. Either it does too little, because rapid osteogenesis takes place, resulting in firm ankylosis; or else it does too much, and the patient is left with a flail elbow. I am quite aware that in my present position, in charge of an orthopaedic centre, it is only natural that I should see more of the failures than of the successes of a particular method of treatment, and I do not wish to suggest that primary excision never gives a good result. But as Major Swan points out, septic gunshot wounds cannot be judged by the standard of closed comminuted fractures, and the numerous cases of ankylosis or flail elbow which come under my care make me feel it necessary to utter a word of warning against the routine use of this practice. It seems to me that the utmost conservatism, consistent with thorough drainage and mechanical cleansing of the wound, should be the guiding principle in the primary treatment of this as of other septic wounds. In the elbow-joint this principle will include the removal of fragments of bone already detached from the articular ends; but this is a very different thing indeed from a formal incision involving the wide opening up of fresh tissues, including the shafts of the bones. Very free drainage can be obtained in cases of special severity by cutting across the olecranon process and flexing the elbow. Later on, the olecranon can be reattached to the ulna. But this detachment of the olecranon I would regard as only an exceptional expedient, being content in the majority of cases with the removal of bone fragments and the excision of the infected wounds. Later on, if ankylosis or limitation of movement requires operative treatment, I think that this should consist in removal of the lower end of the humerus, shaping it as a transverse V, and covering it with fatty fascia. The olecranon should always be preserved, if possible, so as to retain the action of the triceps. The head of the radius is cut off only when ankylosis of the superior radio-ulna articulation exists.

In conclusion, I would summarize my view about the excision of this joint, and the same view applies to other articulations, as follows: it is a dangerous principle to advocate the routine excision of the joint as a primary method of treatment, because it is impossible to foresee the result of active sepsis upon a large operation area. Primary treatment should consist in the minimum required for aseptic healing, this minimum including the removal of broken fragments of the articular surfaces. Only at a later date, when sepsis has been eliminated, can an exact correlation be obtained between the injury which has to be treated and the measures which are necessary for its treatment.—I am, etc.,

ERNEST W. HEY GROVES,
Major R.A.M.C.(T) in charge of the
Bristol Orthopaedic Centre.

December 15th.

TRANSFUSION OF WHOLE BLOOD.

SIR,—With regard to the reference you were good enough to make to my letter in the BRITISH MEDICAL JOURNAL of December 8th (p. 770) on the subject of transfusion, I trust I may be permitted to point out that you seem to have missed my main point, which is the importance of transfusion from artery to artery *towards the heart*. This by setting up a good head of pressure in the arterial system at once fills the heart of the recipient through the coronary system, and recovery even after excessive haemorrhage is magical.—I am, etc.,

Edinburgh, Dec. 13th.

EDWARD A. SCHÄFER.

STATE MEDICAL SERVICE.

SIR,—A very few years ago the suggestion of a State service to replace the present system of medical attendance by one which would convert the medical profession into a State Department of salaried officers would have been scouted as the fantastic product of a disordered brain. But the rapid advance, in recent years, towards State communalism in many directions has brought the question well within the bounds of possible politics—in fact, its consideration has now become a matter of supreme importance to all who have the interest and welfare of the medical profession and the health of the community at heart. No medical man can now ignore this question, however much he may favour the present system or oppose further lay interference in the governance of a great scientific profession.

Admitted defects in the present system of medical attendance, dissatisfaction with the working of the Insurance Act, the fear of many men now in the R.A.M.C. that they will have little to come back to at the end of the war, and the proposed establishment of a Ministry of Health have hurried this question to the front. There is no doubt that many members even of the medical profession itself are now in favour of a State medical service. But have these men given full thought to the many and grave dangers and difficulties that such a system will produce? Have they, for instance, inquired into the condition and status of the medical profession in Italy?

I shall not attempt here to put down all my views for and against either the present or the proposed system. But for a State medical service I would suggest that either (a) there must be two grades of doctors—one the State officials working for salaries under the orders of the department, and the other the free doctors working on their own lines for fees from those who are willing to pay for their own medical attendance in addition to their medical tax; or (b) the whole profession must be swept into the State service.

In either case it would be manifestly unjust that the State doctors should be called upon to defray for themselves the high cost of their medical education, when they will have to take orders from the department as to where they are to work, what work they shall do, and what they are to be paid.

If a general medical service is to be organized as a department of the State, then this department must supply and educate its own officers in the same way as the navy does. The department must control its medical schools; it must provide yearly for the number of medical students that will be required to keep up the necessary personnel of the service. Those desiring to enter the medical profession would present themselves for preliminary departmental examinations, where the requisite number of students could be selected and drafted to one or other of the various medical schools.

If the department defrayed the cost of the medical education, and thus created its own officers, it might then have some rational claim to dictate what work and what salary each officer should have. It might also select any officer, showing special promise in any particular line, for departmental aid in pursuing that line of study, so that progress and research might be encouraged.

But only by some such scheme as this could it be anything but outrageous selective tyranny to forcibly absorb, as a State department under official control, one of the great learned professions, whilst other professions and trades are allowed to work out their own destinies.—I am, etc.,

Harrow, Dec. 8th.

A. H. WILLIAMS, M.D.

THE VALUE OF THE SANATORIUM.

SIR.—The concluding paragraph in Dr. W. Gordon's letter will be noted with astonishment by most of your readers. He refers to cases "regarded as cured consumption, in which, *bacilli having never been discovered*, the diagnosis, in my opinion, remained in doubt." (The italics are mine.) Surely Dr. Gordon does not dispute that in numerous cases it is perfectly easy to diagnose phthisis long before the appearance of bacilli in the sputum indicates the breaking down of tissue. Cases are constantly met with in which, sputum being absent, the physical signs and symptoms are such as would not deceive the most inexperienced tuberculosis officer. The delay in making a diagnosis because the bacteriological report is "T.B. negative" is an even more important factor in the non-success of sanatorium treatment than the indifference to "the influence of rainy winds," so culpably shown by those responsible for the sites of sanatoriums.

May I add that it was not Dr. Henry MacCormac, but Dr. George Bodington of Sutton Coldfield, who by his writings first advocated the principles of open-air treatment—a member of a despised race called general practitioners, now rapidly becoming extinct, and regarded by the public as incapable of making a diagnosis of phthisis. The fact that Dr. Bodington was not listened to in no way detracts from the honour due to his memory.—I am, etc.,
H. DOWNES.
Hlinminster, Dec. 17th.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR—I have much sympathy with your correspondent (p. 812). My son is in a somewhat similar position to his. He passed his "little go" late in 1914, and employed the time before he could enter college in studying preliminary science at the local university. Early in 1915, being then 18½ years old, he enlisted, was sent to Egypt and thence to Salonica, so that we have not seen him for over two years.

If he has to remain in the army until the conclusion of hostilities, and one knows not how long after, five years of study after that will make him a middle-aged man before he is able to begin to earn a living. If the army is able to make exceptions, why not include all who have gone so far as to pass an entrance examination and to register as medical students, as my son did? Of course, if the demand for men will not allow them to do this, we must not grumble, but cheerfully give up all that is required of us.—I am, etc.,
Dec. 15th.

QUI SE SENT MORVEUX QU'IL SE MOUCHE.

SIR.—I am entirely in sympathy with the letter signed "Aux absents les os" which appeared in your issue of December 15th, and my position is somewhat similar. I have a son—my only boy—who, although a medical student, had to join up as soon as he attained the age of 18, and he has been in the ranks ever since. He has not touched a medical book since he became a soldier, and complains now that he is unable to concentrate his mind on any scientific study, the excitement and distraction of camp life being too great, so that should he come out of this terrible war safely he will have to begin his studies all over again.

We fathers can neither afford the time nor the money wasted in this way on our boys, more particularly when it can be proved that their services are not absolutely necessary for the success of the war. Why, if one of the big Government departments were thoroughly combed out of A men the numbers obtained thereby would more than replace all the medical students in the services, and strong pressure should be brought to bear on the Army Council to release all men who were bona fide medical students at the time of their enlistment, provided they resumed their medical studies at once.

The British Medical Association has the interests of the profession in its keeping, and the Central Council has this matter in hand, but time is passing, and they should take this matter up without delay. The speech of the chairman of the General Medical Council recently should convince the Government that, in the interests of this country in the future, it is imperative that the supply of medical men be maintained, and that any delay now is making the position of affairs in the near future all the more grave.—I am, etc.,
December 16th.

MEMCO.

REMUNERATION OF RURAL PRACTITIONERS.

SIR.—I congratulate your correspondent (p. 777) who receives 2s. a head for dispensing under the Insurance Act. I dispense all my own medicines in a sparsely populated area of Northumberland, and all my rural neighbours as well as myself have only received 1s. a head for some considerable time past, and never since the inception of this glorious Act have any of us got more than 1s. 6d. I brought this to the notice of the recent conference during the discussion on rural practice, and apparently such an anomaly had never been heard of. The only explanation we can get from our county Insurance Committee is that we have in the past been paid too much—namely, 1s. 6d.; our drug bills are more than double. We thought the 2s. or 1s. 6d. a head for drugs was part of a contract, but apparently there is under the Insurance Act no such thing.—I am, etc.,

Felton, Northumberland, Dec. 8th.

ROBERT A. WELSH.

As we go to press, a letter addressed to the British Medical Association has been received from the Joint Committee of Insurance Commissioners stating that they have been authorized to make a substantial increase as from January 1st, 1917, in the special payments to rural practitioners in respect of mileage, and to make extra payments for mileage for temporary residents and invalided sailors and soldiers.

Obituary.

ELIZABETH GARRETT ANDERSON, M.D.,

CONSULTING PHYSICIAN, NEW HOSPITAL FOR WOMEN, LONDON.

DR. ELIZABETH GARRETT ANDERSON died at Aldeburgh, Suffolk, on December 17th, at the age of 81. She had been in failing health for some years.

Dr. Garrett Anderson is a unique figure in the medical history of England, inasmuch as any account of her life must necessarily cover the whole period of the initiation, continuation, and successful completion of the agitation for the right of entry of women into the medical profession on equal terms with men in Great Britain and Ireland. Miss Elizabeth Garrett was not the first Englishwoman to obtain a medical degree—Miss Elizabeth Blackwell of Bristol having graduated M.D. in the small university of Geneva, in New York State, in 1849—but she was the first to take a diploma in England. She was the second daughter of Newson Garrett, Esq., of Aldeburgh, Suffolk, and was born in London in 1836. She was educated at home and at a private school. She had no very great interest in medical sciences, but after mature consideration she adopted the profession from a strong conviction of its fitness for women. She began a preparation for her studies by attending for three months as a probationary nurse at Middlesex Hospital, learning what she could from doctors and nurses and reading in her spare moments. She found that the only registrable qualification open to a woman was that of the Society of Apothecaries, which by Act was not only allowed, but was required to examine all persons applying to it after they had gone through the necessary preliminary studies and apprenticeship; all the other examining bodies said they could, and would, refuse to examine her. Having found a corporation that could not refuse to let her try for its diploma she set out to get the necessary preliminary education. The required five years' apprenticeship to a practising medical man was easily managed. She was also able to gain admission to the men's classes at Middlesex Hospital Medical School in some of the preliminary sciences, but she was obliged to arrange for special private tuition in anatomy and physiology from recognized lecturers. This private education was received at St. Andrews University and the Extramural School at Edinburgh. She was then allowed to visit the wards of the Middlesex Hospital with the residents, for whilst the honorary staff were inclined individually to let her attend their clinical classes, collectively they were not. One of the residents also coached her in her clinical reading. At the request of the male students, however, she was required to leave the hospital, but managed to attend for clinical work elsewhere, chiefly at the London Hospital; she passed the final L.S.A. examination in 1865.

In 1866 Miss Garrett became general medical attendant at the St. Mary's Dispensary, which was founded that year to enable poor women and children to obtain medical advice from qualified members of their own sex.

The dispensary was largely attended, and in the course of five years more than 40,000 visits were made to it, 9,000 new patients were admitted, and 250 midwifery cases were attended by midwives attached to it, Miss Garrett being called in when necessary. The work at the dispensary grew in importance, and in 1872 it enlarged its premises and scope by instituting 10 beds, and soon afterwards it grew into the New Hospital for Women at 222, Marylebone Road, with 26 beds. At a later date the hospital moved to 144, Euston Road, where it had 42 beds, and with an acting medical staff composed entirely of qualified women. Miss Garrett worked on the staff for over twenty years.

In 1870 Miss Garrett took the degree of M.D. Paris, being the first woman to graduate at that university. Her achievement caused considerable sensation at the time, and Professor Broca publicly congratulated her on it. In 1870 she was appointed visiting physician to the East London Hospital for Children and Dispensary for Women. In the same year she was elected as a member of the first London School Board for Marylebone by a large majority, but she did not hold either of these posts for long as they interfered with her other work. In 1883, during the Postmaster Generalship of Henry Fawcett, her brother-in-law, who was always a strong supporter of the cause of women doctors, she was appointed a member of the medical staff of the General Post Office. It may be recalled in passing that Henry Fawcett was blind, but was able to hold Cabinet rank chiefly through the devoted and able help which his wife, Miss Garrett's sister, afforded him as a private secretary in his parliamentary career.

Miss Garrett's successful attack on the monopoly of medicine was followed by the adoption of a rule by the Court of the Apothecaries' Hall forbidding students to receive any of their medical education privately. Miss Garrett's success, therefore, made it harder than ever, indeed impossible, for a woman to obtain a qualification to practise medicine from a British examining body.

The Medical Act of 1858 provided that all persons then possessing the degree of M.D. of any foreign or colonial university and already practising in this country at the date of the passing of the Act should be entitled to be registered; but that with this exception no medical practitioners could demand registration unless holding a qualification of one of the British examining boards specified in the schedule attached to the Act. These provisions had for their sole object the protection of the public against incompetent practitioners, but when the British examining boards refused to allow women to take their qualifications their effect was to keep women out of the profession in Great Britain and Ireland. One Englishwoman alone, Miss Elizabeth Blackwell, who had taken an American degree in 1849, and had subsequently come back to England, was able to get her name on the first British register published in 1858. Dr. Garrett's name was the next to appear in 1866. The medical profession seemed then to be closed to the women in England after the Court of the Apothecaries' Hall had adopted the rule forbidding private tuition. But there were more women who wished to follow in Miss Garrett's footsteps, and the agitation was continued by Miss Sophia Jex Blake. The charter of the University of London had been so worded as to exclude the possibility of examining women for medical degrees, and the other universities and the examining bodies in London would have nothing to do with the matter, so she made her first application to the University of Edinburgh (1869). The University Court passed a resolution objecting to legislate for only one lady, and shelving the question of allowing women to be educated in the medical classes. This was looked upon as an invitation to other women to approach it with the same object in view, and several more applied for admission. They were helped by scholarships provided by sympathizers, including Miss Garrett. The General Council of the University went so far as to admit women provisionally to the usual preliminary examination in arts prescribed for medical students entering the university, and to the study of medicine in the university, separate classes for them being formed. The women were all registered as medical students in regular order, and they thought they had won their battle.

They were an unusually able group; four or five of

them gained honours in chemistry and physiology mixed class examinations, and Miss Peechey was first of her year in chemistry and qualified for a Hope scholarship, but the Senate, by a narrow majority, decided that she could have a certificate to say that she had attended the chemistry class of the university, but that she could not have the scholarship, since being a woman she was not a member of the class! Feeling ran so high that some of the men students made riotous attacks on the women, who, however, were more capably defended by other sympathizing men students. In the end, and after four years of struggling, the opposing forces proved to be too much and the women left the city for London, where Mrs. Garrett Anderson (she had married Mr. J. G. S. Anderson, of the Orient Line, in 1871) had by this time come to the conclusion that the real solution of the difficulty of women entering the profession was to be found in Englishwomen seeking abroad what was denied them in their own country. Miss Sophia Jex-Blake opposed this view, and, with the help of some medical men sympathizers, Dr. King Chambers, Dr. Anstie, and Mr. A. T. Norton, and Mrs. Anderson, who still, however, thought the time for creating a school for women had not yet come, the London School of Medicine for Women was founded, its first home being in Henrietta Street, Brunswick Square. Miss Jex-Blake, not then being qualified, acted for the time as unofficial secretary to the school. The staff were naturally all men at first, with the exception of Dr. Garrett Anderson, who took the lectureship in midwifery, and who, with Dr. Elizabeth Blackwell, the only other registered medical woman in England, was on the Council. Dr. Garrett Anderson also was instrumental in getting considerable financial support for the school. In 1877 the practice of the Royal Free Hospital was opened to women students, and some years later women became eligible for some of the resident and acting honorary posts.

Dr. Garrett Anderson became lecturer in medicine in 1876, and held this post until 1898; in 1883 she succeeded Mr. Norton as Dean, and retained the post until 1903. During these years she was actively engaged in private practice in London, in which she attained a very large measure of success.

The fight for right of entry into the profession by women had been dragging on in England whilst Miss Jex-Blake was carrying it on at Edinburgh. In 1862 Miss Garrett had approached the Council of the London University, with a good deal of influential support, suggesting that it should have inserted in a new charter for which it was then applying, a clause expressly extending to women the benefits of its examinations, but the Senate decided by the casting vote of its Chancellor, Lord Granville, not to accede to the proposal. After taking the diploma of L.S.A. and the degree M.D., she continued her agitation with growing support, and in 1874 Convocation expressed the opinion that it was desirable that women should be permitted to take degrees in the University of London. Legislation was necessary to carry this out, and in 1876 the broad issue came before Parliament in Mr. Russell Gurney's bill, which empowered all examining boards to examine women in medicine and to grant them the ordinary degree or diploma. This bill became an Act (1876), and next year London University opened its door to women medical students; the charter embodying this was received in 1878. The Royal College of Physicians in Ireland at once took advantage of Mr. Russell Gurney's Act, and opened its school to women and recognized the London School of Medicine for Women. In 1877 the names of five more English qualified women, amongst them being Miss Jex-Blake, appeared in the *Medical Register*. The next examining bodies to open their qualifications to women were the Irish College of Surgeons (1885), and the Conjoint Board in Scotland (1886). The Scottish universities admitted women to medical degrees in 1892.

In 1875, on the suggestion of the Lord President of the Privy Council, the question came before the General Medical Council, which finally, after three days' discussion, expressed the opinion "that the study and practice of medicine and surgery presented special difficulties for women which could not be safely disregarded; but it was not prepared to say that women ought to be excluded from the profession." Some of those who opposed the opening of the profession to women were inclined to allow them to

sit for a special qualification limited to women only, but Mrs. Garrett Anderson would have none of this. What women wanted was the right to take the same qualifications as men.

It was about this time, too (1876), that the legal advisers of the Royal College of Surgeons in England gave their opinion that the College, by its supplemental charter, could be compelled by legal process to examine women and grant them certificates to practise under its registrable Licence in Midwifery. Some women therefore applied for admission to the examination and were accepted as eligible. However, rather than accept defeat the whole Board of Examiners for the licence resigned; the College became "boycotted by its own examiners," as its women critics put it, and the examination for the Licence in Midwifery was discontinued. It was not until 1909 that the qualifying examination of the Conjoint Board of the Royal Colleges of London was opened to women. The modern universities opened their doors to women students at varying times in the latter part of last century.

The story of the admission of women practitioners to the membership of the British Medical Association runs on very similar lines to that for the right to enter the medical profession. Here again Dr. Garrett Anderson was pioneer in the movement. In the Articles of Association in force in the early seventies there was no clause specifically ruling out the rights of women to membership; it was open to any qualified person with registrable diploma, and Dr. Garrett Anderson was elected by the Metropolitan Branch, being the first woman to become a member. At the annual meeting at Bath in 1878, however, a new clause, stating that "No female shall be eligible for election as a member of the Association," was adopted, after a plebiscite, in which 3,072 voted for and 1,051 against the clause. Dr. Garrett Anderson spoke against the clause, and her personality secured for her a much more favourable reception than did the cause which she so ably advocated. As the years passed on the number of medical women on the register grew from 8 in the Bath days to over 100 in the late eighties and 140 in 1892. Their work was not confined to England, and several of the Branches in the Overseas Dominions found the restriction inconvenient and undesirable; they not only invited qualified women to attend their meetings, but they also began to pass resolutions asking that the Bath prohibition might be expunged from the Articles of Association. Many of the former objectors to the opening of the Association to membership of any qualified person began to change their minds, and after sundry preliminary discussions the question was faced again at the meeting at Nottingham in 1892, when, at an extraordinary general meeting, the late Dr. J. H. Galton moved that Article 4 of the Association be altered by expunging the words, "No female shall be eligible for election as a member of the Association." Mrs. Garrett Anderson seconded the proposal, though she thought the terms of it should be somewhat modified, as she was herself still a member of the Association. This time she was addressing an audience which needed no convincing of the justness of her demands; she had already by her professional and public life done this very thoroughly, and she had the satisfaction of seeing the resolution carried in a meeting of about 300 with only three or four dissentients. A further extraordinary general meeting of the Association was held in August in London to consider and, if thought fit, to confirm the special resolution passed at Nottingham. It did think fit, and the entry of women into the Association was confirmed by a large majority.

Mrs. Anderson's honourable connexion with the Association culminated in her election in 1897 as president of the East Anglian Branch, and she presided very successfully over its work for a year. She was also vice-president of the Section of Medicine of the annual meeting of the British Medical Association in 1900, when it met at Ipswich.

Mrs. Garrett Anderson finally retired to live at Aldeburgh, where her family had long resided, and in 1908 a tribute of confidence and respect was paid to her by her election to be mayor of Aldeburgh. This was the first occasion on which such a position was conferred on a woman in England. She sat for many years on the councils of the North London Collegiate School for Girls and of Bedford College. She was also one of the founders and for long honorary secretary of the Imperial Vaccination

League. Her husband died in 1907. She is survived by two children, a son, Sir Alan Anderson, Controller of the Admiralty, and a daughter, Dr. Louisa Garrett Anderson, C.B.E., who has followed in her mother's footsteps.

Dr. Garrett Anderson wrote a few articles on professional subjects, and also many on the special subject of her cause, in the lay press.

A memorial service will be held at Christ Church, Endell Street (Military Hospital) on Saturday (December 22nd) at 11 a.m.

PROFESSOR GEORGE LAW SINCLAIR, who died recently at Jacksonville, Florida, where he had gone on account of his health, first occupied the chair of anatomy at the Halifax Medical College, and afterwards that of nervous and mental diseases. He was also Dean of the College for a number of years. He was a brilliant lecturer and a successful and beloved teacher, but failing health obliged him to give up active work a few years ago. He was born in Norfolk, Virginia, about sixty-five years ago, a son of a naval officer in the Southern Confederacy. He graduated from Columbia University, New York, in 1872. In 1898 he was appointed inspector of humane institutions in the province of Nova Scotia, Canada, and the following year was elected to the Nova Scotia Medical Board as representative of the provincial government. He was superintendent of the Nova Scotia Hospital for the Insane for many years, and was instrumental in establishing a nurses' training school at that institution, and did much to improve conditions at the hospital and in the gaols and county asylums throughout the province. He was a consistent advocate of the establishment of a provincial institution for the care of the feeble-minded.

DR. RAIMUNDO MENOCAL, a leading surgeon of Cuba who died recently, was born in Havana in 1856. While still very young he took part in political struggles by the side of his uncle Gabriel, father of the present president of the Cuban Republic, and was obliged to seek refuge in Spain. He studied in Madrid, and graduated in 1876. On his return to Cuba he was appointed surgeon to the Hospital of San Felipe y Santiago at Havana. In 1886 he obtained by competition a place on the staff of the Hospital Civil. At the outbreak of the war of independence he had again to leave Cuba, this time migrating to the United States. On his return in 1889 he founded the first school for nurses in Cuba which in time was recognized as a State institution. He became professor of clinical surgery in the University of Havana, an appointment to which he afterwards added the chair of dermatology and syphilis. He was a member of the Superior Sanitary Committee and Secretary of the Board of Health. He was twice dean of the faculty of medicine. He was the author of numerous contributions to the literature of surgery and gynaecology, including a textbook of diseases of the skin and syphilis which has gone through two editions. He was a pioneer of antiseptic and aseptic surgery in Cuba.

DR. ELIZABETH FOLLANSBEE, the first woman who practised medicine in Los Angeles, California, died there recently, aged 78. She graduated at Jefferson Medical College, Philadelphia, in 1877, and was Emeritus professor of paediatrics in the University of California.

Universities and Colleges.

UNIVERSITY OF OXFORD.

The following candidates have been approved at the examinations indicated:

SECOND M.B.—*Materia Medica and Pharmacology*: F. G. Hobson, B.A., H. P. Hodge, B.A., E. G. T. Liddell, W. V. Robinson. *Pathology*: E. H. Clewer, F. G. Hobson, C. F. Krige, W. V. Robinson, E. A. Thomas, E. A. Woods. *Forensic Medicine and Public Health*: C. W. W. Armstrong, W. Gover, R. T. F. D. Roberts, G. K. Stone, H. W. Toms, B. Tordoff, E. A. Woods. *Medicine, Surgery, Midwifery*: C. W. W. Armstrong, F. R. Dutton, W. Gover, R. M. Humphreys, R. T. F. D. Roberts, G. K. Stone.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

A MEETING of the Senate was held on November 21st.

Examiners.—Mr. G. Mudge has been appointed internal examiner in general biology for the first examinations for

medical degrees in the session 1917-18 in the place of Major Marett Tims. The following were appointed additional examiners for medical degrees, Part II, for internal and external students in the session 1917-18, at which the number of candidates shall exceed 70:—*Anatomy*: Professor F. W. Jones (London School of Medicine for Women, and Mr. A. Macphail (external). *Pharmacology*: Mr. P. P. Laidlaw (Guy's Hospital Medical School) and Dr. H. J. Campbell (external). *Physiology*: Professor F. A. Bainbridge (St. Bartholomew's Hospital Medical School) and Professor E. H. Starling (external). Dr. J. S. Edkins and Professor D. N. Paton (external) have been appointed to act as examiners in physiology at the M.Sc. examination for internal students in December, 1917.

Lectures.—A course of five lectures on dysentery and allied conditions will be given by Mr. F. W. Twort, superintendent of the Brown Institution, in the theatre of the Royal College of Surgeons, Lincoln's Inn Fields, W.C., on December 17th, 19th, 21st, 28th, and 31st, at 4 p.m.; admission is free without ticket.

Fallen Members.—Memorial services for members of the University who have fallen in the war were held on All Saints' day at the Temple Church, and on All Souls' day at St. Martin's-in-the-Fields. The Service papers at these services included a list of 1,079 members of the University who have fallen in the war, arranged according to the schools of the University of which they were members.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—G. Balsillie, A. O. I. Brownlee, D. Cook, A. C. C. Craig, Kshibendra Mohan Dey, J. W. C. Fairweather, D. T. P. Gay, J. G. Gilruth, J. T. Godfrey, Elisabeth Harper, J. H. Kerr, J. S. C. Lucas, A. S. McKern, W. G. F. O. Morris, S. D. Nurse, V. E. Purves, E. G. Pyott, A. Robertson, Mary J. D. Rutherford, R. L. Stewart, J. A. Stirling, F. B. Sutherland, E. T. N. Taylor, P. F. V. Walsh, D. M. Young, J. W. van Zyl.

UNIVERSITY OF BRISTOL.

THE *University of Bristol Calendar* for the current academic year contains lists of the officers of the University, members of the University Court, Convocation, and teaching staff, and a directory of graduates and undergraduates, together with the regulations for degrees, diplomas, and scholarships, and information concerning institutions open to students of medicine for hospital practice and clinical instruction.

CONJOINT BOARD IN IRELAND.

THE following candidates have been approved at the examinations indicated:

SPECIAL FINAL EXAMINATION.—R. J. Bassett, M. B. Gunn, F. L. H. MacDowel, D. E. Young.

FINAL PROFESSIONAL EXAMINATION.—J. H. Barrett, J. J. Brennan, M. J. Broderick, W. E. Cooke, G. H. M. Crutts, J. A. Cunningham, N. A. Filose, P. J. Filose, L. Finckan, J. J. Hayes, H. Hurst, J. A. Hamilton, E. D. Kinsey, W. J. McElhinney, C. O'Connor, B. F. O'Reilly, G. R. Wilson.

D.P.H. C. A. Paulusz, J. P. J. O'Connor, M.B. Major J. Walker (with honours).

Medical News.

THE Royal Dental Hospital, Leicester Square, has received a Christmas gift of £10 from Her Majesty the Queen.

DRS. F. J. ALLAN (M.O.H. Westminster), H. E. Corbin (M.O.H. Stockport), C. E. Goddard (M.O.H. Wembley), and A. M. N. Pringle (M.O.H. Ipswich), have been elected Fellows of the Royal Sanitary Institute.

THE case *Russell v. Docherty*, in which judgement was given in the Court of Sessions, Edinburgh, on December 11th, appears to have decided that when a miner seeks compensation on account of miner's nystagmus under the Workmen's Compensation Act his action lies against his last employers.

THE first of a three months' course of lectures and demonstrations in hospital administration for the diploma in public health to be given at the South-Eastern Hospital of the Metropolitan Asylums Board, New Cross, S.E., by Dr. F. M. Turner, Medical Superintendent, on Tuesdays and Fridays, will begin on January 4th, 1918. The fee for the course is £3 3s.

THE Reading Pathological Society, one of the oldest medical societies in the United Kingdom, has decided to admit lady practitioners to the privileges of membership. On former occasions, when such a proposal was mooted, there has been an adverse majority, but at a crowded meeting of the society held last week the proposal was carried *unanimously*. This society maintains an admirable medical library as well as a pathological museum, which do much to maintain a high standard of practice in Reading and the neighbourhood.

DR. F. J. WALDO, coroner for the City of London and Southwark, in his annual return to the City Corporation, states that the system of warming his court by means of fuelless gas radiators proved unsatisfactory. It did not maintain the desired temperature and illness attributed to carbon-monoxide was produced. Electric stoves are now used, and have proved satisfactory. He adds that his experience may suggest that some part of the malaise and sickness experienced by persons who sit in courts of law may be due to preventable causes, and that an analysis of the air of the court and an examination of the means of ventilation and of heating may disclose some remediable errors.

AT a meeting of the Section of Laryngology of the Royal Society of Medicine on December 7th, the President, Dr. Brown Kelly, showed a collection of dental cysts and cysts of the floor of the nose. He pointed out that dental cysts which invaded the antrum had been regarded erroneously as "hydrops atri Highmori" or "distension of the maxillary sinus by fluids or mucous cysts," whereas the cysts really arose outside the antrum and only pushed their way in as they grew larger. Dental cysts might also produce a bulging of the floor of the nose and by extending upwards raise the ala. They were to be distinguished from cysts of the floor of the nose, which were retention cysts, and presumably arose from long ducts present in this situation. Mr. Tilley said that, in his experience, cysts of the floor of the nose were always associated with carious teeth, and the fluid inside contained cholesterol crystals. Dr. Kelly said that he was sure the retention cysts were not connected with the teeth. He did not know if cholesterol was present in the fluid.

NEW regulations governing the supply of petrol come into force in France on January 1st. They are designed especially to limit consumption in cars used for pleasure or touring, but also affect those used in the discharge of public duties. Upon receipt of a written application the prefect of the department in which the applicant habitually resides may issue a book of petrol cards good for a month, each entitling the holder to five litres. The number of tickets is determined by the prefect, but the owner of a pleasure or touring car cannot be authorized to obtain more than fifty litres a month. Cards not used in the month of issue are to be cancelled, and the car owner must show that he is not hoarding. A car must not be used without a permit, which must be renewed monthly. A permit will only be issued by the prefect if the applicant shows that he is doing work of advantage to the public; the permit will specify the area within which the car may be used. Usually this will be restricted to the immediate neighbourhood; permits to cover a wider area will be issued only on the authority of the Minister of the Interior. These regulations would no doubt include the case of a car used by a doctor in his practice. The prefect may give special permits for a journey to carry sick or wounded. The Ministers of War, the Navy, Munitions, Agriculture, Public Work, and Transport, will issue permits to persons in those services, but the total amount to be issued to each department of a Ministry will be determined monthly by the Minister. The decree allows, under stringent rules, the supply of small quantities of petrol for lighting. Hackney motor cars may not travel more than six kilometres beyond the commune in which they are owned.

THE Commissioner of the American Red Cross in Europe has appointed a Research Committee to assist scientific work carried out in American base hospitals or army laboratories in France; the chairman of the committee is Captain Walter B. Cannon, the secretary, Captain Kenneth Taylor, and among the members are Majors Joseph A. Blake, G. W. Crile, and Harvey Cushing. A central laboratory has been established under Captain Taylor at the Red Cross Military Hospital, No. 2, at 6, Rue Piccini, Paris, XVI, which will co-operate with the laboratory established there under the Robert Walton Goelt Research Fund. It is hoped that workers from other military hospitals will utilize the laboratory for the completion of researches requiring special facilities, and it is intended also to extend like assistance to scientific workers of the allied armies. A library of current medical journals is also being established. A research society has been founded, which will meet once a month in Paris, and a periodical, entitled, *The Medical Bulletin*, will be issued under the direction of the Bureau of Medical and Surgical Information of the American Red Cross in France. It will contain abstracts of papers read at the monthly meetings of the society, and of articles appearing in French, British, and American journals. The first number of this periodical bears date November, 1917, and contains an introduction by Major Alexander Lambert, chief surgeon of the American Red Cross in France, from

which the above particulars are taken. The remaining seventy pages contain abstracts, the first being an account of the conclusions adopted by the Interallied Surgical Conference held in Paris in March and May last.

AN address by Dr. Dwight Hillis, pastor of the famous Plymouth Church at Brooklyn, after a visit in July and August to the parts of France and Belgium from which the Germans had been expelled, has had wide influence in America, for it contained the evidence of an eye-witness. It has now been reprinted here under the title, *Murder Most Foul*, and a very large number of copies is being distributed by Messrs. W. H. Smith and Son.¹ It is a sign either of grace or fear that the German military authorities now so much resent the application to their nation of the name of Hun, and are punishing prisoners upon whom is found evidence of its use. Dr. Hillis recalls the origin of the phrase, which was applied by the Kaiser himself when addressing German troops embarking for China on July 3rd, 1900. "Make yourselves," he said, "more frightful than the Huns under Attila. See that for a thousand years no enemy mentions the very name of Germany without shuddering." To-day the nations shudder but do not fear. Dr. Hillis quotes the manifesto of the ninety-three professors, to show how the doctrine has penetrated through all ranks in Germany, and says that the men who forge the German military machine and practise the Ten Commandments with the "not" left out, have stamped out of the souls of their soldiers every instinct of pity and sympathy.

IN his introduction to the first part of *Admirals of the British Navy*,² Mr. E. V. Lucas very happily applies Matthew Arnold's famous line, "Others abide our question, thou art free," to the Royal Navy. "for, although it baffles curiosity and ends by eliminating it, it is only to substitute faith." Every German soldier, Dr. Hillis said, received a token large as a silver dollar, bidding him strike his enemy dead—"The day of judgement will not ask you for your reasons." The American soldier, Dr. Hillis added, should have on his token, on the one side "In God we trust," and on the other "And in England's navy." There is a certain generic resemblance in the characters Mr. Francis Dodd has interpreted for us in his twelve portraits of British admirals. Mr. Lucas has felt it, but being at fault to define has described it. "We discern," he writes, "the subtle and penetrating influence of the sea, a mistress who will allow no relaxation of vigilance or toil, so swiftly and dangerously changeable can she be." We can only wish each of them in directing or executing, and all under their command, continuance of the good fortune good work deserves in defending our shores and better luck in freeing our trade routes from the steel sharks of the sea, and from raiding destroyers.

¹ Copies can, we understand, be obtained from the bookstalls and agents of this firm.

² Published for the Government by *Country Life*, Ltd. (5s. net.)

Letters, Notes, and Answers.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitology, Westrand, London*; telephone, 2531, Gerrard.
 2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Artidulate, Westrand, London*; telephone, 2630, Gerrard.
 3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2534, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.
- The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Referee Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES.

DR. W. J. YOUNG (Harston, Cambridge) has recently attended a patient who, in her eighth labour, had twins, a boy weighing 8 lb. and a girl 7½ lb. He asks whether these weights are not very high for twins.

LETTERS, NOTES, ETC.

THE DISCOVERER OF THE CAUSE OF SLEEPING SICKNESS. DR. R. N. MOFFAT writes: Though it would be easy enough for me to do so, I do not propose to reply in detail to Dr. Nabarro's letter in your issue of December 15th, as it does not appear to me that any useful purpose would be served thereby. Enough, and more than enough, has now been written for the guidance of posterity, and, fortunately for myself, the correctness of my statements and the value of my evidence do not stand or fall upon the mere *ipse dixit* of Dr.

Nabarro. Should my slight contribution to this controversy ever attract the attention of the future historian, he will, no doubt, note the important fact that my evidence was, at any rate, not that of one who numbered himself among those to whom honour was due.

PREPARATION OF THE SKIN FOR ANTITETANIC INJECTION.

DR. R. W. MORGAN (M.O. Gillingham V.A.D. Hospital) writes: One is surprised to hear that there have been several cases of abscesses reported following on the injection of antitoxin. I have done a large number, and have only seen one case of abscess, and this was done in France, the injection being made into the tissue of mamma of a powerful man, a situation which is unusual and open to objection. I leave my iodine swab on for five minutes, and I never boil my needle, as it spoils its temper and causes pain on insertion. The needles are kept permanently in rectified spirit and washed out with carbolic acid lotion 1 in 20, and again washed out with sterile water to remove the carbolic just before use. I use Parke, Davis and Co.'s needles, Schimmel's patent, on account of the extreme smallness of their calibre. In this way I have done fifteen men in succession, and, so far, have never had any untoward complications.

A CHEAP LOTION.

DR. ALFRED EDDOWES (London) writes: Now that glycerin ought to be used as sparingly as possible in medical practice, even when obtainable, and while there is difficulty in finding a good calamine powder for the preparation of the calamine lotions so much prescribed for skin affections, it is necessary to look for substitutes. It occurred to me that a thin solution of boiled starch might form a useful vehicle. I had the following lotion prepared: Cyllin 3 ss, mucilaginis amyli 5 ij, aq. ad Oj. Three weeks' experience of its use, both in hospital and private practice, has much surpassed my expectations. There is a wide field of usefulness for it in cases of eczema, etc. The mucilage of starch is simply a 2 per cent. boiled solution of starch. It will be obvious that endless modifications in strength and variety of combination can be made if desired.

DRESSINGS AND APPLIANCES.

MRS. E. H. GIBSON, honorary general manager of the Central Depot of the surgical branch of Queen Mary's Needlework Guild, 2, Cavendish Square, W.1, writes to suggest that medical practitioners concerned with the welfare and comfort of soldiers and sailors suffering from wounds or sickness are unaware of the work that is being done by the Central Depot. One of the aims of this organization is to supply the ordinary dressings, appliances, and comforts required for the troops at home and abroad, and efforts are made to arrange for the supply of any special bandages, splints, and the like that a surgeon may have difficulty in procuring through the ordinary channels.

"LINKS WITH THE PAST."

THE volume, *Links with the Past*, is "a brief chronicle of a notable institution" (the Eagle Insurance Company), written by its organization and publicity manager, who must be highly congratulated on his taste in literary and artistic matters. The frontispiece is a pleasing reproduction of E. M. Ward's picture of "the familiar discourse" between King Charles the Second and Nell Gwyn at 79, Pall Mall, the present site of the head office of the Eagle. It is, perhaps, the smallest coincidence, but at least a suggestion of "coming events casting their shadows before" that one of the items in a silversmith's bill of hers for over a thousand pounds reads "the two eagles weighing 1c9 ounces." The history of the company is traced with interesting fragments of contemporary history interspersed from its foundation on October 23rd, 1807, at Cole's coffee-house to its recent amalgamation with the British Dominions Company. The reproductions from old prints and photographs are most successful, and medical men will be interested in those of Sir James McGrigor, the shrewd Aberdonian, for thirty-six years Director-General of the Army Medical Department; of Dr. W. A. Guy, the medical statistician whose textbook on forensic medicine, edited by Sir David Ferrier, was familiar to past generations of medical students, and of Dr. J. W. Ogle, remembered with affection by so many St. George's men. As the price is not mentioned, this attractive little book is perhaps of the nature of bread cast upon the waters, but it is withal well worth collection and consumption.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0 5 0
Each additional line	0 0 8
A whole column	3 10 0
A page	10 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes restantes* letters addressed either in initials or numbers.

A STUDY OF FIFTY CASES TREATED BY FLAVINE.

BY

CAPTAIN E. F. BASHFORD, M.D., R.A.M.C.,

CAPTAIN J. N. J. HARTLEY, F.R.C.S.E., R.A.M.C.,

AND

CAPTAIN JOHN T. MORRISON, F.R.C.S., R.A.M.C.,
SURGICAL OBSERVATION HUT, — GENERAL HOSPITAL, B.E.F.*(Report to the Medical Research Committee.)*

SINCE the beginning of June one of our wards has been devoted to an investigation of the clinical results of the application of flavine to war wounds. At the same time an attempt has been made to interpret these results with the help of histological and bacteriological methods. The flavine used has been for the most part "aeriflavine" sent out by the Medical Research Committee, but latterly samples of proflavine from the same source were substituted. The results were substantially the same with both.

TECHNIQUE.

The primary object of the work being to confirm the good results claimed by the earliest workers with flavine, we made a point of adhering as closely as possible to the lines of treatment laid down by them.¹

The skin was carefully cleaned with neutral sodium oleate solution and covered with sterile strips of bandage cloth permeated with sterilized vaseline; the wound was swabbed out with gauze wrung lightly out with flavine, all obvious necrotic tissue cut cleanly away, and every recess then packed with strips of dressing soaked with flavine solution (1:1,000). As far as possible lint was used for the dressing, on the ground that it retains within its mesh a much larger quantity of the fluid it is desired to apply to the wound surface than gauze, but it was found that in small or irregular cavities pieces of gauze are often more convenient. In a few cases, where long tracks or pockets difficult of access had to be dealt with, Carrel's tubes were used for the purpose of a four-hourly instillation of the flavine solution, 10 c.cm. per tube. The flavine solution was used throughout at the original strength of 1:1,000, although we notice that certain workers in France² suggest that after a few days it is advisable to dilute it down to 1:5,000. The last step in the dressing was to apply an impermeable covering. For this purpose one or two thicknesses of the bandage cloth soaked in vaseline, already referred to, were used. Needless to say, careful splinting and removal of foreign bodies was carried out where necessary.

TYPES OF CASES DEALT WITH.

On account of the experimental nature of the treatment, the cases were carefully arranged in a series of gradually increasing severity. The wounds, taken as a whole, were not of great gravity, and this fact should be remembered in estimating the value of the treatment.

Almost all had been treated previously at the front by the Carrel-Dakin method within twenty-four hours of being wounded, and, in the majority of instances, very efficiently.

No wounds involving the cavities of the head, chest, or abdomen were included.

METHOD OF INVESTIGATION.

The patients reached our wards at periods varying from one to six days from the date of reception of the wound, and the flavine treatment was then substituted for that of Carrel-Dakin. It was carried on continuously until either the wound became ready for secondary suture, or until, after three weeks' treatment, it had definitely failed to attain the necessary standard for closure.

In a few cases the treatment was stopped in the patient's interest before the three weeks had elapsed. Every attempt was made to eliminate the possibility of personal bias, and to avoid any conclusion which depended on no more than general impression or individual opinion. Accordingly the points chosen for comparative purposes are all objective; they all depend on definite numerical data, easily ascertained and equally easily verified.

1. The average date on which the temperature reached normal is the first of these points of comparison. For this purpose an evening temperature of 99.2° was regarded as normal.

2. The average date upon which the microbial curve reached the suture standard laid down by Carrel.³

Quite apart from its value as an indication of the possibility of definite closure, this suture standard of Carrel's marks a reasonably definite stage in the bacteriological history of a wound, by reference to which the progress of that wound towards healing may be judged of.

3. The average duration of treatment needed before it was possible to close the wounds.

4. The date of complete healing.

The table of results given refers to a consecutive series of fifty patients with infected wounds.

For comparison a similar table of results obtained by the Carrel-Dakin treatment is given, dealing with as nearly parallel a series of fifty patients as possible. The only material difference is that the Carrel-Dakin series was made up of much more seriously wounded men. It included all the severe cases regarded as unsuitable for the flavine series on account of the experimental nature of that treatment. In spite of this the results obtained are sufficiently striking.

CLINICAL COURSE.

It will perhaps first be well to sketch the clinical history of a wound treated by 1:1,000 flavine. When first seen by us, as a rule two or three days after the man was hit, the surface was still red and raw. In pockets and recesses a little pus might be observed; sloughs were beginning to show grey or yellow; sometimes there would be a more or less offensive odour. As has been pointed out, however, the previous treatment had been good, so that the amount of sloughing tissue was usually slight, and most of the cases were not really heavily infected. The flavine dressing was applied, and twenty-four hours later it was found that the surface was a bright yellow colour, especially where fascial or tendinous structures were exposed. Pus was generally very small in amount, and even where it had been present it usually rapidly diminished in quantity. We often, in fact, experienced some difficulty in getting material for smears for bacteriological examination from the wound surfaces.

The surrounding tissues in most cases remained healthy and free from oedema or infiltration. Any spreading infection that already existed generally subsided quickly. In two cases, however, secondary abscesses developed, and in a third there was spread of infection along tendon sheaths, all of which required incisions.

Once established, the appearance just described, which Mr. Maxwell has cleverly caught in his drawings, at present on exhibition at the Army Collection of War Specimens, remained the characteristic of wounds treated by flavine for from two to three weeks. From then onwards the yellow surface, mainly due to the deposition of a tough layer of plastic lymph, gradually disappeared, being replaced by small granulations of a pale pinkish colour. It was very noticeable that where a heavy growth of organisms was present on the wound surface, this change took place much more rapidly, and in a few cases—not more than four or five—really good small dark-red granulations were seen. Throughout this time ingrowth of epithelium was very slow. In the course of the third week it generally started; but up till that period the wounds remained with sharp edges, having almost a punched-out appearance. This point is also brought out in Mr. Maxwell's drawing, and it was a constant feature.

WOUND FLORA.

Meanwhile a watch had been kept on the flora of the wound surface in order that secondary suture might be resorted to at the earliest possible moment.

In wounds treated by the Carrel-Dakin method it is the cocci—streptococci in our experience—which are usually the last to disappear from an infected wound surface.

In these wounds treated by flavine, strangely enough, this was not so. The commonest type of organism to outlive others on the wound surface was a Gram-negative bacillus. This point has already been confirmed by other workers.⁴

It is not at all certain that such organisms need necessarily contraindicate secondary suture, but such experiments as have been made to investigate this problem are not yet sufficiently advanced to enable us to speak with any confidence. Consequently for the most part the wounds were not closed unless they had reached the "suture standard" laid down by Carrel. In two instances, both cases of fracture, the sutures had to be removed, in one on the third, in the other on the fifth day. The firm healing of sutured wounds was noticeably delayed.

RESULTS.

In the chart we have made an attempt to show graphically the rapidity with which wounds treated by flavine became ready for secondary closure by suture.

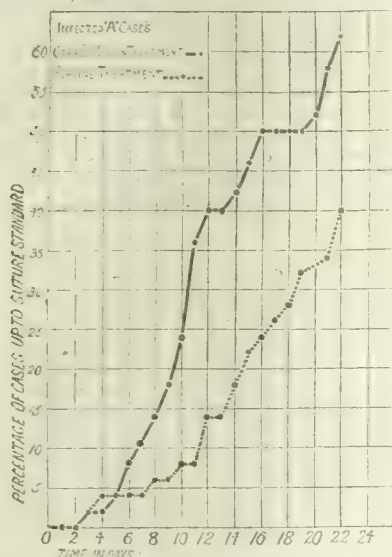


CHART 1.—Showing graphically the comparative rapidity with which wounds treated by the Carrel-Dakin method and flavine respectively become ready for secondary closure by suture. The classification as "A" cases means that they came under treatment within twenty-four hours of being wounded.

Along the ordinate line are marked the percentage of the fifty cases up to the "suture standard" on any given day, the days being marked along the abscissa. A case that had been sutured was reckoned as still one of the cases up to suture standard.

For purposes of contrast, the graph traced in a similar way for the Carrel-Dakin series is shown. It will be seen that from the tenth day on till the eighteenth the number of flavine cases bacteriologically clean varies from one-third to one-half of the number of cases similarly clean under the Carrel-Dakin treatment. The same result is brought out in a slightly different way in the table given below.

Table of Average Results.

Total number of cases: Flavine 50; Carrel-Dakin method 50.

	Flavine.		Carrel-Dakin.	
	Percentage of Cases.	No. of Days.	Percentage of Cases.	No. of Days.
Temperature normal ...	86	8.8	94	11.7
Suture standard reached ...	38	15.6	68	12.6
Suture performed ...	34	17	54	14.9
Healed ...	22	26.5	56	28.6
Evacuated unhealed ...	78	24	44	36.8
Secondary haemorrhage ...	4	—	0	—
Secondary amputations ...	2	—	4	—
Mortality ...	0	—	0	—

The temperature reached normal distinctly earlier, as a rule, in the flavine group, but the percentage of failures to reach the normal line while under treatment with flavine was rather greater. Under the influence of flavine only 38 per cent. of the cases attained the standard required for suture.

This is in marked contrast to the 68 per cent. under treatment in the Carrel-Dakin series. The superiority of the latter is still maintained when we consider the number of wounds sutured (54 per cent. as opposed to 34 per cent.) and the percentage of patients evacuated to England healed (56 per cent. as opposed to 22 per cent., or more than two and a half times as many).

We hold that the ideals and standards we must aim at consist in the early healing of wounds, and a correspondingly early restoration of the patient to full functional activity. It is no longer sufficient to say "the patient was evacuated doing well, his wounds being clean and granulating." Judged by the higher standards flavine seems to us to have failed, although in two features, the apparent preservation of the surrounding tissues from infiltration and the tendency to inhibit suppuration, its influence is not to be denied.

COMPLICATIONS.

In 8 per cent. of the cases which we treated an irritation of the skin was noted. Round about the wound there appeared first a redness and oedema, and then an eruption, in its early stages papular but later becoming vesicular in character. Cultivation from the blebs failed to reveal any bacterial influence in this complication, and, indeed, it occurred around one wound which was sterile on culture—one of the earliest test cases to which we applied flavine. In 6 per cent. it was sufficiently severe to necessitate change of treatment. Apart from this inconvenience, skin irritation and its results is always a handicap when the moment comes for secondary suture.

Secondary haemorrhage occurred in 4 per cent. of the cases. It is noteworthy that among the Carrel-Dakin series under treatment at the same time no case of secondary haemorrhage occurred.

HISTOLOGY.

The surfaces to which flavine is applied are stained yellow. This staining is apparent microscopically in fifteen minutes, and is more intense in patches. In the course of twenty-four hours it appears as if the wound were covered with a layer of fibrinous exudate, but later the covering looks more like a slough, and it does actually separate from about fourteen days onwards, leaving a granulating surface underneath. To the naked eye the slough appears as a structureless yellow-stained mass. Microscopical examination shows that it consists for the most part of extravasated blood and fibrin, and it is the amount of blood which determines the greater intensity of the yellow staining in some patches. The slowness with which the wounds become clean bacteriologically, as well as the delay in healing, suggested the necessity for a more careful histological examination of what was proceeding in the tissues. For this purpose portions of tissue were excised from nine of the most successful cases immediately before secondary suture at periods varying from two to twenty-one days after wounding, and from two to nineteen days' treatment with flavine. The tissues were fixed in Zenker's solution, cut in serial sections and stained with haematoxylin and eosin. The histological pictures all depart markedly from those figured elsewhere³ for healthy granulation tissue in wounds, and did not show the reaction of muscle undergoing repair treated by other methods. For the purpose of illustration some sketches have been made of the main features early and late in the treatment. Three days after wounding and after two days' treatment with flavine three or four layers can be recognized. There is usually a homogeneous surface layer without the characteristic structure one looks for in fibrin. It is also curiously free from leucocytes. Beneath it there are numerous muscle fibres which have lost their staining reaction and which are embedded in haemorrhages and in a fibrinous exudate containing many entangled leucocytes. The whole structure is in a state of disorganization. There is practically no formation of new capillaries, and scarcely a single muscle bundle shows any sign of regeneration. Some of the muscle fibres are fragmented by haemorrhage or heavily invaded by leucocytes. The third layer exhibits muscle fibres widely separated by exuded fibrin showing the typical network and containing fewer leucocytes. Older (pre-existing) vessels are encountered with their walls heavily infiltrated with leucocytes, and an undue proportion of them exhibit typical thrombosis. Indeed, the stagnation of the blood



FIG. 1.—Sterile wound at three days, and after two days' treatment with flavine. Homogeneous surface layer; disturbance of the formation of granulation tissues and capillaries; delay in muscle regeneration and removal of the processes of repair to deeper layers of muscle; numerous haemorrhages near the surface, fibrinous exudate in deeper layers; thrombosis of deep vessels. Four successive layers can be recognized. $\times 60$ (? reduced).

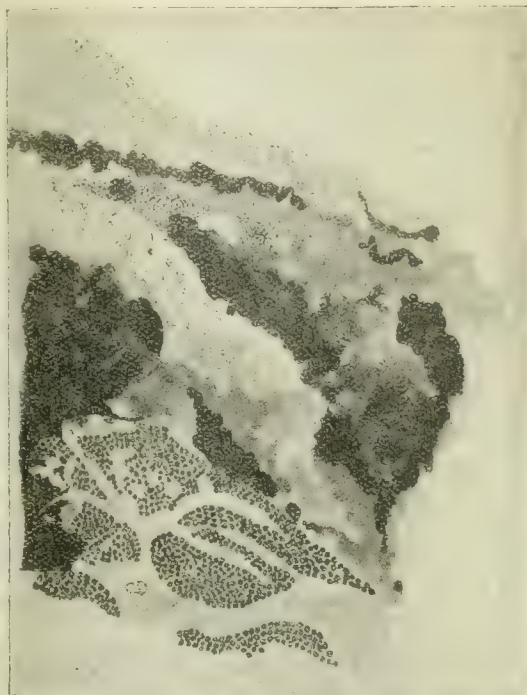


FIG. 2.—Wound seven days after being received and after five days' treatment with flavine. Haemorrhages and fibrinous exudations of different age blurring the picture as seen in Fig. 1. Dead muscle fibres on the surface, destruction of new granulation tissue, and transference of whole process of repair to the depths. $\times c. 25$.

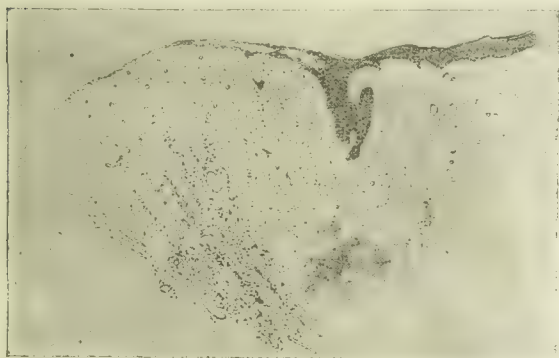


FIG. 3.—Wound just before secondary closure by suture, twenty-one days after being received, and after nineteen days' treatment with flavine. Interference with ingrowth of epithelium; granulation tissue is abnormal both in cellularity and vascularity; scar tissue not being properly formed (see Fig. 4). $\times c. 25$.

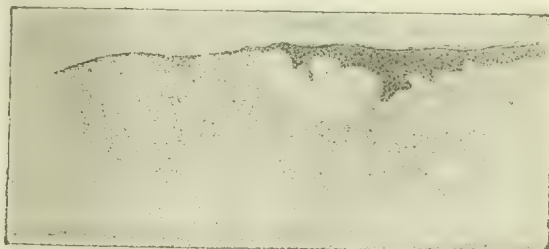


FIG. 5.—Wound comparable with that of Fig. 4, but treated by the Carrel-Dakin method. No interference with the process of healing either in the skin or the granulation tissue has taken place. Formation of normal scar tissue. $\times c. 25$.

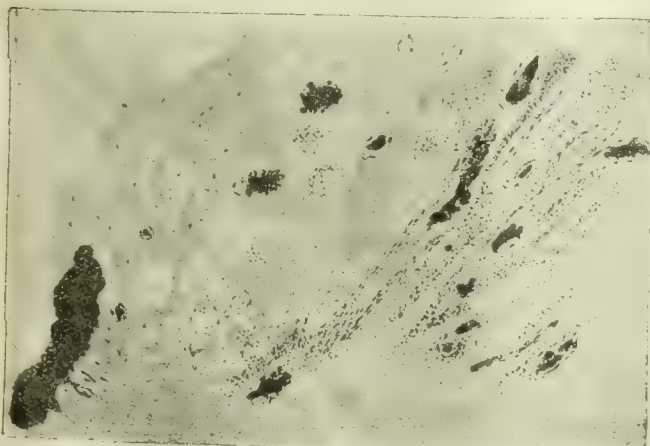


FIG. 4.—Portion of same section as in Fig. 3, under higher magnification, showing extensive damage to the vessels, together with haemorrhages, thromboses, and fibrinous exudates. Portion of tissue at lowest level of Fig. 3. $\times c. 60$.

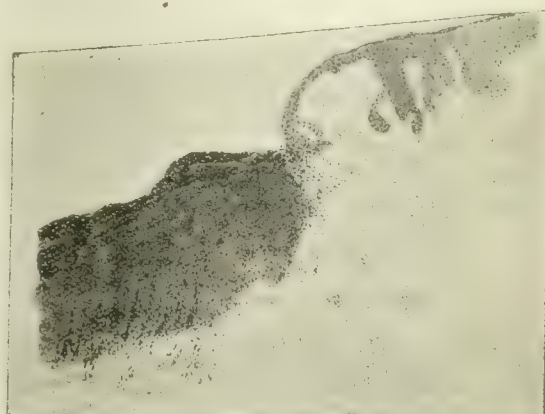


FIG. 6.—Wound to which flavine (1:25) was applied for six days; exaggeration of all the deleterious effects seen in Figs. 1 to 4. Demonstration of the formation of an eschar and extension of the action of flavine to blood vessels below in which the blood is dead and stained with flavine. $\times c. 25$.

is so pronounced that it is easy to pick out a complete series of vessels showing all the features of slowing of the blood stream, deposition of platelets, leucocytes, and formation of fibrinous thrombosis. In the fourth layer normal muscle is approached, the features of the third layer being all present in less marked degree.

Fig. 1 is from a case which, three days after wounding and after two days' treatment with flavine, showed the least disturbance of the formation of granulation tissue and muscle regeneration of any in the series, possibly because it was sterile from the start. The disturbance is, however, evident enough.

At a later date (seven days after wounding and after five days' treatment) the effects of flavine are more pronounced. Several layers can be recognized, but the whole picture is blurred by the very extensive haemorrhages (Fig. 2) and fibrinous exudations. These haemorrhages are obviously of different ages, the oldest are immediately below the surface layer, which shows the same absence of structure as at an earlier date; but in the case chosen for illustration it has formed in the superficial muscle fibres which are dead and devoid of all staining reaction. Beneath this first layer of haemorrhage granulation tissue and capillaries have been forming—partly amongst muscle fibres—when fresh haemorrhages have put an end to both the processes of granulation tissue formation and muscle regeneration. A third extensive haemorrhage has occurred below this earlier granulation tissue and partially surrounds fresh muscle bundles which are now entering on the processes of repair and are widely separated, partly by the formation of fresh granulation tissue, and partly by a fibrinous exudate corresponding to that seen in the third layer of Fig. 1. Thrombosed vessels are found adjacent to the approximately normal muscle, and haemorrhages can also be detected into the sheaths of small nerves. Thus the whole process of repair has been transferred to the depths, a quarter to almost half an inch from the surface. Sections mounted without previous staining show—notwithstanding the amount of flavine dissolved out during repeated sojourns in alcohol—that the haemorrhages are all deeply stained, as are also the red cells contained in the destroyed capillaries of the earlier attempts at granulation tissue. Apart from the bright yellow staining of the dead blood, the processes differ in no essential feature from the production of an eschar by a destructive agent not liquefying the tissues. The delay in healing is due to the advance of this process to a point which corresponds to the limits of the penetration of flavine through the successive layers of tissue killed by its action. The absence of pus on the surface is explained by the absence of any possibility of leucocytes reaching the surface on account of the destruction and poor formation of capillaries. The fact that the wounds do ultimately clean up, in spite of this, is an interesting commentary on the very great stress that has been laid on the importance of pus in the healing of infected wounds.

The latest stage under flavine treatment is reached when secondary suture is performed. The slough has now, as a rule, separated. A typical example, twenty-one days after wounding and after nineteen days' treatment, is shown in Fig. 3. To the naked eye it is evident that the skin is not growing in as rapidly as is to be expected, and where it has grown in its surface is irregularly raised, as if thickened, the reason not being apparent. On sectioning, it is seen that the growth of the epithelium has been seriously interfered with and diverted from the surface of the wound downwards into the depths, so that healthy new epithelium is only found where it can apply itself either to newly formed scar tissue or older dense connective tissue. Towards the wound surface growth has become abortive; the skin has separated into two layers, between which there is an accumulation of leucocytes and some fluid, this being the explanation of the curious appearance above remarked upon. Many leucocytes have also invaded the epithelium throughout the whole length of growth over the wound. They have also invaded an abortive attempt at the production of a papilla which has become vacuolated. The appearances recall those seen in an infected ulcer of the skin or tongue, or in the epithelium adjoining an epithelioma which has become infected. The downgrowth of epithelium away from the granulations exposed to the action of flavine is interesting because it reproduces in man what has been described for the

epithelium of the rabbit's ear after the injection of Scharlach R. by German authors (B. Fischer) some years ago, but wrongly interpreted as being due to stimulation of epithelial growth. From the figures it is quite obvious that it is the exact opposite—a growth away from the area acted on by flavine, and towards tissue not acted on by it.

The granulation tissue at this stage also calls for some comment. As contrasted with healthy granulations, it is remarkably poor in blood vessels. It is also abnormal in the arrangement and number of its various cellular elements. Leucocytes are far too numerous, and scar tissue is not being formed properly. On examining sections under a higher power extensive damage to the existing vessels is observed. In Fig. 4 the vessels at the very bottom of Fig. 3 are shown. They are 5 mm. from the surface. All show an abnormal cellularity of their walls, which are formed sometimes of three or more layers of flattened cells as if there had been previous abnormal proliferation. Many also show thromboses, and in Fig. 4 two capillaries are shown to be obliterated. There are numerous small haemorrhages in the neighbourhood, and a more extensive one in the pre-existent dense connective tissue to the left of the figure. To the left of the long vessel in the centre of the figure much fibrinous exudate is seen. Thus flavine continues to hinder the later processes of healing and the formation of scar tissue by the same sort of action as it exerts on the earlier stages. For the purpose of contrast Fig. 5 has been prepared from a wound treated by the Carrel-Dakin method, but otherwise comparable with the foregoing. It will be observed that not one of the interferences with the process of healing, either in the granulation tissue or the skin, has taken place; indeed, the whole process is quite as normal as in the healing of a sterile bullet wound.⁵

The foregoing description of wounds treated with flavine applies to cases in which the procedure laid down by Browning for the employment of a solution of 1:1,000 had been strictly adhered to. Browning has stated that the use of 1:500 is not harmful, and we believe that others have suggested 1:250. Fig. 6 is from a wound to which a solution of 1:250 flavine was applied for six days without the application of an impermeable covering, but then stopped in the patient's interest. The figure shows in exaggerated degree all the deleterious actions above described both for granulation tissue and skin. The capillaries running up into the flavine eschar are full of blood deeply stained with flavine, both within the scar and for some distance below, indicating that the blood was brought to stagnation and death. The tissue in the eschar has for the most part lost its power of nuclear staining by haematoxylin, and this loss extends somewhat deeper than the obvious staining with flavine. Some of the vessels immediately under the limits of the ingrowth of skin also contain blood stained with flavine, but elsewhere the blood is normal, so that circulating blood corpuscles do not retain flavine, as, indeed, has been proved by intravenous injection. Careful examination of the walls of capillaries containing blood stained with flavine showed that the endothelium was swollen irregularly, and the nuclei vacuolated in some places.

One other late effect of the action of flavine calls for mention. The extent to which the reaction of repair is removed into the depths and tends to involve muscle ultimately leads to a great over-production of scar tissue. To what extent this is liable to produce an undue amount of contraction cannot as yet be determined, but it is certainly not a desirable feature.

The conclusion to be drawn from the foregoing histological observations is that they explain the clinical course of wounds undergoing treatment by flavine, when taken in conjunction with the fact that abundant growths of micro-organisms can be obtained from portions of deeply stained granulation tissue excised after many days' treatment. A review of all the circumstances lends no support to the claim that "the outstanding property of flavine is its selective toxicity to the organisms; thus powerfully bactericidal solutions do not harm the tissues and protective mechanisms of the body." On the contrary, a solution of 1:1,000, far from being innocuous, produces the very deleterious effects recorded above on the entire process of healing, killing successive layers of the reacting tissue elements, including the essential

vascular mechanism, which latter is also an important protective mechanism. The only favourable feature has been that the patient is apparently protected in some way from the absorption of toxic products. Whether this is due to the disturbance of vascularity or to flavine rendering toxic products non-toxic has not been determined. But the employment of flavine and other dyes as if they supplied royal roads to success must be regarded as retrograde steps. However promising this line of inquiry may be for the future, the introduction of fresh substances will only be justified after some such adequate comparative trial as we have done our best to carry out, holding no brief for any particular form of treatment.

CONCLUSIONS.

In the light of the foregoing facts the following points stand out clearly:

The flavine treatment of wounds is associated with—

1. Small formation of pus.
2. Slow epithelial ingrowth.
3. Delay in all the processes of repair.
4. Lingering of organisms on the wound surface.
5. Some diminution in the local and general reaction to infection.

In conclusion, we wish to acknowledge our great indebtedness to Surgeon-General Sir George Makins, to whose foresight and influence the surgical observation hut owes its existence, and to Sir Arthur Sloggett, Director-General of Medical Services in France, for according the necessary facilities for these investigations, as well as to the British Red Cross Society for provision for them. We have also to acknowledge the willingness with which Colonel H. E. Cree, A.M.S., assented to the necessary arrangements being made for the surgical observation hut attached to the general hospital under his command.

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THE TREATMENT OF PARAPLEGIA FROM GUNSHOT OR OTHER INJURIES OF THE SPINAL CORD.

BY

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NOTHING can be more deplorable than the condition of an otherwise healthy man suffering not only from paralysis of the lower extremities, but also of the sphincters of the bladder and rectum.

At present the condition is considered incurable and the patient is condemned to a life of helplessness and misery. But is it incurable? I trust to be able to show that there may be hope for some of these cases by surgical treatment.

The spinal cord is made up of a series of local nerve centres, together with a large amount of conducting material resembling nerve structure which conveys impressions to and from the brain. If continuity is lost, all voluntary action of the nerve centres below the seat of injury is destroyed.

If we can by operative means remedy paralysis due to nerve destruction by transplanting new nerve tissue or part of the spinal cord of one of the lower animals, as I proved possible some years ago,¹ why should we not be able to obtain return of function in a damaged spinal cord by excising the injured section and transplanting into the gap thus made a portion of the spinal cord of a recently killed rabbit, or perhaps better, of a sheep or calf?

I have for some time believed it to be feasible, and I now deliberately propose that such an operation should be tried in cases otherwise incurable.

With due care in asepsis it should be possible to perform the operation without danger to life; and as the paralysis in any suitable case would be complete, the condition of the patient should not be made worse by the operation,

even if it failed to establish continuity. In a case of simple fracture of the spine it may be done as a primary operation, when it is clearly established that the cord is divided or damaged beyond natural repair. If the cord is simply divided, possibly simple suture is all that may be required.

One of the following cases proves the possibility of successful suture, but in the case of gunshot wound the injury will be septic, and it is necessary that the wound should be healed and all trace of septicity absent before the operation I propose can be safely done.

Some years ago I performed laminectomy in the mid-dorsal region in a boy suffering from tuberculous disease of the spine and paraplegia. He ultimately made a complete recovery, and in due course returned to school, he being able to walk, and ultimately even to run about. Unfortunately the spinal support with which he had been furnished was, after a time, discarded, of course without advice, and in time he developed a well marked hunchback, which his fellow schoolboys considered it good fun to ride on. One day, while giving a boy a ride on his back, he fell and fractured his spine at the seat of weakness. This was immediately followed by paralysis.

I saw him shortly after the accident, and cut down on the cord, which I found torn nearly across from behind forwards, the separation behind being in width about half an inch, a small part of the front of the cord only holding together. On straightening the spine the divided ends came into good apposition, and were fixed with fine catgut sutures. The theca of the cord was then closed by a continuous catgut suture, and the rest of the wound was united. The patient was put up at once in plaster-of-Paris in the straight position. There was very little shock, and recovery from the operation was uninterrupted. The function of the lower part of the cord gradually returned, and ultimately he regained power over the sphincters, and recovered the use of his lower extremities.

This case proves that suture of the severed cord can be successfully performed.

During the past six months it has been my duty as well as my pleasure to visit officially the Duchess of Connaught's Canadian Red Cross Hospital at Clivedon, and through the kindness of Colonel Mewburn I have seen a case there that bears out the ideas I had previously held as to the possibility of transplantation to secure continuity of the divided spinal cord.

Acting on the knowledge that I had successfully transplanted the spinal cord of a rabbit into the human subject, the surgeons in charge of a case of gunshot injury of the spine with wound of the cord and consequent paraplegia have performed a most successful operation. The spinal cord was partly divided and otherwise seriously damaged over a limited area by a bullet which had lodged in the spinal canal. The bullet was removed, and after the wound had become germ-free, the edges of the injured part of the cord were pared and a section of the recently removed spinal cord of a rabbit was transplanted into the partly divided cord of the patient.

I have seen the patient on two occasions since the operation, and at my last visit the paraplegia was gradually passing off; function showed signs of returning in the lower extremities and the sphincters were regaining power—in fact, the case promises to be a brilliant success.

Colonel Mewburn has kindly forwarded me an account of the condition of the patient on November 24th, 1917. Sensation has returned from above the nipple line to 3½ in. below that line. There is a general soreness over the rest of the paralysed parts indicating the beginning of return of sensation in the paralysed parts. There is a marked tendon patella reflex, and both legs have sensation when being tapped. Both limbs give a marked continuous clonus. The patient says that he is conscious when his bowels are moving and when the parts are soiled. Bed-sores are healing, and some have quite healed. All the improvements have dated from the time of operation two months ago.

These cases have encouraged me to write this short paper so that others may give a trial to the method I have advocated and so make an attempt to cure some of the deplorable cases of paraplegia up to the present time considered to be incurable.

I have just seen in one of the hospitals of the Southern Command a case of fracture of the seventh dorsal vertebra from gunshot injury in April of this year. The wound has healed soundly and the patient is in good general health except that he is completely paraplegic, including loss of use in the sphincters of the bladder and rectum. The condition of the bladder has been relieved by tho

* This case will doubtless be reported later with full details by the surgeons in charge.

performance of a suprapubic cystotomy. I have advised operation, and I hope shortly to help my colleague, under whose care the man is, to perform laminectomy to be followed by excision of the damaged area of the cord and transplantation of one or more sections of a rabbit's cord into the gap, in order to try to secure conduction of impressions between the upper and lower segments of the man's spinal cord.

There are, I feel sure, many similar cases of invalided soldiers in various institutions throughout the country who would doubtless be willing to undergo operation even if it gives the barest possibility of success.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, September 13th, 1890, and October 31st, 1896.

An Address

ON THE

NECESSITY FOR EDUCATION IN RADIOLOGY
AND ELECTRO-THERAPEUTICS.

DELIVERED TO THE ELECTRO-THERAPEUTICAL SECTION OF
THE ROYAL SOCIETY OF MEDICINE.

BY

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(Abstract.)

DR. ORTON began by referring to the views expressed by Dr. Thurstan Holland in his presidential address to the Röntgen Society,* and in his letter in the JOURNAL of September 15th, 1917, giving an account of the steps taken by the Surgeon-General of the United States Army to organize military radiographic work; as a result of a conference of leading radiologists a number of schools in charge of experts were established for the teaching of radiographic work, which medical officers intending to do x-ray work were required to attend for three months; the x-ray examination of recruits, especially with reference to chest conditions, was organized, and methods for the localization of foreign bodies were considered.

Dr. Orton said that the organization for military x-ray work had been carried out in this country without consultation with leading radiologists, with possibly one exception, and added that the same remark applied to electro-therapeutics. In March, 1917, the council of the Electro-therapeutic Section of the Royal Society of Medicine appointed a small committee, with Sir James Mackenzie as chairman, to consider the best manner in which to deal with questions concerning the status of medical men holding positions as radiologists and electro-therapeutists, and the steps which should be taken for the promotion and teaching of radiology and electro-therapeutics. After full consideration had been given to the matter at several meetings the following letter was addressed to the Vice-Chancellor of the University of Cambridge on May 26th, 1917:

Dear Sir,

The call for some organization of the members of the medical profession who practise radiology and other branches of electro-therapeutics is urgent, and there is great need that some steps should be taken to establish these subjects on a proper footing both in regard to the public and the profession generally. At present no standard exists; there is no organized teaching of the subjects, and those medical men who have taken up this branch of medicine have had to pick up their knowledge almost entirely by experience—at the expense of their patients. The result of this haphazard state of things is well depicted by Captain Thurstan Holland in his presidential address before the Röntgen Society—the lack of knowledge on the part of those who have been responsible for placing totally untrained men, both lay and medical, in charge of most of the military x-ray departments has led to endless tragedies, while in civil practice much suffering would be saved if competent radiologists were in charge of the departments. In civil general hospitals,

where the x-ray department is properly organized, fully 10 per cent. of all the patients who enter the doors of the hospital find their way to this department, and this in spite of the fact that those in charge are so over-burdened with routine work that there is no time for research or the undertaking of new branches of diagnosis and treatment.

As the outcome of a discussion at the Council Meeting of the Electro-therapeutic Section of the Royal Society of Medicine on March 16th of this year a small committee was formed to consider—

- (i) The best means of raising the status of radiology and electro-therapeutics to their rightful place among the branches of medicine, and to attract the better class of medical men to take up these special subjects.
- (ii) To suggest what steps should be taken to provide teaching in radiology and electro-therapeutics.

At this meeting, after a prolonged discussion, a sub-committee was elected to go into this matter. After considering several schemes the subcommittee suggested that it was not advisable to start any programme of teaching in London until it was known if facilities could be offered for granting a diploma at Cambridge or some other university.

It was decided to approach Cambridge University in the matter, as it was stated by one of the members that funds would be found not only to provide for the necessary expenses, but also to equip, maintain, and eventually to endow a Research Hospital and Chair if these facilities were granted by this University.

It is intended that the scheme shall be started on broad lines, in order that development may not be hampered, the objects being:

- (i) To provide a standard in these subjects.
- (ii) To provide the teaching that will be necessary, together with the facilities for hospital experience.

So far as it has advanced at present the scheme of the Subcommittee provides for:

A. A central organization in London, housed in an institute, where teaching facilities would be available in the scientific part of the curriculum, the practical experience being available in the large hospitals. Later, if necessary, centres could be started in other towns.

B. A post-graduate diploma in one of the older universities where a research hospital would be built. This hospital would be devoted to the scientific investigation of the many physiological, pathological, and physical problems that are waiting to be worked out. This hospital would be available for those who wished to work on various problems, and especially for those who were investigating with a view to the M.D. thesis.

Appended you will find outlines of: A, The London Scheme; B, the Cambridge Scheme:

A. The London Scheme.

A representative board, elected annually, would be responsible for this scheme.

1. The intention is to provide a central institute in London, equipped for general organization, and also for post-graduate teaching, where the necessary appliances would be available for demonstrations, and where all lectures on scientific subjects could be given.

2. Arrangements would be made for teaching in physics, chemistry, pathology, and clinical medicine, and for lectures by specially qualified medical men in those branches of radiology in which they had specialized. Special lectures and demonstrations in allied subjects would also be arranged, and whenever distinguished colleagues from abroad visited this country they would be invited to deliver lectures.

3. In conjunction with the university which grants the diploma, the board would draw up the general lines of teaching, not only for the London school, but for any other schools that might be formed.

4. The board would arrange for students to hold appointments as clinical assistants in the various x-ray and electrical departments that would be available in the London hospitals.

5. The board would arrange centres throughout the country in close touch with the central institute, where it would be possible to arrange for post-graduate teaching.

6. The institute would be the centre for the spread of knowledge of these subjects and of the work done in this country; and, if possible, the existing x-ray journal would be utilized as its official organ.

In the future it is probable that many overseas workers will be attracted to this country, and a strong

* Journal of the Röntgen Society, January, 1917, vol. xiii, No. 50. BRITISH MEDICAL JOURNAL, November 18th, 1916, p. 696. A fuller expression of Dr. Holland's view was contained in an address published in the JOURNAL of March 3rd, 1917, p. 285.

effort should be made to establish an attractive post-graduate school where the subjects could be taught in a manner worthy of their importance. It is especially important to get the scheme started as soon as possible, even in a small way, for when the war is over there will be many medical men who have done the comparatively mechanical war x-ray work who will be attracted to the subject, and who will welcome the idea.

Lay assistance is necessary in x-ray and electro-therapeutic work, and provision will have to be made later for the training of qualified assistants, to whom a certificate would be granted.

The next step would be to approach the General Medical Council on the question of the recognition of radiologists, and the making of it illegal for any other than a qualified member to practise these subjects.

This would at once lead to the raising of the standard and the multiplication of posts of responsibility which would attract the better type of medical man to the new subjects.

B. The Scheme for Cambridge.

Clinical material for adequate teaching facilities is not available in Cambridge, but, on the other hand, there is quite sufficient for research, and the intention would be that, while London, and possibly other large towns, are the teaching centres, Cambridge should be the examining and research centre.

For this purpose it is necessary that there should be some man in charge in Cambridge who would, in conjunction with the duly appointed board, make the necessary arrangements for the examinations and undertake the direction of the research hospital.

In the first instance the duty of the man in charge would be to find out what men were at work and what work was being done in the various hospitals throughout the country, and to enlist the active and sympathetic support of all workers, not only in the central institute in London, but also to obtain their co-operation in the research work. As far as possible he should also be in touch with the work that is being done abroad, especially in Canada and the States.

There is room for endless research in radiology, not only on the physical side, but also on the human, for example, in the investigation of the alimentary tract, and especially in the action of drugs, etc., and it is proposed that a research hospital should be started with twelve or more beds and certain laboratories attached; this should be placed as close to the Addenbrooke Hospital and also to the existing laboratories as can be arranged.

In the first place it would be advisable that this hospital should be started in temporary buildings as it is impossible to foresee on what lines the hospital would develop.

Yours, etc.,

Another meeting was held on June 15th, 1917, when the following encouraging replies to the letter addressed to the Vice-Chancellor of Cambridge University were read:

The Vice-Chancellor wrote (May 28th, 1917):

I brought your letter before the Council of the Senate this morning. The proposals contained in the letter were received favourably and the whole question was referred to a special board for medicine, with the request for an answer to the Council before the end of the term.

Dr. Lawrence Humphrey, secretary of the special board for medicine, wrote (June 7th, 1917):

The special board for medicine considered your letter *re* medical radiology and welcomed the proposal. It was unanimously agreed to approve the general principle, and the board were prepared to recommend that steps be taken to institute a diploma. It was thought advisable that the scientific teaching should, as far as possible, be carried on in Cambridge and that the appointment should be rather a director or reader and not a professor. The board appointed a small committee to consider the details and, if desired, to meet members of your committee to discuss the matter.

The Committee further considered that, in view of the importance of the questions involved, and of the necessity for unanimity of opinion, it would be a proper step to invite the leading radiologists and electro-theraputists to attend a meeting, and the Secretary was authorized to call such a meeting and to invite the co-operation of the deans of the various London schools. Most of the deans have replied approving of the scheme, subject to the consideration of details, and there can be no doubt that in the near

future it should be possible to arrange for post-graduate teaching at several of these schools.

The meeting of radiologists and electro-theraputists was held at the Royal Society of Medicine on July 25th, when, after much lengthy argument and discussion, the following resolution was carried unanimously:

That this meeting of medical men practising as radiologists desire to express their approval of the initial steps taken by the gentlemen who have submitted an outline of a scheme, and to thank them heartily for the work they have done; and further we propose that the gentlemen who have already taken action in the matter should form an executive of a larger committee representative of all the London and provincial schools.

If such a body had been in existence at the beginning of the war it would have been in a position to advise the military authorities as to the general organization of radiology and electro-therapeutics, and, further, to undertake the teaching of men appointed to the various departments on standard methods; unfortunately this was not the case. But is it yet too late? From what I have seen and heard even in the last few weeks I should say decidedly No, but I fear nothing so simple as saying No will help us out of the anomalous position in which we find ourselves; but, as Captain Thurstan Holland has truly said, "The time has come to enter a strong protest against the continuance of methods which allow of such anomalies to exist." I think we are now in a position to enter such a protest. From what has been done there appears no doubt that the Cambridge part of the scheme could soon be in active being, if the necessary financial support can be arranged. It remains for us to see that the London scheme is put upon a sound basis, so that the two may be able to co-operate in practical teaching and research work.

To do this we must endeavour to establish a central institute in London with facilities for post-graduate teaching on a fairly large scale, in order that men who desire to study these subjects may be able to do so under conditions comparable with those already established in other countries.

The task is not easy, and I foresee that there are many obstacles still to be overcome, not the least being the lack of funds. The way, however, has been paved, and if we push on with sufficient energy and determination there is no reason why in the near future our efforts should not be crowned with success.

THE MYCOLOGICAL DETECTION AND DETERMINATION OF CERTAIN CARBOHYDRATES AND OTHER CARBON COMPOUNDS IN PATHOLOGICAL WORK.

BY

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VARIOUS carbohydrates and other carbon compounds are currently used in the identification of certain bacteria and higher fungi. The reverse process may also be carried out, namely, certain hyphomycetes and bacteria presenting permanent biochemical reactions may be used in the determination of various carbohydrates and other carbon compounds in pathological work.

For many years ordinary German yeast has, as is well known, been used in the detection of glucose, but this is the only substance for which so far such method of detection has been employed in pathological investigations. As a matter of fact, the method is scientifically incorrect, at least when using the German yeast obtainable in London, for judging by the results of the investigation of several specimens collected by us, this yeast ferments with the production of gas, not only glucose, but several other sugars. When, therefore, gas is thus produced it does not mean with certainty that the sugar present is glucose; it might be levulose, or some other. To detect glucose recourse should be made to really specific germs for that sugar—namely, germs which will ferment glucose only.

with production of gas; for instance, *Monilia balcanica* Castellani, *Monilia parabalcanica* Cast. We have not specific germs for each of the other sugars and carbohydrates, but, as there are a number of species of hyphomycetes and bacteria which select certain carbohydrates to the exclusion of others, we have found it possible, by using certain of these hyphomycetes and bacteria and comparing the results, to devise a general method with the object of assisting in the detection and identification of some carbon compounds, especially certain sugars and other carbohydrates.

General Principle of the Method.

The three more important sugars which have to be dealt with in physiological and pathological investigations—namely, glucose, lactose, and maltose—may, as is well known, be distinguished by their relative powers of reducing Fehling's solution, and by the characters of their osazones; but they may also be distinguished, in our experience, by a very simple mycological test, which may be carried out as follows:

Make a 1 per cent. solution in peptone water of the substance, which it is assumed is known to be one of the three sugars, and distribute it into two tubes, (1) and (2). Inoculate No. 1 with *Monilia balcanica* Cast., or *M. parabalcanica* Cast., or *M. krusei* Cast. Inoculate No. 2 with *M. pinoyi* Cast. or *M. tropicalis* Cast. Incubate at 37° C. for forty-eight hours, and then read the results. If both tubes present gas, the sugar must be glucose; if No. 1 presents no gas and No. 2 gas, the sugar must be maltose; if neither of the tubes present gas, the sugar must be lactose.

This is explained by the fact that *M. balcanica* Cast., *M. parabalcanica* Cast., or *M. krusei* Cast., while producing gas in glucose, have no action on maltose or lactose; and *M. pinoyi* Cast., or *M. tropicalis* Cast., while fermenting glucose and maltose, have no action on lactose. Acid fermentation without production of gas is not to be taken into account. We have carried out the experiment also with certain species of the genus *Saccharomyces*—either with live organisms or their extracts (zymases).

Instead of hyphomycetes, certain bacteria may be used. Thus:

Inoculate Tube No. 1 with *B. proteus vulgaris* Hauser (P.I. strain); inoculate Tube No. 2 with *B. diffluens* Cast. If both tubes show presence of gas, the sugar is glucose; if No. 1 shows gas and No. 2 no gas, the sugar is maltose; if both No. 1 and No. 2 show no gas, the sugar is lactose.

This is explained by the fact that *B. proteus vulgaris* Hauser (P.I. strain) does not ferment lactose, while it ferments with production of gas, glucose and maltose; and *B. diffluens* Cast. does not ferment lactose and maltose, but does ferment glucose with production of gas.

Differentiation of Fehling-reducing Substances.

If we have a Fehling-reducing substance we can determine which it is of the six sugars which may be found in pathological urines—namely, glucose, levulose, maltose, galactose, lactose, or pentoses—by the following method:

Make a 1 per cent. solution of the substance in sugar-free peptone-water, and distribute it in four tubes, each containing a Durham's fermentation tube. Label them Tube 1, Tube 2, Tube 3, Tube 4. Inoculate No. 1 with *Monilia balcanica* Cast., or *M. parabalcanica* Cast.; No. 2 with *M. krusei* Cast.; No. 3 with *M. pinoyi* Cast.; No. 4 with *M. metalindinensis* Cast. Incubate the tubes at 35° C. for forty-eight hours and then read the results.

- (1) Tubes 1, 2, 3, 4, gas present: the reducing substance is glucose.
- (2) Tube 1 no gas; tubes 2, 3, 4, gas present: the reducing substance is levulose.
- (3) Tube 1 no gas, tube 2 no gas; tubes 3, 4, gas present: the reducing substance is maltose.
- (4) Tubes 1, 2, 3, no gas; tube 4 gas present: the reducing substance is galactose.
- (5) Tubes 1, 2, 3, 4, no gas: the reducing substance is either lactose, a pentose, or a reducing substance belonging to the group creatin, uric acid, hippuric acid, etc.

The above conclusions are easily explained when the biochemical reactions of the four monilias we have used are kept in mind. *M. balcanica* Cast. produces gas only in glucose; *M. krusei* Cast. in glucose and levulose; *M. pinoyi* Cast. in glucose, levulose, and maltose; and *M. metalindinensis* Cast. in glucose, levulose, maltose, and galactose; while none of them produces gas in lactose or the pentoses or any other Fehling-reducing substance we have experimented with.

The reducing substance in which none of the monilias mentioned has produced gas may be further investigated, as follows: Take two tubes (5 and 6) of the 1 per cent. peptone water solution, and inoculate No. 5 with *B. coli* Escherich, and No. 6 with *B. paratyphosus* B. Schottmüller, taking care to use strains producing a large amount of gas. Incubate for forty-eight hours and read the results. If both tubes contain gas, the reducing substance belongs to the so-called pentoses; if No. 5 contains gas and No. 6 no gas, the reducing substance is lactose. This is explained by the fact that *B. coli* Esch. produces gas both in lactose and the pentoses; while *B. paratyphosus* B. Schott., does not ferment lactose, but ferments with production of gas the so-called pentoses (arabinose, etc.). If both tubes show absence of gas, the substance belongs to the non-fermentable group of reducing substances, including uric acid, creatinin hippuric acid, etc.

The working of the method can be seen at a glance in the accompanying table and key.

Table showing Identification of Certain Fehling-reducing Substances.

<i>M. balcanica</i> Cast.	<i>M. krusei</i> Cast.	<i>M. pinoyi</i> Cast.	<i>M. metalindinensis</i> Cast.	<i>B. paratyphosus</i> B. Schott.	<i>B. coli</i> Esch.	Reducing Substance.
+	+	+	+	+	+	Glucose.
0	+	+	+	+	+	Levulose.
0	0	+	+	+	+	Maltose.
0	0	0	+	+	+	Galactose.
0	0	0	0	+	+	Pentoses.
0	0	0	0	0	+	Lactose.
0	0	0	0	0	0	Non-fermentable reducing substances of the groups creatin, hippuric acid, uric acid, etc.

+ = Production of gas; simple acid fermentation is not taken into account.
0 = No gas.

The reducing substance is made into a 1 per cent. peptone water solution. Selected strains of the various organisms with permanent biochemical reactions and producing a large amount of gas should be used.

Key to the Identification of Certain Fehling-reducing Substances.

Inoculate Tube 1 with *Monilia balcanica* Cast.

0; inoculate Tube 2 with *M. krusei* Cast. + = GLUCOSE.

0; inoculate Tube 3 with *M. pinoyi* Cast. + = LEVULOSE.

0; inoculate Tube 4 with *M. metalindinensis* Cast. + = MALTOSÉ.

0; inoculate Tube 5 with *B. coli* Esch., and Tube 6 with *B. paratyphosus* B. Schott. + = GALACTOSE.

<i>B. coli</i> +, <i>B. paratyph.</i> B -, = PENTOSE.	<i>B. coli</i> +, <i>B. paratyph.</i> B 0, = LACTOSE.	<i>B. coli</i> 0, <i>B. paratyph.</i> B 0, = Non-fermentable reducing substances of the groups creatin, uric acid, hippuric acid, etc.
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Presence of More than One Reducing Substance.

If the presence of more than one sugar and other carbohydrates is suspected, this may, to a certain extent, be ascertained, and the various carbohydrates determined by our mycological method. Let us assume that a liquid, after gas fermentation with *M. balcanica* Cast., is still fermentable with production of gas by *M. krusei* Cast.—the conclusion is that in addition to glucose the liquid must have contained levulose; strains of *M. balcanica* Cast. and of *M. krusei* Cast. should be used having approximately the same fermentation power on glucose. If, now, the liquid, after exhaustion, first with *M. balcanica* Cast. and then with *M. krusei* Cast., is fermentable with production

of gas by *M. pinoyi* Cast., the presumption is that the liquid contained three sugars—glucose, levulose, and maltose. The explanation is found in the fact that *M. balcanica* Cast. ferments with production of gas glucose only; *M. krusei* Cast., glucose and levulose; *M. pinoyi* Cast., glucose, levulose, and maltose.

There are, however, in certain circumstances some sources of error, but with these, as well as the precautions for avoiding them, and with the whole subject of the presence of more than one reducing substance, we propose dealing in a future paper.

Application of the Method to the Detection of Certain Non-reducing Substances.

The method, using certain species of fungi and bacteria, may be applied to assisting in the detection of certain other substances—saccharose, inosite, dextrin, etc. To help in the identification of saccharose, for instance, make a 1 per cent. peptone water solution of the substance to be examined, and inoculate two of the tubes of the solution with two germs (bacteria or monilias or saccharomyces) identical in all their biochemical reactions except on saccharose; for instance, inoculate No. 1 with *B. coli* Esch. and No. 2 with *B. pseudocoli* Cast. If after forty-eight hours' incubation at 37° C. No. 1 shows absence of gas, while gas is present in No. 2, the sugar is saccharose. With this subject also we propose dealing more fully in a future paper.

Use of the Method in Urine Analysis.

From a number of experiments we have carried out, adding to samples of urine various sugars and other carbohydrates, and also from a few pathological specimens, we can say that the method can be used in urine analysis for the detection and differentiation of certain sugars and other substances—glucose, levulose, lactose, pentose, etc.—provided that the amount of such substances present is not too minute (not less than 0.1 per cent.). The urine is distributed in sterile tubes containing Durham's fermentation tubes or similar devices and inoculated with the organisms mentioned in the table and key. Two points of considerable importance are (1) the urine must be aseptic; if it cannot be collected aseptically it should be sterilized as soon as possible—after distribution in the tubes—by heating in Koch's steamer for thirty minutes on two or three consecutive days. It should never be autoclaved, as this procedure may alter the characters of the sugars and other carbohydrates present. (2) It is of great advantage to add a third or the same amount of peptone water to the urine before inoculation, otherwise the organisms may grow very scantily, and there may be no production of gas.

A METHOD OF SKIN GRAFTING UNDER SEPTIC CONDITIONS.

BY

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THE difficulty which has arisen in connexion with skin grafting is recognized by most military surgeons. In a considerable number of instances grafts have not grown on account of the generally septic conditions prevalent. Hitherto the first principle of successful skin grafting has been the most rigid asepsis, without using antiseptic solutions on the raw surface of the wound, since efficient antiseptic solutions have proved as fatal to the delicate grafts as the bacteria which they sought to eradicate. As a rule, the only solution used by most surgeons has been normal saline. Another difficulty arises when a patient has multiple wounds and the wound to be grafted cannot therefore be retained in the best position possible, so that the grafts are sometimes pulled out of place in handling the dressings.

By the method here described I have been able to obtain successful grafts upon areas which, though "clean" to the naked eye, were still actually suppurating, dressings which had been left on for twenty-four hours showing a certain amount of pus, and even possessing an offensive odour.

The following is a case which seemed less promising at the beginning than any other I have dealt with:

The patient had been wounded in the arm, the head, the back, and the left thigh. The wound in the arm had necessitated a guillotine amputation in France, which had remained septic; the wound in the thigh had been excised in France, and when I received the patient in England it consisted of an area on the posterior surface extending from two inches above the knee to the natal fold. The outer border reached to about one and a half inches in front of the great trochanter, and the inner border to within about one and a quarter inches of the rectum—an area of approximately seventy-two square inches, in which all the skin, superficial fascia, and fat had been removed and had left the hamstring muscles exposed and still in a septic condition in very nearly their whole length. (On first viewing this leg it seemed doubtful whether it could be saved, especially as the wound was of such an irregular shape that a plastic operation by means of which parallel strips of skin might be brought over portions of the exposed surface was not possible.)

For ten days the wound was dressed on every third day with pure sterilized liquid paraffin containing one drachm of ordinary bipp to the ounce. At the end of this period the wound was quite clean at the edges and had granulated well over the muscles; a skin graft under the following conditions was decided upon in spite of the fact that the dressings were still somewhat offensive.

The edges of the wound and the skin of the buttocks, whence the graft was to be taken, were sterilized with iodine; the surface of the wound itself was sprayed with zoel, which the manufacturers inform me is made by mixing 1 lb. of 78 per cent. electrolytic caustic soda ground to pass through a sieve with ten holes to the linear inch, with 1½ lb. of No. 20 pure salt; to this is added 5½ lb. of granulated borax and the whole well shaken together. Combination of the caustic soda with the borax takes place rapidly, resulting in a mixture (zoel) containing 19½ per cent. sodium chloride, 3 to 4 per cent. of sodium diborate, and 76½ to 77½ per cent. of sodium monoborate. I then raised small portions of the skin of the buttocks with forceps and dissected off portions about a quarter of an inch in diameter and one-sixteenth of an inch thick in the centre. I passed a single stitch through each graft and through the granulation tissue, suturing each graft in careful apposition; in all I planted about thirty-five grafts in this way. Again I sprayed with an atomizer a solution of zoel upon the grafted wound, and then dressed the whole with gauze soaked in sterilized paraffin, so that the dressing should not dry and tear off the grafts or cause bleeding when it was changed.

The paraffin dressing was left on for forty-eight hours without removal, but was moistened from time to time with fresh paraffin in order to prevent it from sticking. At this period the dressing had begun to smell, and the edges of the dressing had become green. I therefore re-dressed the wound, and sprayed it again with a 2 per cent. solution of zoel, afterwards again placing over the surface gauze soaked in paraffin. This procedure I repeated from time to time on the average every twenty-four hours, and at the end of twelve days every graft had not only taken but had spread to more than twice its original area.

I have used this method on other cases, of which that quoted is typical, and the success of the technique I ascribe to three outstanding conditions:

1. The fixing by means of sutures of the grafts, so that, although in an awkward position, they cannot be removed when the wound is dressed.
2. The use of liquid paraffin as a medium for the dressing, which prevents any adhesion, and hence movement of the grafts.
3. The use of an antiseptic spray which is efficient in its germicidal powers, and yet non-irritant and non-poisonous to such delicate tissues as skin grafts; this last is, without doubt, the most important of the three.

A NOTE ON SKIN GRAFTING.

BY

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THERE appears to be a tendency among surgeons to avoid the operation of skin grafting chiefly because, with the usual methods adopted, no great measure of success is obtained. With proper care and attention to certain details there should be very few, if any, failures. The details to be attended to are:

1. The raw surface must be in a good condition for skin grafting—that is, it must be covered with healthy granulations and as free as possible from discharge. If there is much discharge many pieces of grafted skin are raised and so fail to "take." To prevent this the wound should be dressed with 1 in 1,000 flavine for four to seven days before operation. In the cases I have treated by this method

there has been no discharge whatever between the grafts, although I had regarded them as very unsuitable cases before the application of flavine.

2. The grafts should not be covered with any dressing and should be properly protected. At the suggestion of Dr. Culverwell I have used inverted boxes of various sizes and shapes cut to fit the contour of a limb if necessary. A jeweller's or instrument maker's cardboard box is the most suitable. The edges should be slightly padded, and the box should be amply large, so that there is no risk of the padding touching the wound.

3. The technique I have used is as follows: The surface from which the skin is to be taken is prepared in the usual way. The wound is covered with a simple gauze dressing, and when this is removed care is taken to disturb the surface as little as possible. Two razors are employed, so that one can be dipped into boiling water while the other is being used; thus the freshly cut surface heals without any suppuration. The grafts are cut about the size of a postage stamp, and with practice can be cut to almost any shape. The skin and razor are kept thoroughly wet with normal saline, so that the grafts can be more easily cut and removed from the razor. The graft is conveyed to the wound on the razor, and slipped off it with the help of a blunt probe. The grafts are generally placed about one-eighth of an inch apart, but can be closer together in a very clean wound. The box, sterilized beforehand, is adjusted to the part and fastened down by long strips of rubber plaster; the ends of these are thoroughly bandaged, the bandage being brought up to the box as close as possible on all sides, but not over it. As a further safeguard against any chance of slipping the bandage is always used in the form of a spica whenever possible. It is then pinned to the box with a liberal supply of safety-pins. The box remains quite firm for three or four days, when it can be removed. The grafts are then found to be firmly fixed, and any dressing, such as fomentations or red lotion, can be applied.

Lectures

ON

THE ANATOMICAL AND PHYSIOLOGICAL PRINCIPLES UNDERLYING THE TREATMENT OF INJURIES TO MUSCLES, BONES, AND JOINTS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,
NOVEMBER-DECEMBER, 1917.

BY

PROFESSOR ARTHUR KEITH, M.D., F.R.S.,
CONSERVATOR OF THE MUSEUM.

IV. THE INTRODUCTION OF TENOTOMY.

THE events which led to the introduction of tenotomy as a measure of surgical routine had nothing to do with Hunter's experiments; they occurred nearly thirty years after he was dead.

The man who can best serve as a guide, as we follow the march of events, is William John Little, the son of parents living in comfortable circumstances in the East End of London. Little was born in 1810, and was therefore a contemporary of Hilton. In his infancy he suffered from a fever which left the extensor muscles of his leg (so he informs us) paralysed. As he grew up his left foot became inverted, the heel raised, and a typical talipes equino-varus developed. At the age of 16 he was apprenticed to a neighbouring apothecary, but two years later, in 1828, his indenture being cancelled, he began the study of medicine at the London Hospital. He entered his studies with the fixed intention of discovering what could be done for the relief of such a condition as he suffered from. He found that club-foot was regarded as lying outside the legitimate scope of surgery, and, in the opinion of his teachers, was properly confided, as his own case had been, to the care of bonesetters and sprain rubbers, who treated the condition with manipulations or instruments, often with a fair degree of success. A man whose chief object in devoting himself to medicine had been the alleviation of a personal infirmity—one with which his senior contemporaries Lord Byron and Sir Walter Scott were

afflicted—was not likely to remain content with the comfortless promise of his time. All through his time of study at the London Hospital he sought every opportunity of making himself acquainted with the actual condition of parts in deformed feet; he had a facile command of the French tongue, and during his studenthood followed medical progress in the literature of Paris as well as in that of London. He became particularly interested in the work of Delpech of Paris, who had proposed and carried out in 1816 section of the tendo Achillis for the cure of club-foot. When he had passed through the curriculum of his own hospital he went to study in the *post-mortem* room at Guy's Hospital, under Thomas Hodgkin, and to study comparative anatomy under Dr. Robert Grant at University College. It was in that year (1834) that he settled to a city practice in Billiter Street, and was appointed lecturer on comparative anatomy and physiology at his own hospital—the London. In 1834, being then 24 years of age, he became a Member of this College, but in that year was his failure to obtain a vacant assistant surgeoncy at his hospital. He therefore resolved, as is not unusual under such circumstances, to become a Licentiate of the College of Physicians, and devote himself to medicine. For that purpose it was necessary for him to spend two years at a university. He chose Berlin, drawn thither by the great fame of Johannes Müller. In 1834 we see this lame and somewhat sensitive Englishman set out for Berlin armed with a letter of introduction to Müller from Grant of University College and supported by the status accorded to him because of his office of lecturer in comparative anatomy. When Little entered Müller's laboratory he found there Schwann, Henle, Remak, and the other young men who, a few years later, were to reveal the cellular constitution of living matter. Little had every opportunity given him in Müller's laboratory of continuing his dissections of deformed feet. The condition revealed by his dissections supported the conclusions he had drawn from his investigations in England—namely, that surgeons were in error in believing club-foot to result from an inherent defect in the growth of the bones of the foot; the cause of the deformity lay in the soft parts—particularly in a disordered action of the muscles. With that conclusion Müller agreed. He also concurred with Little in regarding the condition as one which should be amenable to surgical treatment.

Before leaving England Little had read of a young surgeon at Hanover, Stromeyer by name, who had modified Delpech's operation, and was cutting the tendo Achillis for the rectification of club-foot. Müller agreed with Little that such an operation had a rational basis. Hence we find Little, in the summer of his second year of study in Berlin, and the twenty-sixth year of his age, visiting Stromeyer in Hanover.

Stromeyer was only six years Little's senior. He was born in Hanover in 1804, the son of a surgeon there who had strong leanings towards the art as practised in England. After spending almost a year in England, young Stromeyer commenced practice in his native town in 1828. From the outset of his practice Stromeyer applied himself to the treatment of physical disabilities and deformities. He fitted out a small private hospital, but found the establishment of the kind of practice he desired an uphill task. In 1831 his opportunity came. The son of a local schoolmaster, a boy of 14, was the subject of club-foot—intractable, painful, the despair of his relatives and medical attendants. Stromeyer gave the lad a bed in his hospital, and settled down to give his case eighteen months of unremitting attention and care. As a last resort, he cut the tendo Achillis by a new—a subcutaneous—method; he found that the foot could then be flexed (dorsiflexed) and that the cut ends of the tendon separated for three-quarters of an inch. The gap evidently frightened him somewhat; at least he again extended (plantar flexed) the foot until the ends were in apposition, before he fixed it in a splint. At the end of six days he found on bending the foot that the cut ends of the tendon did not separate, but moved together. He gradually dorsiflexed the foot, thus, as he supposed, stretching the scar in the tendon, so that in eight weeks the heel was brought down to its proper level and all trace of the equinus deformity removed. Stromeyer ascribed his success, not to the eighteen months of unremitting attention he had given to the case, but to the operation he had thus introduced into surgery. Tenotomy, he declared, reduced the

time necessary for the cure of club-foot from months to weeks. It brought hope and healing to a neglected class of beings. One great truth he clearly recognized—one which has still to be insisted on—that the theory of congenitalism which had been so consistently applied to a certain class of deformities was a curse to surgical progress; it was used to cover ignorance, and when applied to club-foot prevented surgeons from inquiring into the nature, origin, and ultimate cure of the condition. Nature, he said, could not cure club-foot; it could only make the condition worse. Heat and rubbing, he found, were useless in mending spastic or contracted muscles. He regarded deformities as primarily due to disordered muscular action. To cut the tendon of a spastic or contracted muscle was, therefore, a rational means of treatment. He was impressed by the discoveries of Charles Bell, and in 1836, when Little came under his care, he published a paper on lateral curvatures of the spine, ascribing them to a disordered action of the muscles of respiration. Section of a tendon, he believed, not only relieved the tension of a muscle, but also, as Hunter had concluded, altered its functional behaviour. He observed that a spastically contracted muscle, when its tendon was cut, passed into a condition of rest. Tenotomy he regarded as a means of giving rest to an inflamed joint. He saw how tenotomy could be profitably applied to many regions of the body; he introduced it as a cure for strabismus. Tenotomy was not only a cure for deformities—it gave the surgeon an opportunity of directly affecting the disordered action of a muscle.

Such was the condition of matters when Little entered the modest orthopaedic hospital at Hanover in the July of 1836. There he had his deformity rectified; numerous opportunities were given of perfecting himself in the technique of the new operation; he returned to Berlin convinced that a new era had dawned for the deformed. He showed himself to Müller and to Müller's colleague, Dieffenbach, the surgeon; they were amazed at the success of the Stromeyerian methods. Dieffenbach put them in practice almost immediately; in the course of a little over a year he had operated on 140 cases of club-foot, preferring to rectify the deformity rapidly at the time of operation to the slow post-operative reposition practised by Stromeyer.

Little read his thesis for the doctorate of Berlin University on the nature and treatment of club foot, and early in 1837 returned to London and at once settled down to treat cases of club-foot. His enthusiasm compelled the attention of his British colleagues; some were interested, others were sceptical, many were actively opposed to the new measures. Although of a retiring, modest nature he proved to be the right man to lead a crusade. In 1838, with the help of relatives and friends, he succeeded in establishing the Orthopaedic Institution—afterwards the Royal Orthopaedic Hospital—the first of our public charities for the relief of the maimed and deformed poor. Into the labours of that institution he threw his full strength. In 1839 he published a treatise on *The Nature of Club-foot and Analogous Distortions*—dedicating the work to Sir Astley Cooper. He gave courses of lectures to students on orthopaedic treatment of deformities; he published the course he gave in 1843-44 under the title of *The Nature and Treatment of the Deformities of the Human Frame*.

There can be no doubt that Little was the pioneer of orthopaedic surgery in England. He regarded subcutaneous tenotomy as a great discovery—a surgical revolution. If in this he was too sanguine he at least focussed attention on the treatment of deformities, and particularly on muscles and tendons. We have evidence that his influence and labour made themselves felt in London and Edinburgh. In 1839 James Paget, then a young man of 25, waiting at St. Bartholomew's Hospital for an appointment on the staff, was moved to investigate the repair and blood supply of tendons. He found that tendons were provided with a double supply, (1) from the arteries of the muscle, (2) from the arteries of their sheath. If a tendon were cut, both these supplies took part in furnishing the "callus" of repair with nourishment. In Edinburgh Syme began to practise the operation of tenotomy. He cut tendons in deformed feet and almost immediately turned patients out of hospital to let Nature complete the cure; we know now that in such cases she performs her part very ill.

On Little's return to England he became a Licentiate of

the College of Physicians, and in 1840 was appointed assistant physician to the London Hospital, but the College could not look upon his surgical endeavours with a favourable eye, and he was a man of 67 before his College made him a Fellow. He also had his gains. It was his interest in orthopaedic surgery which drew him to the study of the disordered action of muscles and led to his recognition and description of spastic paralysis (Little's disease). His belief in the efficacy of tenotomy ultimately waned; he came to think that a stretched muscle recovered better than one which had been tenotomized. We find him in 1876, when he gave an address in Edinburgh, towards the end of his professional life, using expressions which show us that his early enthusiasm for tenotomy had become tempered by an experience of forty years. He then realized that tenotomy might be a curse as well as a benefit. Tenotomy applied as the sole measure for the treatment of deformities might have disastrous results. He came to the final conclusion—the same conclusion H. O. Thomas reached—that it was the continuous care of the surgeon, the nursing and coaxing of the parts day by day, with an infinite expenditure of patience, which gave restoration of shape and function to deformed parts. In 1884 William John Little withdrew from active practice to live at West Malling, Kent, where he died in 1894. Stromeyer's career had come to an end long before; he died in 1878, at the age of 74.

To see the principles which guided the practice of the men who followed in the orthopaedic movement started in England by Little, we shall follow the career of William Adams. When Little returned from Berlin in 1837, Adams, a lad of 17, had just been apprenticed to his father, a surgeon in Finsbury Square, in the city of London. He joined St. Thomas's Hospital as a student, working under Hodgkin and Green, and after four years became a Member of this College in 1842. By that time the orthopaedic movement started by Little was well afoot. At Hodgkin's suggestion Adams became curator of the museum at St. Thomas's Hospital and worked there at pathology, waiting for an appointment on the staff, trying at the same time to build up a practice in the city. In 1851, being then 31 years of age and seeing no hope of an appointment to his own hospital, he sought and obtained a place on the staff of the orthopaedic hospital founded by Little. We can see by the way he then set to work that he knew how scientific surgery should be built up. There was still a doubt as to the exact manner in which repair was effected after a tendon is cut. He carried out a series of experiments on sixteen rabbits, cutting the tendo Achillis and studying each stage in the process of repair. His description of the nucleated blastema need not detain us, nor need we linger over his insistence on the part played by the sheath or peritendineum in supplying the material needed to make good the gap in a cut tendon. If time permitted, it would repay us to review the results of his dissections of deformed feet in which the operation of tenotomy had been carried out at varying periods before death occurred from some accidental cause. In one case of tenotomy of the tendo Achillis, he demonstrated that 2½ in. of new tendinous material had become inserted in the course of repair. In another foot, where the tibialis posticus had been cut within its synovial sheath behind the malleolus, he observed that repair had failed, and at the point of section the tendon had become adherent to the bone. Adams availed himself of every opportunity to look beneath the surface and obtain an accurate knowledge of the condition of the deep parts—bones, joints, ligaments, and muscles—which had to be dealt with in the rectification of deformities. He investigated particularly the condition revealed by the dissection of club-foot, and in 1864 was awarded the Jacksonian prize of this College for his dissections and investigations. When, however, we seek for a deeper knowledge of the cause and prevention of deformities and of the action of nerves and muscles, we shall search Adams's publications in vain. With Stromeyer and Little, he believed that deformities should be slowly reduced after the necessary tenotomies had been performed, and that rectification had to be effected by the application of rigid machines.

In 1871 Adams introduced a subcutaneous operation for the relief of ankylosis of the hip-joint. We see in that operation the application of the subcutaneous method to osteotomy. He there applied to the hip-joint a method which had sprung out of the practice introduced by

Stromeyer. Subcutaneous osteotomy, however, had been practised in Germany long before the date at which Adams applied this method to the hip-joint.

THE LAW OF LIGAMENT.

When we examine the principles and practice of Stromeyer, Little, and Adams, all of them pioneers in orthopaedic surgery, we are struck by the importance they attach to ligaments in the production and treatment of deformity; ligaments seemed to them almost as important as muscles. Even now the essential function of ligaments is misunderstood, and so long as this is the case we cannot hope to effect an object which is quite as important as the rectification of deformities—namely, their prevention. Hunter's teaching as regards the respective functions of muscles and ligaments in the mechanism of the human body is very definite. Muscle is the only tissue of the body which can be applied for the continued support of parts without undergoing elongation. A ligament cannot perform that function because it is composed of living passive tissue which must stretch when it is submitted to continued tension. Nature never uses ligaments either for the purpose of passive support or of active maintenance of parts in position: she uses them only for the purpose of limiting movements when the muscles which guard and surround a joint are forced beyond the compass of their normal reach.

This law can be best illustrated at the shoulder-joint. In paralysis of the shoulder muscles, or when a patient is deeply anaesthetized, the head of the humerus drops away from the glenoid cavity under the weight of the arm; the shoulder-joint can then be moved far beyond its normal limits; the ligaments become then the sole agents which limit movements, and are subject to direct stress. If in the dissecting room we strip the muscles from the shoulder and leave the humerus attached merely by its ligaments, we can see then that in all normal movements they never become taut until the usual limits are exceeded. The real ligaments of the shoulder-joint, as of every other joint in the body, are the active defensive contractile muscles.

Now man's upright position has made him more dependent on the ligamentous function of muscles than any other animal. His shoulders, when he stands up or sits up, have to be steadily supported by muscles—every one of the twenty-four vertebrae of his backbone has to be kept continuously balanced one upon the other; the contents of his abdomen have to be constantly braced by the contraction of the muscles of the abdominal wall and thus prevented from falling down. Ligaments are useless for such purposes; Nature never employs them for such ends. We see the same principle applied in the maintenance of the joints of the lower extremities. We cannot stand without the muscular braces of our hip, knee, and ankle joints coming into continuous action. It is easy to demonstrate that the maintenance of the plantar arch owes nothing to ligaments; that can be demonstrated in the living foot and leg, and also in the dissected parts.

It is quite clear that ligaments are passive parts; their elongation is not a cause but a consequence of the deformity. In short, in all static deformities of the human body the cause has to be sought for, not in ligamentous changes, but in the disordered action of the muscles, and we shall never succeed in preventing or mending static deformities until the truth of this law of the function of ligaments is clearly realized.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PROFLAVINE IN SEPTIC WOUNDS.

THE following short notes of five cases of septic gunshot wounds of limbs treated with proflavine at the Kineton Auxiliary Hospital may prove of interest to others engaged in military surgery:

CASE I.

Pte. P. Gunshot wound of right shoulder on July 12th: large wound on back of shoulder, through deltoid muscle. Exposed bone felt with probe. X rays showed fractured scapula below glenoid cavity running into the joint. Piece of metal present in

upper third of arm. The wound was operated on at the casualty clearing station and Carrel treatment used. On admission here on July 25th the wound was very septic and discharging. There was slight rise of temperature at night. Sinus leading to bare bone of scapula plugged with gauze saturated with proflavine 1 in 1,000 in normal saline; dressing covered with protective tissue. Dressed daily for a week. There was a marked decrease in amount of discharge. The wound became healthy and granulating; temperature normal, and the patient doing well.

CASE II.

Pte. O., aged 22. Gunshot wounds of both legs on April 11th. Perforated left tibia: large lacerated wound of left leg, tibia exposed, piece cut away. May 25th, wound very septic; profuse discharge. Wound drained under A.C.E. and several sequestra removed. Cavity packed with bipp paste. Temperature varying between 101° and 98°. On admission here on June 9th wound still very septic. Ensol irrigations and dressings used, and wound improved to a certain extent, becoming cleaner. Proflavine was tried, irrigations of the solution 1 in 2,000 in normal saline through drainage tubes, and gauze packings through sinus on inner side of tibia; the wounds were then covered with gauze saturated in the solution (1 in 1,000), and covered with protective. Dressed daily for ten days, then small vesicular rash appeared on surrounding skin. Saline dressings only were then applied. Previous oedematous condition of leg greatly improved, sensation and movements of the limb returning on August 10th; sequestra separating. Temperature slightly raised at night, but patient's whole condition improved.

CASE III.

Pte. F., aged 28. Gunshot wound of left leg on April 27th; large wound of inner side of left calf. Aponeurosis of deep muscles exposed. Wound excised in France. On admittance to Farnborough V.A.D. Hospital, temperature 103° at night; oedematous swelling on inner side of left ankle. This was excised and a quantity of pus removed, and gauze saturated with carbolic 1 in 20 passed through from upper to lower wound. These wounds were also syringed daily with carbolic solution.

On July 15th patient was transferred to Kineton Hospital, and an incision was made above ankle sinus leading to an abscess in front of tendo Achillis. Cavity irrigated with proflavine 1 in 2,000 in saline solution, and then packed with gauze saturated in solution 1 in 1,000. After a week's treatment, cavity quite clean and ready to heal. Wound now healed, and man sent to Medical Board.

CASE IV.

Cpl. C. Multiple wounds of scalp, right arm, right thigh, leg and buttock; wounds dirty and bone exposed. Transferred from France June 2nd, 1917; admitted Kineton Hospital (stretcher case) June 7th, 1917; wounds still very dirty and several pieces of shell imbedded in wounds of leg. Tibia exposed middle third of shaft. Ensol dressings applied for four days. Flavine gauze applied to leg wound. After two days' treatment the wound started to heal at the edges and was so clean that no swabbing was required. Flavine gauze with protective used for ten days, after which the wound completely healed with saline gauze on fourteenth day.

CASE V.

Pte. C. Gunshot wound of right thigh on September 15th, 1916; compound fracture of femur, middle third. Admitted Southampton Hospital September 28th, 1916. Was transferred to convalescent camp May 16th, 1917. Healed and went on furlough end of May, 1917. Reported sick on June 6th, 1917, admitted Birmingham University Hospital. Abscess opened and bone scraped on June 8th. Transferred to Kineton Hospital (stretcher case) on June 16th with large open wound 5 in. in length (unstitched) exposing shaft of femur. Discharge copious. Bone very painful to press from 1 in. above knee to neck of femur. Packed with ensol gauze and fomented every four hours. Temperature high from June 28th to July 7th. Flavine packing and gauze with protective applied July 7th. About a week later the sinus commenced to heal, and on August 22nd packing was discontinued.

FRED. V. ELKINGTON, L.R.C.P., L.R.C.S.,
Surgeon to Kineton Auxiliary Hospital.

PROLONGED CATHETERIZATION.

A PATIENT, aged 76, has just died after having catheterized himself regularly for fifty-seven years.

At the age of 19 he was a very keen oarsman at Cambridge, and after great exertion in rowing had an attack of what was probably transverse myelitis. His legs were completely paralysed, and he was utterly unable to pass water. The legs gradually recovered so that he could walk with two sticks. The bladder never recovered, and for fifty-seven years he passed a catheter regularly twice a day. He had repeated attacks of orchitis and cystitis. He told me that the urethra had grown so hard that no lubricant was wanted, and that he never used any disinfectant.

Yattendon, Berks.

F. A. BRODRIBB, M.R.C.S., L.R.C.P.

BULLET IN POSTERIOR MEDIASTINUM.

PRIVATE G. H. H., Australian Imperial Force, was wounded at the landing at Anzac Cove, Gallipoli, April 25th, 1915. A rifle bullet entered between the first and second ribs on the left side. He was sent to the 1st Australian General Hospital, Cairo, Egypt, and rejoined his unit at Gallipoli on June 6th, 1915. The diagnosis given was "Bullet in chest." When discharged from hospital he had no embarrassment of respiration and no cardiac symptoms.

He returned to Egypt after the evacuation of Gallipoli, and subsequently went with his battalion to France. He was again wounded on July 24th, 1916, at the capture of Pozieres, when the index finger of his left hand was partly shot away; the remains were subsequently amputated. After his discharge from hospital he passed into a training battalion in November, 1916, and remained there until admitted to No. 2 Australian Auxiliary Hospital on June 30th, 1917, for "breathlessness and debility."

On admission, an antero-posterior skiagraph showed a bullet apparently lying in the outer wall of the left ventricle. On a screen examination, the bullet moved synchronously with the apex beat. A lateral radiograph showed the bullet lying in the posterior wall of the pericardium. Localization was done by Mackenzie Davidson's method and the bullet found to be 12½ cm. beneath a point on the anterior wall of the chest 2 cm. above the apex beat. The patient being rather a thin subject, this corresponded with the lateral radiograph and made the bullet lie in the posterior mediastinum.

The interest of this case is in the fact that the patient was returned to the Gallipoli front and was able apparently to carry out all the arduous duties which are the lot of a private in an infantry battalion for nearly two years.

The patient's condition on admission to this hospital may be gauged from the medical officer's notes on his medical history sheet, which were as follows:—April 25th, 1915: Bullet in chest. July, 1916: Wounded index finger left hand. July, 1917: Complaints of pains in shoulders, and on exertion of shortness of breath. Nothing abnormal found clinically. The patient subsequently went before a medical board, and was recommended for discharge and return to Australia.

A. T. H. NISBET,
Captain A.A.M.S.

Reports

ON

**MEDICAL AND SURGICAL PRACTICE IN
HOSPITALS AND ASYLUMS.****SHEFFIELD ROYAL HOSPITAL.****STRANGULATED OBTURATOR HERNIA.**

(By GORDON F. STONES, M.B., Ch.B., Captain R.A.M.C.(T.),
Resident Surgical Officer.)

Miss C. T., aged 50 years, was admitted on October 17th, 1917, with a history of pain in the lower part of the abdomen, commencing on October 10th and gradually getting worse. Vomiting commenced on October 11th, and since that date she had vomited seven or eight times during each day. For the last two days the vomit had been "like motions." The bowels had not been opened since October 10th. On several occasions during the last two years she had noticed a "pricking, burning sensation" in the right iliac region, striking down the right thigh. This sensation generally lasted for one or two days and was not accompanied by any signs or symptoms of obstruction. The bowels had always been constipated. She had also suffered from palpitation and shortness of breath for the last three or four years. She had been losing flesh for the last year.

The patient was thin and emaciated, with sunken features and anxious countenance. She referred the pain to the lower part of the abdomen, but did not localize one point of maximum intensity. The abdomen was distended and tympanitic. No definite rigidity could be ascertained. The liver dullness was present, although tympanitic distension of the intestines reduced its area. On rectal examination nothing definite could be felt owing to extreme tenderness on the right side of the pelvis. The radial pulse was

markedly intermittent and the beats were irregular both in force and time; rate 80. The rate at the heart was 160. No murmurs were heard. Temperature 96.6°. The external hernial rings were all free from protrusions. A simple enema was given, but no result was obtained.

Operation was performed three-quarters of an hour after admission. An incision was made through the middle line below the umbilicus. On opening the peritoneal cavity about half a pint of straw-coloured fluid escaped. The small intestine was much distended and plum-coloured. On tracing this towards the ileo-caecal junction it was found to enter the right obturator canal, and the collapsed distal loop to continue on to the ileo-caecal junction. Gentle traction was first tried to reduce the intestine from the hernial sac, but this was unsuccessful. The upper fibres of the thyroid membrane were then torn by the tip of the finger. This, aided by firm pressure on the inner side of the right thigh, effected reduction. It was then found that the free border only of the small intestine was involved in the strangulation, and that the mesentery had not entered the hernial sac (Richter's hernia). The gut recovered under bathings of normal saline, and peristaltic waves were observed to pass along the intestine. The patient's condition was rather critical, and the gut was returned, half a pint of saline being poured into the peritoneal cavity. One pint of saline was given into the axillae during the operation. The anaesthetic consisted of open ether, which the patient took fairly well.

The patient recovered from the operation, but vomiting persisted, and death took place thirteen and a half hours later.

A post-mortem examination revealed a sac about the size of a pigeon's egg, behind the right pectineus muscle, and to the outer side of the adductor longus. The obturator artery and nerve ran on the outer and posterior aspect of the neck of the sac.

I am much indebted to the kindness of Captain J. B. Ferguson Wilson, F.R.C.S., R.A.M.C.(T.), under whose care this case was admitted, for allowing me to operate, and to publish these notes.

Rebueloz.**HOW TO AVOID TUBERCULOSIS.**

POPULAR handbooks on medical subjects, written by doctors, but addressed to the public generally, are not as a rule to be commended. In so far as they deal with treatment they are distinctly objectionable, but if employed for the purpose of aiding prevention of disease such works may be of real service not only to the public but also to the doctor by whose advice preventive measures are undertaken. In the attempt to stay the progress of tuberculosis all classes of persons are concerned, and it is essential to success that every one should become acquainted with the main principles involved.

Within the small compass of a pocket volume on *Tuberculosis*,¹ Dr. CLIVE RIVIERE has endeavoured to compress all the essentials of modern knowledge with respect to the incidence and spread of tuberculosis and to point out the means by which the individual may be protected from infection and from the further progress of the disease. The different periods of life are considered in order and the relative danger, as shown by age death-rates, is fully discussed. The extreme susceptibility of the infant under nine months of age renders it necessary to sterilize all milk, if the child be not breast fed, but after a year, Dr. Riviere advocates the use of mixed raw milk in order that the inevitable introduction of the bovine type of bacillus may take place in a very diluted form. This counsel rests upon the basis that almost everyone becomes infected in youth and that a mild dose of bovine bacilli, while it may induce a moderate degree of lymphatic inflammation for a time, does in fact protect the recipient from the attack of the human form of the organism later in life. The precautions that should be taken to avoid such later attacks are fully enumerated and discussed. Many of these precautions, although most easy to observe, are commonly ignored, and the adoption of wiser methods will doubtless

¹ *Tuberculosis*. By Clive Riviere, M.D., F.R.C.P. (Methuen's Health Series.) London: Methuen and Co., Ltd. 1917. (Fcap. 8vo, pp. 127, 1s. net.)

take a very long time to materialize, but the constant repetition of appeals to common sense may bear fruit in the long run.

Dr. Riviere's little book deserves to be read and re-read by everyone who may be called upon to supervise the home life of tuberculous persons and may safely be placed in the hands of such persons themselves.

A PHYSICO-CHEMICAL VIEW OF LIFE.

WHILE the individual processes of digestion, metabolism, production of heat, secretion, and muscular contraction are admitted to be of a purely physico-chemical nature, the reactions of the organism as a whole are usually regarded as the expression of non-physical agencies, as due to design and a directing force outside the scope of biology. The object of Dr. JACQUES LOEB, in his book *The Organism as a Whole*,² is to show that life as a whole can be stated in physico-chemical terms and that there is not any need to invoke the action of non-physical agencies to explain the origin of life. Pasteur's proof that spontaneous generation did not occur in the solutions used by him does not finally decide that a synthesis of living from dead matter is impossible under any conditions, staggering though the difficulties in imagining this may appear. The essential difference between living and non-living matter is that the living cell synthesizes its own complicated specific material from non-specific simple compounds of the surrounding medium, whereas the crystal adds the molecules present in the supersaturated solution. The author long ago (1899) found that the activating effect of the spermatozoon on the ovum can be obtained by a purely physico-chemical agency—namely, by treating the ovum with hypertonic sea water of a definite osmotic pressure for two hours; further, numerous experiments show that the influence of the spermatozoon in inducing development of the ovum consists in an alteration of the cortical layer of the latter, and that this can be caused by other factors. As artificial parthenogenesis proves that the ovum is the future embryo and animal, it appears that the function of the spermatozoon, apart from its activating effect, is confined to the transmission of Mendelian characters.

The idea that the organism as a whole cannot be explained on a physico-chemical basis depends chiefly on the existence of animal instincts and will; but the author reduces instincts to elementary physico-chemical laws, and the conception of design therefore becomes superfluous. The word "environment," for the use of which John Sterling upbraided Carlyle, may easily assume mysterious import, but Dr. Loeb's consideration of the physical and chemical factors which constitute environment leads him to explain its influence on material grounds. The conception of adaptation to environment is submitted to an ingeniously destructive criticism, and this, like other chapters, is likely to meet with opposition; but whether right or wrong, the author is a most serious worker, and this should be borne in mind by any reader who may regard him as a ruthless iconoclast.

IMMORTALITY.

Immortality,³ described as "an essay in discovery co-ordinating scientific, psychical, and biblical research," is an opportune book, not only for the reason suggested in the preface—the loss of so many young lives—but because a stage of scientific investigation has been reached where the very success of such researches as those of Loeb, which appear to account for certain phenomena of fundamental importance in reproduction and development, rather tends to strengthen the opinion that eventually, at some horizon, the physical explanation will fail. The acceptance, indeed, of the doctrine of evolution seems to many to entail the acceptance also of some purposeful intelligence directing the whole process, as Tennyson sang long ago. We believe we are justified in saying that physiologists and practical physicians are as sick as the friends in council who wrote this book can be of "the old bickerings between science and religion, reason and revelation."

² *The Organism as a Whole*. From a Physico-chemical Viewpoint. By Jacques Loeb, M.D., Ph.D., Sc.D., Member of the Rockefeller Institute for Medical Research. New York and London: G. P. Putnam's Sons 1916 (Demy 8vo, pp. x + 379; 51 figures. 12s. 6d. net.)

³ *Immortality*. An Essay in Discovery co-ordinating Scientific, Psychical, and Biblical Research. By Burnett H. Streeter, A. Clutton-Brock, C. W. Pinmet, and J. A. Hadfield. London: Macmillan and Co., Limited. (Medium 8vo, pp. 394. 10s. 6d. net.)

To the majority of physiologists and biologists the two studies are separate, and only related in this respect—that while science is concerned with phenomena and their immediate causes, religion, which seeks the embracing generalization, must concern itself with science as the study which reveals the processes of the universe, and may therefore suggest some answer to the question of what it all means. This is to some considerable extent the point of view taken by Dr. J. A. Hadfield in the chapter he has written on the mind and the brain; it is an able statement, and has the merit of dealing in a short space with a subject very apt to cause prolixity, though some of the clinical details are related at a length which puts the whole out of balance. It has the merit also of avoiding the common fault of accusing medicine of neglecting the influence of the mind on the body; medicine has moved along the same line as biology generally; many things which were mysteries have been shown to be due to physical causes, but this, while limiting the range of conditions attributed to interaction of mind and body, has thrown into the greater prominence the occasions on which this interaction can be verified. Between this, however, and the hypothesis that the mind survives the destruction of the body there is a great gulf. In no capacious spirit we would ask for the definition of the word "nature" as used in the passage quoted below, and of the word "god" as used by Mr. Clutton-Brock in the first chapter of the book—on presuppositions and pre-judgements. It would be well to put the two definitions side by side and see where we were. We could wish, also, that the terms "mind" and "soul" had been defined. Dr. Hadfield uses them as interchangeable (pp. 72, 73), and though he has good authority for this we suspect that both words are needed. Dr. Hadfield seeks to show not only that the doctrine that the mind survives the body is credible and not contradictory to the teaching of science at the present day, but "that science points to this supremacy and liberation of the mind as the goal towards which nature is working." The first proposition seems to be included in any precise definition of science, but the second, so far as it applies to "liberation," seems to rest, in the author's argument, mainly on the acceptance of the facts of telepathy and the explanation of them usually offered. Modern theories of the constitution of the atom, to which Dr. Hadfield makes reference, do not seem really to help. They may be held to strengthen the hypothesis which many philosophers have entertained that matter is a product of energy. It is, indeed, almost impossible to conceive the converse, although not easy to think of the two apart. Even if we make the assumptions that energy is indestructible and that mind is a form of energy, we get no nearer proof of the survival of the individual mind after the death of the body. We have dealt chiefly with a part only of the book in response to what we understood to be an invitation, but the whole may be read with profit, and in particular two chapters by Miss Lily Dougall, the one an acute discussion of "the good and evil in spiritualism," where we again find telepathy a crucial matter, and the other on reincarnation. Speaking generally, the book deals in a spirit of sanity and fairness with problems from the discussion of which these qualities are too often absent.

A SEVENTEENTH-CENTURY FRIENDSHIP.

A CHANCE of the war placed Dr. ARCHIBALD MALLOCH in charge of a small hospital for officers at Burley-on-the-Hill, Rutland, a house rich in historical associations and papers bearing on the lives of two Fellows of the Royal College of Physicians, original Fellows of the Royal Society, and knights—*Finch and Baines*.⁴ Meeting first as pupils of Henry More, the Platonist at Christ's College, Cambridge, where these subsequent benefactors were eventually buried, they enjoyed a veritable David and Jonathan life for thirty-six years, mainly abroad. In 1659 Finch was appointed professor of anatomy at Pisa, being the first, and possibly the only, Englishman to receive the honour; there he investigated the torped fish. From 1672 to 1681 he was ambassador at Constantinople, and when Baines died there he brought back the body to

⁴ *Finch and Baines: A Seventeenth Century Friendship*. By Archibald Malloch, B.A., M.D., temporary Captain C.A.M.C. Cambridge University Press. 1917. (Demy 4to, pp. x + 90; 10 illustrations. 10s. 6d. net.)

Cambridge, and followed his friend to the tomb a year later. Finch, a member of a noble family, though the more prominent in the public eye, was probably indebted for much of his diplomatic and scientific success to his quiet helpmate, who was handicapped for years by poor health and paralysis agitans, and eventually died from the effects of vesical calculus. The interesting story of their varied lives is pleasantly told by Dr. Malloch in scholarly English, and is well illustrated by portraits.

NOTES ON BOOKS.

DR. SOLLMANN'S *Manual of Pharmacology*⁴ is a large volume containing a great deal of information. It is designed to serve the student and the practitioner of medicine both as textbook and a book of reference in pharmacology, and has been brought well up to date. An extensive bibliography is provided, and will be useful to the few who care to trace their information to its source. A sensible and practical feature of the work is that the many unimportant drugs rarely used and without very specific actions are dismissed briefly, while the few important drugs are treated at full length. The text is not divided up into chapters, and so Dr. Sollmann avoids the difficult problem of classifying his drugs according to their actions. The book begins with a general account of the principles and methods of pharmacology, and then plunges into the consideration of the vegetable drugs generally, drugs derived from benzene and synthetic drugs generally, narcotics, hypnotics, serums and vaccines, and the inorganic materia medica. Intercalated are many excellent summaries of the actions of groups of drugs. Skillful use is made of type of various sizes, with the result that both the readers who want to know little and those who want to learn much on any particular point can readily satisfy themselves. The book is primarily meant for use in America, but doses are given in both the metric and the British units, and free use has been made of the British and as well as the United States pharmacopoeia.

Walt Whitman died in 1892 at Camden, N.J., and an appreciation of the man in the last rather pathetic years of his vigorous life is given in a volume entitled *Visits to Walt Whitman*,⁵ by two representatives of a kind of informal private club in Bolton, Lancashire, which met weekly for the discussion of literary and other subjects, and thus got to admire and eventually into correspondence with Whitman. One of this group, Dr. J. JOHNSTON, visited Whitman in 1890, and his published account has long been out of print. It is now reproduced with appreciations by Mr. J. W. WALLACE, and other additions. These contributions contain almost Boswellian records of Whitman's conversations set in an atmosphere of sincere devotion to the author of *Leaves of Grass*, whose magnetism, human personality, and democratic qualities are graphically described. Though Whitman did not say very much about the subject in his books, he expressed himself in conversation as an enthusiastic admirer of the work done by the surgeons in the war between the North and South, and intended when opportunity offered to draw attention in his works to their devotion. Among Whitman's friends Dr. R. M. Bucke, the medical superintendent of an asylum for the insane in Canada, is an interesting and picturesque figure; he was the first in Canada to abandon the old system of restraint, padded rooms and strait-jackets, for a more humane system, and his methods are said to have had considerable influence on the practice of other leading alienists in America. This well illustrated volume will be welcome to students of Walt Whitman, and may interest many who know little about him except his name.

Dr. A. WINKELRIED WILLIAMS, Lecturer on Military Hygiene, Royal Pavilion Military Hospital, Brighton, has published in a small pamphlet the substance of a lecture on *Veneral Diseases and their Prevention*,⁶ which he has given to soldiers at various times and places since the war began. He deals first with the physiology of self-control, next with the preventable causes of sexual irritability, and lastly with the nature, symptoms, and consequences of syphilis and gonorrhoea, with a short note on soft chancre and other infections which may be contracted

during sexual intercourse. Dr. Williams has notes on preventive methods that can be taken by those who risk infection, but of syphilis says that there is no certain method of preventing infection during coitus with a syphilitic person. The pamphlet will be helpful to medical men who may be asked to give a lecture on the subject.

The Transactions of the Ophthalmological Society of the United Kingdom,⁸ vol. xxxvii, contains the communications brought before it during the session 1916-17. It includes Sir George A. Berry's Bowman lecture on colour sense phenomena, and reports of two discussions, the one on a technical subject, "concussion injuries of the visual apparatus," introduced by Mr. A. W. Ormond and Dr. Kinier Wilson, and the other of more general appeal, on the employment of the blind, introduced by Sir A. Pearson. The bulk of the volume is made up mainly of reports of cases, but there is also an interesting contribution by Colonel R. H. Elliot, on the history of couching for cataract. The volume throughout is well illustrated.

Last February we published (p. 252) an abstract of three lectures delivered at the London Hospital by Dr. O. Leyton on the modern treatment of diabetes mellitus. The lectures were published in full in the *Clinical Journal*, and have now been collected in a volume.⁹ They expound the treatment by alimentary rest, sometimes known as the "Allen" treatment, and give full instructions for carrying it out.

⁸ *Transactions of the Ophthalmological Society of the United Kingdom*. Vol. xxxvii. Session 1917. London: J. and A. Churchill. (Demy 8vo, pp. xlv + 394. 12s. 6d. net.)

⁹ *Three Lectures on the Treatment of Diabetes Mellitus by Alimentary Rest (The "Allen" Treatment)*. By O. Leyton, M.D., D.Sc., F.R.C.P. London: Aliard and Son and West Newman, Limited, 1917. (Cr. 8vo, pp. 64. 3s. net.)

MEDICAL AND SURGICAL APPLIANCES.

Aseptic Dental Appliances.

MR. ROBERT M. CAPON, L.D.S., of Liverpool, President of the North Midland Branch of the British Dental Association, has designed an appliance for lessening the risk of infection through unclean dental instruments. The instruments for sterilization are arranged on trays fitting into a rack, which is placed in a perforated box having at each end a lug attachment for easy insertion, or withdrawal from the sterilizer. The appliance holds over 150 instruments, and for each set there is a special tray on which they remain until required for use. When a tray is removed from the rack the instruments on it do not come into contact with the surface of the cabinet or of the stand on which it rests. When large instruments, such as forceps, are to be boiled the perforated box is used alone. To secure continuity of asepsis through all operative dental work Mr. Capon has designed a simple form of instrument cabinet with more and larger working surfaces than is usual, all of which can readily be kept surgically clean. The instruments rest in the trays described above, and not in drawers as in other cabinets. A work bench is fitted at one end, and there is a disinfecting cupboard for holding face-pieces and other anaesthetic apparatus, while space is provided for the water sterilizer when not in use. All bottles are kept free from dust. The cabinet can be easily moved to whichever side of the chair is most convenient to the operator; and as both bracket and bracket table can be dispensed with, freedom of movement is secured. We understand that the cabinet and sterilizer will be demonstrated next month at the Odontological Section of the Royal Society of Medicine.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE SECOND APPEAL.

TO THE MEDICAL AND PHARMACEUTICAL PROFESSIONS OF GREAT BRITAIN AND IRELAND.

LADIES AND GENTLEMEN.—When at the close of 1914 the terrible plight of our professional colleagues in Belgium, overrun in circumstances of incredible brutality by the Germans, was brought to your notice, you responded generously to an appeal for the immediate creation of a Fund which should deal first with the grave necessities of those who had taken shelter with their families in this country, and secondly with the sufferings of those who remained in Belgium. The appeal of a committee representative of all sections of both professions was kept

⁴ *A Manual of Pharmacology and its Applications to Therapeutics and Toxicology*. By T. Sollmann, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine in Western Reserve University, Cleveland. Philadelphia and London: W. B. Saunders Co. 1917. (Roy. 8vo, pp. 901; 29 figures. 20s. net.)

⁵ *Visits to Walt Whitman in 1890-1891*. By two Lancashire friends, J. Johnston, M.D., and J. W. Wallace. London: George Allen and Unwin. 1917. (Pp. 279; 20 illustrations. 6s. net.)

⁶ London: H. K. Lewis. Price 6d.

steadily before you in your professional journals, and the history and progress of the Fund up to February, 1917, which marked the opening of the third year of work, has been published as a pamphlet. This statement showed that by the first week in February, 1915, over £5,000 was received, and that by the end of the first year of working £18,570 has reached the treasurer's hands. Further sums afterwards brought the total up to £20,000 by the end of the second year of working. No appeals for subscriptions were sent out after the movement had been once inaugurated, and now the last financial statement shows that the Fund is practically exhausted.

Of the value that the Fund has been to those for whom it was created in the directions designated there can be no doubt, and we call your attention to the appended letter from Mr. W. B. Poland, who has had the closest personal experience with the lamentable position of our Belgian colleagues, and who writes movingly of what your practical assistance has done. To us it seems impossible that we should not attempt to continue the work.

The present position, however, is that without further large and prompt subscriptions to the Fund we shall be unable to keep up those substantial monthly subsidies to Belgium to which the money has been mainly devoted. We are fully aware of the burden which the medical and pharmaceutical professions of this country are bearing; we know that several funds which have the highest claims upon our purses are at the present moment seeking, and rightly expecting, widespread assistance; but we none the less urge that the money should be found for carrying on acts of mercy—or rather we should say of bare justice—towards the doctors and pharmacists of Belgium, the little country which with unexampled heroism stood between the German onrush and the civilization of Western Europe. Of the rightness of second appeal we know that no doubt can exist, nor of the good that your money has done; while to the manner of the distribution of the Fund we can point with legitimate pride. All our administration has been carried out gratuitously, and the expenses at the end of the first year were only £12 and at the end of the second year only £50. We direct attention in this connexion to the very special wording of the certificate given by Messrs. Crewdson, Youatt, and Howard after the examination of the accounts, with the books and vouchers of the Fund before them. This statement is also appended.

We beg, therefore, earnestly for immediate further subscriptions, that the benefits which we have been able to distribute for nearly three years may not suddenly cease at a time when they were never more urgently needed.

The address of the honorary treasurer of the Belgian Doctors' and Pharmacists' Relief Fund is Dr. H. A. Des Vœux, 14, Buckingham Gate, London, S.W., to whom all subscriptions should be sent. The honorary secretaries are Dr. S. Squire Sprigge, the *Lancet* Office, 423, Strand, London, W.C., and Mr. W. J. Uglov Woolcock, the Pharmaceutical Society, 17, Bloomsbury Square, London, W.C.

We are, ladies and gentlemen, your obedient servants,

RICKMAN J. GODLEE, Chairman,
President of the Royal Society of Medicine; late President
of the Royal College of Surgeons of England.
H. A. DES VŒUX, Honorary Treasurer,
S. SQUIRE SPRIGGE,
Editor of the *Lancet*.
W. J. UGLOV WOOLCOCK, Hon. Secs.
Secretary and Registrar of the Pharmaceutical
Society.

MEMBERS OF THE COMMITTEE.

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Mr. J. Y. W. MACALISTER, Librarian of the Royal Society of Medicine.

Dr. C. O. HAWTHORNE, representing the Royal Faculty of Physicians and Surgeons of Glasgow.
Mr. J. P. GILMOUR, Editor of the *Pharmaceutical Journal*.
Professor WILLIAM RUSSELL, late President of the Royal College of Physicians of Edinburgh.
Mr. J. W. B. HODSDON, late President of the Royal College of Surgeons of Edinburgh.
Dr. JOSEPH O'CARROLL, late President of the Royal College of Physicians of Ireland.
Dr. WILLIAM TAYLOR, late President of the Royal College of Surgeons in Ireland.

LETTER FROM THE DIRECTOR IN EUROPE OF THE COMMISSION FOR RELIEF IN BELGIUM.

3, London Wall Buildings, London, E.C. 2,
November 20th, 1917.

Dear Sir,—We wish to emphasize the claim that Belgium has upon all the friends in the outside world who are trying to relieve her continually increasing distress. In spite of all we can do, her position to-day is more perilous than it has ever been, and far from relaxing our efforts we must, with renewed energy, see to it that every possible means of tiding over the starvation and destitution there is made use of. The most difficult class to reach is the very class that your Fund in the past has ministered unto—namely, the families of the doctors and pharmacists who may not dig, to beg they are ashamed. If the supporters of your Fund knew how much actual suffering they had allayed, and how much potential, moral, and physical suffering they had prevented, they would not cease to continue their support, many as are the claims now made upon them. This office is a gulf into which pours the stream of Belgian misery, and it would not be difficult to supply you with hundreds of testimonials as to the state of things there, but any of them tells the whole story: "The misery has become terrible and increases every day. It pursues us wherever we go. In the streets we see the emaciated figures of our neighbours; eyes sad, heads lowered. One would think that the people had aged twenty years by reason of these unmerited calamities." Another message comes: "Life becomes mere suffering; no liberty, no food. We are chained and starved in one. For three years we have fasted to such a point that now we scarcely recognize one another. The times are indeed hard."

The people who receive your kindness and charity are grateful in the extreme. Wave after wave of gratitude sweeps over the country. Some day you will know of it. Finally, it is needless to say that all the charities in Belgium are well administered—there is no leakage by the way. Only those who deserve it get relief, and never more than they need. The funds from your society are paid over to a commission of eminent gentlemen of your profession and the distribution is under their personal supervision. The knowledge that their associates in England have not forgotten them is an inspiration to the whole profession at a time when moral support is perhaps as much needed even as food.

Faithfully yours,
(Signed) W. B. POLAND,
Director for Europe.

Dr. H. A. Des Vœux,
Honorary Treasurer of the Belgian Doctors' and
Pharmacists' Relief Fund.

The Auditors' Statement of the Present Position of the Fund.

TREASURERS' CASH ACCOUNT, JULY 1st TO NOVEMBER 30th, 1917.

July 1st, 1917.					
To balance ...	£5,477	13	4	By relief ...	£4,012 0 0
.. interest ...	34	0	7	.. clothes ...	10 10 0
				.. administration expenses ...	2 6
				.. balance	
				Cash at bank ...	1,489 1 5
	£5,511	13	11		£5,511 13 11

We have examined the above account with the books and vouchers of the Fund and certify it to be correct according to the books. In our opinion the receipts and payments have been fully recorded, and we have compared the receipts with the published acknowledgments and have had produced to us certificates as to the correctness of the balance as shown.

CREWDSON, YOUATT AND HOWARD,
Chartered Accountants and Auditors.
70A, Basinghall Street, London, E.C. 2, December 5th, 1917.

This pecuniary position corresponded with the estimate of the Committee, earlier in the year, that the funds in hand would enable a mensuality of £800 to be sent during 1917 to Belgium, but that the end of 1917 would see the practical exhaustion of the Fund.

Subscriptions Received to the Second Appeal for the Fund.
Lancet £50 0 0

British Medical Journal.

SATURDAY, DECEMBER 29TH, 1917.

A MINISTRY OF HEALTH.

DURING the past two or three months the topic of a proposed Ministry of Health has shown no tendency to retire into the political background. This is a little surprising in view of the cold douche administered by the Premier on October 11th, when he told a deputation that a bill for this purpose could not be introduced in the midst of war. A week later the Chancellor of the Exchequer stated in the House of Commons that the subject had been carefully investigated and reported on by the Reconstruction Committee and by a Committee of Ministers, and expressed the pious hope that substantial agreement would shortly be reached amongst those directly concerned. For the time being the project seemed to be at a standstill; but recent events would suggest that it is very much alive. Thus, while the bill drafted by the National Insurance organizations has made little or no headway as a parliamentary measure, it has at least served to focus attention on the matter and to bring into view some of the opposing political and departmental forces which bar the way to action. This is equally true of the scheme outlined earlier in the year by the British Medical Association, and the two schemes have other points of resemblance. With the object of clearing the ground and possibly devising some mode of concerted action, joint sessions have been held between members of the Ministry of Health Committee of the Association and the promoters of the Approved Societies' bill, at which the clauses of the bill were examined, but it seems certain that neither scheme in its original shape would be accepted by Parliament as a non-contentious measure.

In the meantime there has been activity in many other quarters; in addition to meetings and sectional discussions up and down the country, several important public conferences have taken place in London under the auspices of such bodies as the Royal Institute of Public Health and the Faculty of Insurance. These were attended by spokesmen of the British Medical Association, and reports of the discussions have appeared in the JOURNAL. Special interest attaches to Dr. Addison's address at the conference in the Central Hall, Westminster, on November 24th, in the course of which he announced that the Cabinet had instructed him, as Minister of Reconstruction, to study the whole question of a Ministry of Health, with a view to bringing about agreement between the parties interested and formulating a plan. This amplified Mr. Bonar Law's previous statement that the Reconstruction Committee had taken the matter in hand. Dr. Addison has now made the first practical step towards the accomplishment of his purpose by getting into touch with the Ministry of Health Committee of the British Medical Association. Needless to say, its advice and criticism will be freely at his disposal if, as we assume to be the fact, an undertaking can be given that the Government is not as yet committed to any definite line of policy. Unfortunately, just at the moment when a steady public opinion was especially needed, one of the daily papers startled its readers with a

string of irresponsible guesses. It may be hoped that the prompt official denial was in time to undo most of the mischief; but a *canard* is always hard to shoot down once it is well on the wing.

As the year draws to a close it becomes more and more plain that an agreed measure alone has any chance of reaching the Statute Book. The war has passed into its most critical phase. Cabinet and Parliament alike are engrossed in economic and military problems, upon the right solution of which our national future depends. Reform of public health administration is admitted on all hands to be long overdue; but whereas the war has accentuated the urgency of this demand, nothing will be done about it in war time unless rival interests agree to sink their differences and unite upon a common minimum programme. At the moment there would seem to be some chance of such a compromise. The first question to be asked is whether it is in the public interest that a partial and preliminary measure should be enacted, straightening out some of the tangle at the centre, while leaving the periphery untouched at the outset. We conceive that the majority of the medical profession, when the alternatives are put before it, will be inclined to support a policy of compromise upon matters of detail, method, and procedure—provided no big principle is yielded—rather than that all reform should be shelved; but there is, on the other hand, force in the plea which the Council of the Royal Sanitary Institute has entered in favour of fuller consideration, for there are historical grounds for fearing that an incomplete scheme when it gets into the hands of departmental officials may be whittled away to nothingness.

As to the real intentions of the Government nothing is known, and probably the Cabinet is waiting to see whether the force of public opinion is sufficient to calm the contending parties. Rumour, indeed, unkindly suggests that the various interests are being brought together at the Ministry with the object of playing them off against each other. It may be so: such things have happened before. But we can well believe that Dr. Addison himself would like to present to Parliament early in the New Year an agreed bill for setting up at once a Ministry of Health, with enabling clauses for future development, both central and local. His own view may be judged from a passage in his speech, to which allusion has been made above, where he said that while the first thing to aim at was to get the general plan right and the central executive department constituted on right lines, it was to be wished not that everything should be done by a department in Whitehall, but that a large measure of decentralization of control should be worked out. The first duty of the new Ministry would be to evolve a proper health plan and policy; the need of the moment was, he thought, to get that body created.

As we pointed out on October 27th, the danger inherent in a measure which refrains from dealing by direct legislation with some of the most important and urgent branches of health reform is that the Minister might become an absolute autocrat in all health matters, with the future of the general medical profession in the hollow of his hands. If events are moving towards the formation of a Ministry of Health, the Committee of the British Medical Association, which holds a watching brief for the profession, will, we do not doubt, take a firm stand upon the principle that the Central Advisory Council within the Ministry must have real power and adequate medical representation. For instance, without a statutory right to report to Parliament any serious

disagreement with the Minister on fundamental questions, the Advisory Council would have little real influence. We understand that this point has already been put before Dr. Addison. With a principle of this kind at stake, it is essential that those who speak on behalf of medicine should feel that the profession appreciates the issues and is solidly behind them. But if this demand is conceded—even though to do so would involve a break with precedent—many complicated questions will remain for adjustment. To take only one instance: it is far from easy to decide which of the existing functions of the Local Government Board ought to be taken over by a Ministry of Health. All are agreed that housing is closely related to health, but the term is vague, and a working definition is needed before housing is included among the duties of a new central health authority.

If a Government bill for a Ministry of Health should take shape early next year, the time for effective criticism and action may be short. The medical profession must therefore keep its attention fixed on this subject. As Dr. Johnson once said in the course of a famous argument: "Depend upon it, Sir, when a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully."

ENGLISH PIONEERS IN NAVAL MEDICINE.

A SEAFARING nation like the British was naturally confronted early in its naval development with the problems of disease as they affect men who go down to the sea in ships. The subject did not escape the far-seeing mind of Richard Hakluyt, or Hacklewit as his name was generally pronounced and often spelt by his contemporaries. He was not a medical man, but a clergyman: though he modestly called himself simply a "preacher" he was Archdeacon of Westminster and Chaplain of the Savoy. The tercentenary of his death fell on November 23rd of last year. From his boyhood he had been fascinated by the "sweet studie of the historie of cosmographie," and he had a prophetic vision of the important part to be played by tropical disease in colonial expansion, or "plantation" as it was called in his day. In his dedication to Sir Robert Cecil of the third and last volume of the *Voyages, Navigations, Traffiques and Discoveries of the English Nation*, published in 1600, he refers to an essay on naval hygiene which is probably the earliest English work on the subject. This is a treatise by George Whetstone, which was not long ago unearthed and reproduced in facsimile by Dr. Charles Singer.¹ Notices of the little work appeared in the *BRITISH MEDICAL JOURNAL* of November 23rd, 1912 (p. 1481), and November 13th, 1915 (p. 730). Hakluyt says: "I was once minded to have added to the end of these my labours a short treatise, which I have lying by me in writing, touching *The Curing of hot diseases incident to travellers in long and Southerne voyages*, which treatise was written in English, no doubt of a very honest mind, by one M. George Wateson and dedicated unto her sacred Maiestie. But being carefull to do nothing herein rashly, I showed it to my worshipfull friend M. doctor Gilbert, a gentleman no less excellent in the chiefest secrets of the Mathematicks (as that rare jewel lately set forth by him in *Latine* doth evidently declare) than in his own profession of physicke: who assured me that it was very defective and imperfect, and that if hee might have leisure, which

that argument would require, he would either write something thereof more advisedly himselfe, or would conferre with the whole Colledge of Physicians, and set downe some order by common consent for the preservation of her Maiesties subiects." Whetstone was a gallant and a poet who had seen much of foreign parts, and in his travels had picked up some notions of naval medicine. But he was not a doctor; it is no wonder, therefore, that his work was defective and imperfect. William Gilbert, on the other hand, was the foremost scientific man of his time, and the advance of knowledge was greatly delayed by the fact that his scheme never reached fulfilment. Nearly a century had to elapse before there appeared a work entitled *An Account of the . . . Distempers that are incident to seafaring people With observations on the diet of Seamen in His Majesty's Navy*, by the "Physician to the Blue Squadron of His Majesty's Fleet" (London, 1696). Gilbert seems to have been in high repute for his knowledge of the diseases of seamen. In a recent paper giving an account of his life and work Dr. Singer² quotes the following entry from the Acts of the Privy Council under date March 22nd, 1588, when the navy must have been anticipating the arrival of the Armada which appeared off our coasts a few months later: "Whereas a dysease and sickness began to encrease in her Majesties Navye, for remedie of the dyseased and for staie of further contagion their Lordships thought meet that some lerned and skillfull phisicians should presently be sent thether; and for that their Lordships hard that good reporte of the sufficiency learning and care of Dr. Gilbert, Dr. Marbeck, Dr. Browne, and Dr. Wilkinson, as they were thought very fytte persons to be employed in the said Navye to have care of the helthe of the noblemen, gentlemen, and others in that service," therefore these physicians were required "to put themselves presently in a readynes to goe downe to the Navye, and to carry with them a convenyent quantytie of soche drogues as should be fyt for medycine and cure; and uppon their repaier and conference with the Lord Admyrall soche order should be taken for their entertainment as should be to their contentement." It would be interesting to know if this scientific mission was ever accomplished, and, if it was, what came of its work.

If Gilbert must share with others the glory of creating naval medicine, he stands alone in fields of scientific exploration which have been of incalculable advantage to mankind. He was referred to by Sir Thomas Barlow in his Harveian Oration last year as a pioneer in the study of magnetism, but he is more adequately described in the *Encyclopaedia Britannica* as the father of electric and magnetic science. His book, *De Magnete*, is the record of eighteen years of patient experimental work, and contains a great number of important observations on the properties of the magnet. He framed a theory to explain magnetic deviation, investigated the dip of the compass needle, and propounded a method of determining latitude by its means. He was the inventor of two instruments designed to enable seamen "to find out the latitude without seeing sun, moon, or stars." He founded the science of electricity, and placed it on a solid basis of experimental fact. He also did much work in chemistry but the records of his experiments have, unfortunately, been lost. He had a hand in the preparation of the first British pharmacopoeia, although the work did not see the light till after his death. This was a misfortune, for he hated everything savouring of quackery, and it can hardly be doubted that his

¹ *The Cures of the Diseased in Foryaine Attempts of the English Nation*. By George Whetstone. London, 1598. Oxford, 1915.

² *Journal of the Royal Naval Medical Service*, October, 1916.

influence would have prevented the inclusion of much fantastic and foolish stuff which found its way into the work. Summing up Gilbert's scientific achievement in addition to his pioneer work in electricity and magnetism, Silvanus Thompson¹ says: "He also made notable contributions to astronomy, being the earliest English expounder of Copernicus. In an age given over to metaphysical obscurities and dogmatic sophistry, he cultivated the method of experiment and of reasoning from observation, with an insight and success which entitles him to be regarded as the father of the inductive method. That method, so often accredited to Bacon, Gilbert was practising years before him."

This remarkable man came of a family which was probably connected with Sir Humphrey Gilbert, the famous explorer and half brother of Sir Walter Raleigh. He was born at Colchester in 1544, and educated at St. John's College, Cambridge, of which he became a Fellow and mathematical examiner. He took the degree of M.D. in 1569. He then spent some years in travel abroad, visiting Italy, where he made the acquaintance of Giordano Bruno, the martyr of free thought, Sarpi, and probably Galileo. On his return to England he settled in London, where he practised his profession with great success. He lived on St. Peter's Hill, between Upper Thames Street and Little Knight-bridge Street, where he used to gather together a society or college of men interested in the study of nature. This, Dr. Singer says, may be regarded as the earliest scientific association in England, and perhaps in Europe. Gilbert was successively censor, treasurer, and president of the Royal College of Physicians. In 1601 he was appointed physician to Queen Elizabeth, who trusted him as a doctor, and appreciated his work as a scientific investigator. How genuine was her appreciation is proved by the fact that, although by no means liberal in the matter of money, she gave him a pension to help him in the prosecution of his researches. Gilbert attended Elizabeth on her deathbed in 1603 and was appointed physician to her successor. He lived only a few months afterwards, dying, probably of the plague, towards the end of 1603.

The medical profession may well be proud of this great scientific pioneer. His name is immortal in the truest sense, for as Dryden sang—

Gilbert shall live till loadstones cease to draw
Or British fleets the boundless ocean awe.

SANITARY ARRANGEMENTS IN TUBE SHELTERS.

DURING the air raid on London on December 18th some 250,000 people found shelter in the underground stations of the tube railways. From the fact that three and a half hours elapsed between the warning and the "all clear" signal, and that many of the refugees must have been some while longer in the tubes, it is evident that very effective sanitary organization is necessary to cope with such an emergency. The number of tube stations which are underground in the sense that the platforms are reached by lift or escalator is between ninety and one hundred, and in all cases the permanent lavatories and urinals are situated either at street level or a little below it. It has been necessary to put up temporary conveniences, if possible near the platforms, but the exact situation must vary with the structure of the station. If this provision were not made, we are assured by the tube authorities that the conditions would be unspeakable, since it is well known that in nervous subjects excitement or shock may provoke the act of defecation. These temporary conveniences are installed, supervised,

and cleared by the sanitary authority of the particular borough council in whose area the station is situated. The tube management has no responsibility for them; they are wholly a municipal matter. The removal of litter, however, is carried out by the station staff, and is very efficiently performed, especially in view of the fact that many of the people bring with them supplies of food. The atmosphere of the tube is inevitably close during the actual period of congestion, but the tube management point out that five of the railway systems are of very recent construction, and that in these the engineers had the advantage of applying such principles of underground ventilation as experience had shown to be desirable; while as for the older systems, the largest of these, the Central London Railway, is ventilated, alike in the stations and the tunnels, by means of the ozonair installation. At all events, no special measures have been found necessary as yet to purify the air after a raid night. Since the series of raids at the end of September the St. John Ambulance Brigade has provided a staff to attend to cases of fainting and illness in the tubes during raids. Even when there is no damage in the immediate locality the first-aid staffs find their hands sufficiently full with people who are suffering from shock and exhaustion. At Finsbury Park station on two consecutive nights 300 such cases were dealt with, although very often all the first aid that is necessary is a mug of water. The principal stations are now manned by the brigade when a raid is expected, and the borough councils also dispatch a number of women lavatory attendants. Where possible, an unused lift or storeroom is placed at the disposal of the St. John men. Although fatalities have not been unknown since the public began crowding into the tubes, the fewness of the serious casualties under these unusual circumstances reflects great credit alike upon the tube management, the ambulance service, and the police.

THE TYPHOIDIN TEST.

THE original technique of Gay and Force's typhoidin test, or skin reaction indicative of immunity against typhoid fever, consisted in the application of a killed concentrated old glycerin broth culture of a single strain of the *Bacillus typhosus* to the slightly abraded surface of the arm. A positive reaction was distinguished from a negative result by a quantitative difference in millimetres in the diameter of the areola appearing round the abraded surface after twenty-four hours. By means of this test it should be possible to determine if a person previously inoculated against typhoid fever has outgrown the protection and therefore should be reinoculated. Since it was first described in 1914 the technique of the test has been considerably modified and improved; thus Force and Stevens¹ use a multivalent preparation from ten strains of *B. typhosus*, so as to allow for the probable varieties and the corresponding antigenic differences, inject a dried typhoidin powder intradermically in the minimal effective dose (0.00002 gram in 0.05 c.cm. of 0.5 per cent. carbolated saline), and read the result of the test forty-eight instead of twenty-four hours later. The prolongation of the interval is advisable, as it eliminates the non-specific irritative reaction which may occur in normal persons from the proteins of the culture media and from the carbolic acid used in the injection. In these conditions a positive reaction is shown by the presence, forty-eight hours after the application of the test, of a maculo-papule with a definite erythema at least 5 mm. in one diameter, a doubtful reaction by the absence of either induration or erythema, and a negative reaction by the absence of both after forty-eight hours. Out of 18 normal persons 17 gave a negative typhoidin reaction, and out of 26 persons with a history of typhoid fever 19 gave a positive reaction. It appears that typhoid immunity is less stable than is often supposed—50 per cent. of persons

¹ Gilbert of Colchester, *Father of Electrical Science*. London, 1903.

¹ J. N. Force and I. M. Stevens: *Arch. Int. Med.*, Chicago, 1917, xix, 440-456.

vaccinated against the disease three years before, 45 per cent. of those vaccinated two years, and 27 per cent. of those vaccinated one year previously gave a negative reaction. The routine administration of three doses of typhoid vaccine is in many instances insufficient to produce sensitization to the typhoid protein, and presumably therefore protection against the disease. In support of the contention that this test shows whether or not an individual is protected against typhoid fever, Gay and Lamb² point out that no person giving a positive reaction has subsequently developed the disease, that individuals who react positively, when reinoculated with typhoid vaccine, react much more violently than persons giving a negative reaction, in this respect resembling typhoid recoveries, and certainly indicating a reaction and probably protection against *B. typhosus*, and that persons inoculated against typhoid who give a negative typhoidin reaction become in most instances positive after further inoculation. The value of the test, in deciding on the desirability of antityphoid vaccination or its repetition, therefore appears to be established.

THE UTERUS REMOVED BY CAESAREAN SECTION.

OBSTETRICIANS should not fail to see the November number of the *Bulletin* of the Johns Hopkins Hospital, which contains an article by Professor Whitridge Williams on the examination of 50 uteri removed by subtotal hysterectomy immediately after Caesarean section. Apart from the respect with which all the writer's work is received in this country, this paper is of special interest on account of the fine material upon which the observations contained in it are based, and from the fact that it tends to alter in some degree the views on certain points hitherto accepted and incorporated into teaching. In the 50 uteri examined the placenta was attached to the anterior wall in 18 instances, and to the posterior wall in 32. The condition of the decidua at term was very variable, not only in different uteri but even in different parts of the same uterus. In some it was thick, in others thin; in some it consisted mainly of the compact layer, in others the spongy glandular structure was the more extensive. The line of separation of the placenta was found to be more often through the spongy layer, but sometimes through the compact and sometimes quite indiscriminately and irregularly through both. In one instance the decidua basalis was almost entirely absent, the chorionic villi being separated from the muscular wall by a thin layer of canalized fibrin only. Would this, one wonders, have been a case of "adherent placenta" if labour had occurred *per vias naturales*? Professor Whitridge Williams's specimens give no definite proof of the method of separation of the placenta, but the festooning and wrinkling of the fetal membranes, which is beautifully shown in his sections of the wall of the recently emptied and retracted uterus, suggest in no uncertain way that it is more likely to be caused by the disproportionate shrinkage of the placental site than by the occurrence of retroplacental haemorrhage. After describing the large cells, almost certainly of chorionic origin, so frequently found deep in the uterine wall at the placental site, Professor Williams goes on to describe certain degenerative changes in the vessels of the placental site, which he seems to regard as characteristic of this area. The nature of these changes he hesitates to specify. Incidentally he gives the *coup de grâce* to the expiring theory that thrombosis of the vessels in the placental site was a normal precursor of labour, and one factor in preventing haemorrhage during the third stage. The last, and perhaps the most important, observation refers to the scar in the uterus after a previous Caesarean section. Where the operation is followed by a normal afebrile puerperium the scar is recognizable on the outer and inner surfaces of the uterine wall only. There is no scar tissue in the wall itself and muscular

fibres run across the site of incision as freely as elsewhere. In cases where the previous operation had been followed by wound infection, the wall in the region of the scar was excessively thinned. There is therefore no inherent reason, as far as the uterus is concerned, why a woman who has had a Caesarean section and made a perfect recovery should not subsequently be able to deliver herself. The paper is very well illustrated, and will afford food for reflection to practitioners as well as to all teachers of obstetrics.

EMBRYOMAS IN PLANTS INDUCED BY BACTERIAL INOCULATION.

AMONG the interesting addresses given by Sir James Paget one of the most attractive is that on elemental pathology delivered at Cambridge in 1880 and devoted to vegetable diseases, which he had studied as a hobby in what he called "the idleness of vacations." When preparing this address he nearly abandoned the subject when he found the vast amount of good scientific work that had already been done even then on the subject. Since then further researches have gone on, but most medical men do not see the periodicals in which the reports appear, and on this account the easily available article by Erwin F. Smith¹ is most welcome. Working in the laboratory of plant pathology, Bureau of Plant Industry, U.S. Department of Agriculture, Washington, D.C., he has, with his co-workers, produced since 1906 hundreds of crown galls on various plants by inoculation of pure cultures of a white, rod-shaped, polar flagellate schizomycete. The crown gall is a tumour common in wild and especially in cultivated plants, and is analogous to a sarcoma. When the connective tissues only of the plant are stimulated by inoculation of cultures of the *Bacterium tumefaciens* this crown gall develops; the parasite, which is intracellular and not very abundant in the tumour, does not destroy the cells, but stimulates them to abnormal growth by means of its diffusible products. A new and remarkable result has been obtained by introducing pure cultures of the micro-organism by needle pricks into the growing tissues of susceptible plants in the neighbourhood of the totipotent or pluripotent cells, which may be either dormant axillary buds or meristematic cells remote from the leaf axils; these cells begin to grow, and a complex tumour or embryoma results. These embryomas, which are produced as readily as the ordinary crown galls by inoculation in a different site, contain sarcomatous tissue and rapidly developing abortive parts of the young plant roots, stem, leaves, and flower buds, or cells with floral pigment. The organs or tissue fragments in these atypical teratoid tumours are poorly vascularized, abort at various stages, usually early in development, and the organs or fragments of organs are often monstrous, simplified, reduced, reduplicated, and invaded by sarcoma. These experimental embryomas have been obtained in fifteen different families of plants. Whether or not carcinoma can also be produced in plants by bacterial inoculation remains to be proved; but as the author has obtained the first stages of cell division in the epidermic cells by bacterial infection he anticipates that further research will give an affirmative answer. The tumours, common on clus and apple trees, called cankers, and due to injury, present considerable superficial resemblances to human cancer, but, as Sir James Paget pointed out, are more closely allied to cheloids.

PNEUMOCOCCIC INFECTION IN MENINGOCOCCIC MENINGITIS TREATED BY SERUM.

DURING the first four months of the year the cases of cerebro-spinal fever in Paris showed an extraordinary high incidence of secondary pneumococcic infection. Thus in February, when this somewhat unusual complication was first noticed, Netter and Salanier² stated that out of 300

²F. P. Gay and A. R. Lamb, *Journ. Lab. and Clin. Med.*, 1917, ii, No. 4.

¹E. F. Smith, *Bull. Johns Hopkins Hosp.*, Baltimore, 1917, xxviii, pp. 277-294.

²Netter and Salanier, *Bull. et mém. Soc. Méd. des Hôp. de Paris*, 1917, 3 ser., tome xli, p. 239.

cases of meningococcic meningitis there had been four examples of this complication, three of which had occurred in that month, and argued that as primary pneumococcic meningitis had been much more in evidence since December, 1916, the virulence of the pneumococcus had increased. In a more recent communication¹ these writers tabulate 22 cases of secondary pneumococcic infection of meningococcic meningitis treated by serum in the first four months of the year, and mention that among 73 hospital cases of proved meningococcic meningitis 17 (which are included in the 22 quoted above), or 23.3 per cent., showed this secondary invasion. The pneumococcic infection usually occurs comparatively late, and may do so when recovery appears to have begun; in most instances a primary focus is absent and infection is presumed to have spread from the nasopharynx. Diminished resistance due to meningococcic infection, and probably the injection of large quantities of serum intrathecally, favour the occurrence of this complication. The prophylactic injection of 2 or 3 c.cm. of antipneumococcic serum with the anti-meningococcic in 25 cases appears to have diminished both the incidence and, in the two cases in which secondary infection occurred, the severity of this complication, as the two cases recovered.

TACHYPHYLAXIS AND ITS THERAPEUTICAL APPLICATIONS.

TACHYPHYLAXIS, or rapid immunization, is the term used to describe the phenomenon that the effects normally produced by the intravenous injection of certain substances can be prevented by the previous injection of a quantity of the same substance so small that it need not have the usual action, and that this change occurs in a few minutes. Although Gley and Champy, the inventors of the word in 1911, observed this in connexion with albumose, a minute dose preventing the anticoagulating effect of a subsequent injection, in most cases the important factor in tachyphylaxis appears to be that the blood is rendered incoagulable by the first and small intravenous injection, and that in this way bad effects, commonly due to intravascular clotting, caused by ordinary injections of the substances in question, are obviated. This applies to arseno-benzol, sodium nucleinate (used in paralysis agitans), and chaulmoogra oil, which have been shown to induce tachyphylaxis both in animals and man. Busquet² points out that in view of its possible practical application in medicine the subject of tachyphylaxis should be more widely known to the medical profession. Thus it can be utilized in the transfusion of defibrinated blood; the toxicity of defibrinated blood, pointed out by Magendie, has been shown to depend on intravascular clotting, which, as Hédou has proved, can be obviated by the tachyphylactic effect of a preliminary small injection of defibrinated blood. Similarly, Busquet argues that a corresponding procedure should be successful in the case of intravenous injections of the extracts of the ductless glands. On the other hand, he found that the preliminary injection of a small quantity of colloidal gold in typhoid fever and of colloidal sulphur in rheumatism did not fulfil the expectation that it would abolish the fever and other unpleasant symptoms produced by the ordinary injection.

THE "HIDDEN SCOURGE" IN MEDIAEVAL PARIS.

DR. HENRI BOUQUET has unearthed an interesting historical document³—a decree of the Paris Parlement of March 16th, 1496, relative to the prevention of the "great pox." It is interesting to note that the date of this decree is only four years later than the discovery of the New World by Christopher Columbus and the supposed importation of the scourge into Europe. It sets forth that for two years the disease had raged in Paris and other places in France,

wherefore the Reverend Father in God, the Bishop of Paris, in association with certain royal officials, was commissioned to devise measures for checking the scourge. A proclamation was to be made by the public crier in the King's name that all men and women suffering from the disease who were not residents of Paris when attacked should, within twenty-four hours, go forth from the city to their native place or elsewhere, as they thought fit, under penalty of the hangman's rope. To facilitate their departure all such persons were to be given four *sols parisis* as they passed out by the gate of St. Denys or St. Jacques with a strict injunction not to return till they were completely cured. Paris residents were to be confined to their houses and forbidden to go about the city under a like penalty; if they were indigent, they could, on the recommendation of their parish priests or churchwardens, be supplied with suitable provisions. Such poor persons as had no home to go to were to be isolated in houses hired for the purpose in Saint-Germain des Prez, and were to be supplied with food and other necessities, but were forbidden to go into the city till their cure was complete. Women were sheltered in separate quarters. When accommodation in these houses was inadequate, the patients were placed in barns and other buildings hired at the expense of the city. The patients were not allowed to hold any communication with people outside; breach of this regulation was punished by imprisonment and corporal punishment. This ordinance could not have been very effective, for on June 25th, 1498, the prohibitions were reissued under the penalty of being cast into the river. This appears to be the first attempt to found special establishments for the segregation of syphilitics. It thus marks a date in the social history of venereal disease, but it may also be taken as a record of the first failure of legislative repression.

THE LATE COLONEL HENDLEY.

THE late Colonel Thomas Holbein Hendley, C.I.E., I.M.S., of whose life and career a full account was published in the *BRITISH MEDICAL JOURNAL* of February 10th, 1917, p. 211, was a notable example of successful devotion to what Lieut.-Colonel D. G. Crawford in his monumental *History of the Indian Medical Service* denominates "extra-professional work" (Vol. ii, Chapter XXIX, p. 139). Crawford gives in this chapter an admirable summary of contributions to exploration, science, philology, and literature which have been made by officers of the Indian Medical Service. A brief note under the head of "Art" refers to Colonel Hendley's fruitful study and exposition of every variety of Indian artistic handiwork. This phase of Hendley's most devoted and meritorious labour is presented in greater detail in a very excellent and appreciative memoir published in the November, 1917, number of the *Journal of Indian Art and Industry*, in the founding and conducting of which he took a prominent and very willing part. Most of the Indian medical officers who have undertaken "extra-professional work" have abandoned their medical duties in pursuit of their hobbies; but it was far otherwise in Hendley's case. During his long service in Central India and his subsequent tenure of administrative office in the North-Western Provinces and Oudh and in Bengal, he practised his profession with zeal and success, and suggested and promoted means and measures for extending the benefits of medical treatment among Indian peoples. He also acted as a volunteer surgeon, and was an Honorary Associate and Knight of Grace of the Order of St. John of Jerusalem; he furthered the objects of the order by his instrumentality in introducing the elements of first aid and hygiene into schools and into the examinations of the Calcutta University. His art pursuits were mainly carried out while he served for a period of twenty-three years as Residency Surgeon and Administrative Medical Officer in the Jeypur State. He was fortunate in obtaining the warm countenance and aid of an enlightened ruler and in finding

¹ Bull. et mèm. Soc. Méd. des Hôp. de Paris, 1917, 3 sér., tome xli, p. 89.

² H. Busquet, *Presse méd.*, Paris, 1917, xxv, 605-7.

³ *Paris médical*, September 29th, 1917.

a nucleus for his art essays in the productions of Jeypur artificers. The Jeypur Museum remains as a permanent monument of his devotion to the study of Indian art and industry, of which the notice under reference supplies a very complete and highly laudatory record.

THE MOTOR SPIRIT RESTRICTION ORDER.

It was announced in the SUPPLEMENT of last week that the motor car badge for members of the British Medical Association is now ready for issue, on the distinct understanding that those to whom it is supplied will only use it when their cars are engaged on professional or other purposes expressly authorized by the Motor Spirit Restriction Order No. 2 of 1917, and that the Association takes no responsibility for improper use of the badge. In this connexion it may be well to draw attention to two recent prosecutions of medical men under the Defence of the Realm Act for using their motor cars in other than a professional capacity. In the first case, at Leeds, the practitioner put in the plea that on the occasion in question he drove his family to an hotel for a dancing lesson which had been prescribed for one of his daughters after an illness, and that he then went on his professional round. The police superintendent in his evidence said that a Home Office instruction laid it down that the carrying of a passenger by a driver engaged on legitimate business did not by itself constitute a breach of the Motor Spirit Restriction Order. He stated further that this was the first case of the kind in Leeds, and the prosecution was undertaken as a warning. Having regard to the ruling by the Home Office that a medical man could fill a car on his rounds, the magistrate did not think it was always incumbent on a practitioner to go by the shortest route to his business, and dismissed the case. In the second prosecution, at Marylebone, the medical man was less fortunate. His defence was that he called at Baker Street station to pick up a lady who was both a patient and his fiancée. The magistrate remarked that the visit was not a professional one on that occasion, and imposed a fine of £1. It is evident that doctors will have to use considerable discretion in giving lifts to their families or friends, since the onus will be upon them to satisfy the authorities that the car is being used at the time for an authorized purpose.

THE HALF-YEARLY INDEXES FOR 1917.

THE usual half-yearly indexes to the JOURNAL, to the EPILOGUE, and to the SUPPLEMENT, have been prepared, and will be printed. They will, however, not be issued with all copies of the JOURNAL. Any member or subscriber who desires to have one or all three of the indexes can obtain a copy of what he wants post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2. Such copies will be dispatched shortly after the middle of January.

Medical Notes in Parliament.

Insurance Amendment Bill.—The National Insurance (Amendment) Bill passed through the report stage and was read a third time in the House of Commons on December 18th. A few amendments to the financial clauses were adopted, and to Clause 13 a fresh subsection was added as to women's benefits. This laid down that, notwithstanding any provisions to the contrary in any rule of an approved society, an insured unmarried woman who was pregnant should not on the ground that her pregnancy was due to misconduct be deprived of any sickness or disablement benefit to which she would but for that provision have been entitled.

Medical Examination by National Service Boards.—Mr. Beck (Parliamentary Secretary to the Ministry of National Service) informed Mr. Gilbert that it was not the case that

men medically examined by National Service Boards were refused information as to the grades in which they were placed. Every man fit for any form of military service received a card (M.N.S. Form 3291) on which his medical grading was plainly stated—Grade 1, Grade 2, or Grade 3, as the case may be. Every man found to be totally and permanently unfit for military service received a certificate (M.N.S. Form R. 2079) discharging him from all further liability to military service.

Junior Army Officers' Pay.—On questions by several members, Mr. Bonar Law expressed regret that he could not announce the decision on the subject of the pay and allowances of junior commissioned officers. The Cabinet Committee had been sitting almost daily, and it was not a very easy matter to solve.

Red Cross Workers in France: Combing Out.—Mr. Beck, in answer to Colonel Faber, said that the total number of men of military age employed by the British Red Cross Society in France was stated by the society to be approximately 1,900. On representations made in June, a proportion of these men were being withdrawn for service in the armed forces, on the principle that men fit for general service, and men of category B1 under 30 years of age should be released, subject to appeal by the society to Sir Douglas Haig in very special cases of indispensability. The society further stated that there were also approximately 200 men of military age similarly employed in other theatres of the war. In Great Britain, excluding tribunal cases, there were approximately 250 men of military age employed by the society; only two were fit for general service. In addition to the above there was a certain number of men of military age who had been granted exemption by the tribunals in the ordinary course, and who had undertaken either whole or part time under the British Red Cross Society. Mr. Beck added that some of the men had been in the Red Cross Society from the beginning and were very valuable, but combing out was being done.

Grants for Auxiliary Hospitals.—In reply to Sir William Collins, Mr. Forster said that the increased grants in aid of auxiliary hospitals, Classes A and B, of 3s. 3d. and 2s. 6d. respectively (maxima), took effect from August 1st. Established civil hospitals were in receipt of grants on a different scale, and the question of increasing those grants was under consideration. Sir William Collins asked when the additional grants to those hospitals voluntary before the war which were now receiving only 4s. a head for military cases would be announced. Mr. Forster took the reference to be to the large hospitals, such as the London. He hoped there would be no undue delay; the question of increasing the grant was now under consideration.

Training Centres for Discharged Soldiers in Ireland.—Sir A. Griffith-Boscawen informed Mr. Hogge that in Dublin training was in operation in optical and astronomical instrument making, basket-making, carpentry, toy-making, gardening, care and management of horses, clerical work, manufacture, etc., of artificial limbs, pipe-making, and motor mechanics. In Belfast there was training in commercial subjects, and courses had been sanctioned, but were not yet in operation, for cane-chair seat making, French polishing, and domestic assistance in hotels. Schemes for instruction in boot repairing and box-making were under consideration.

Small-pox in the Army and Navy at Home.—In reply to Mr. Benthall, Mr. Macpherson said that the number of cases of small-pox in the army notified in England and Wales during 1916 was ten. Of these, six were unvaccinated—five of them recovered and one died. Three were vaccinated in infancy—two of these recovered and one died. One who was revaccinated at the age of 14, and fourteen years before the attack, recovered. Dr. Macnamara, in answer to another question by Mr. Benthall, said that one case of small-pox occurred amongst sailors in the navy last year. The man recovered; particulars were not available as to vaccination or revaccination. The man, being a stoker in the Royal Naval Reserve, was liable to be vaccinated or revaccinated as a condition of entry into the service.

The Cost of Living.—Mr. Herbert Samuel asked a question as to the cost of living, the Food Controller being reported to have said on December 18th that it had gone down by something like 10 per cent. in the course of the last six months, while the figures published in the *Labour Gazette* for December purported to show that in the same period the cost of food had increased by 3 per cent. Mr. Law said he was strongly of opinion that, if possible, a reliable estimate of the increase in the cost of living should be obtained. The Government were now considering whether or not an inquiry such as had been recommended by the committee of which Mr. Samuel was chairman should be made.

Neurasthenic Soldiers.—Mr. Hugh Law asked Mr. Forster whether before soldiers who had been invalidated suffering from shell shock or other nervous troubles were sent back to the front they were examined by a medical board containing at least one specialist in nervous diseases. Mr. Macpherson: I cannot give the assurance at present, but under the new arrangements it is hoped that this desirable end will be obtained.

THE WAR.

GUNSHOT WOUNDS OF THE HEART.

STABSARZT PROFESSOR REHN¹ has recorded three cases of wound of the pericardium and heart.

CASE I.

The patient had received several shrapnel wounds of the left side of the body, one of which showed an aperture of entry just above the left nipple, with no aperture of exit. The cardiac area was normal on percussion. There was a small area of dullness over the postero-inferior part of the left lung, with feeble breath sounds and diminished vocal fremitus. Marked pericardial friction was audible over the sternum. The pulse was small and rapid, the breathing shallow and laboured. The diagnosis made was wound of the pericardium, the projectile being lodged in the left lung. Under expectant treatment the symptoms disappeared in the course of a few weeks, with the exception of shortness of breath on exertion.

CASE II.

The patient had received a shrapnel wound of the right side of the thorax twenty hours previously. The aperture of entry was two fingerbreadths from the left border of the sternum and one fingerbreadth below the horizontal nipple line; there was no aperture of exit. The fifth costal cartilage comminuted. Cardiac dullness was increased laterally to the right, especially towards the base of the heart. The heart sounds distant; there were no friction sounds. The pulse was rapid and irregular. X rays showed a large fragment in the pericardial sac. An operation was performed under pressure; a costo-xiphoid incision was made beginning at the left costal arch and extending upwards two fingerbreadths above the aperture of entry; the sternal end of the fifth rib was resected together with 5 cm. of the sixth and seventh ribs. A fragment of shell, measuring 4.5 by 2 by 0.8 cm., was found lodged in the parietal pericardium and projected 1 cm. into the pericardial cavity; on removal of this a large quantity of blood-stained fluid was discharged. On enlarging the pericardial wound upwards it was found that the apex of the heart was superficially wounded, but haemorrhage from it had ceased. There was also a wound of the left pleura. The wounds in the pleura and pericardium were sutured, a drainage tube being inserted into the lower part of the pericardial sac. A suction apparatus was adopted for removal of the exudate from the pericardium, and air was excluded by means of an india-rubber plate. These measures were not completely efficient, chiefly owing to the loss of substance at the external wound, and on the following days a putrid, haemorrhagic pericarditis developed, terminating fatally in profuse haemorrhage on the eighth day, from erosion of a pericardial vessel.

CASE III.

A bullet wound, with aperture of entry in the right postero-lateral part of the chest at the level of the sixth rib, had been received a few hours previously; the aperture of exit was on the left side anteriorly, at the same level and external to the nipple line. There was slight haemothorax on both sides, with marked left pneumothorax. Cardiac dullness was somewhat increased to the right; loud friction sounds were audible over the sternum. There was marked cyanosis, with rapid pulse and respiration. The abdomen was distended and slightly tender. The diagnosis made was perforated wound of the chest and abdomen, wounds of both pleurae, pericardium, and peritoneum, wounds of heart, lungs, and liver.

Operation.

A costo-xiphoid incision was made, commencing at the left costal margin, and carried upwards for four fingerbreadths. The peritoneum was opened, and a bleeding wound of the convexity of the liver was plugged. The sternum was then divided transversely, and the pericardium was freed from the pleura and opened. It contained fluid blood, and there was a deep transverse wound of the apex of the heart, not involving the ventricular cavity; the pericardium was perforated in two places. The wound in the heart was closed with two sutures, the perforations in the pleura and pericardium sutured without insertion of a drainage tube, which the experience of the previous case had shown to be disadvantageous, and the peritoneal incision closed, a gauze drain being brought out to the external wound. Owing to movements of the patient on recovering from the anaesthetic, recent adhesions in the left pleura gave way, producing an open pneumothorax. This necessitated removal of part of the comminuted fourth rib and fixation of the lower border of the lung. The case appeared to progress favourably until the twelfth day after the operation, when an increase in the area of cardiac dullness was noticed. On the twenty-fourth day a sharp rise of temperature occurred, and dilatation of the track into the pericardium revealed a localized abscess, which was then effectively drained. On the twenty-

seventh day the upper part of the abdomen was tense and tender, and death occurred twenty-four hours later.

Necropsy.

Recent general peritonitis by extension from a subphrenic abscess, which appeared to have originated from a stitch abscess in the deeper part of the abdominal incision. The pericardium was completely adherent anteriorly and at its upper part, and the small abscess cavity at its lower part showed no retention of pus. The wound in the ventricular wall had healed completely.

Professor Rehn considered that the patient would have been saved but for the abdominal complication, and that the stitch abscess was possibly due to his having used coarse silk instead of catgut for the sutures. He refers to the case published by Sauerbruch:

The patient received a grenade wound over the right half of the sternum at about its middle. The fourth costal cartilage, which was comminuted, was removed with a portion of the sternum. Haemorrhage had occurred into the mediastinum and a wound was found in the pericardium, from which blood exuded. On opening the pericardium a penetrating wound of the right ventricle was disclosed, from which blood spurted at each systole; the wound was sutured. Death occurred five days later from suppurative pericarditis. The *post-mortem* examination showed that the projectile had perforated the wall of the right ventricle and entered the wall again from within, becoming lodged in the muscle substance.

Oberstabsarzt Professor Thöle has described² a case in which he removed a bullet from the heart.

The patient had received a wound in the abdomen, and at the dressing station vomited a quantity of mucus once. On admission into the Feldlazarett the next day he was suffering from pains in the left side of the chest and beneath the costal margin, but there was no palpitation. A year later the man was admitted into a Kriegslazarett complaining of a feeling of pressure and painful tension in the left side of the chest, especially after exertion or deep breathing, but otherwise he appeared to be in good health. There was a scar 8 mm. in length, 7 cm. above and to the left of the umbilicus. Physical examination of the chest and abdomen revealed no abnormality. The pulse was regular, 76; no palpitation had at any time been felt. The x rays revealed a bullet at the lower part of the heart. The shadow was most distinct during the pause after deep inspiration, less so after complete expiration. The bullet lay transversely, with its point directed to the right, and moved synchronously with the ventricular systole and with the vertical movements of the diaphragm in deep breathing. It was situated nearer the anterior than the posterior wall of the thorax, and exactly in the angle where the shadow of the heart joined that of the diaphragm. It was concluded, therefore, that the bullet was not free in the pericardial sac, but was embedded in the wall of the right ventricle or in the connective tissue between pericardium and diaphragm.

Operation.

An incision was made, under local anaesthesia, from the middle of the sternum over the sixth rib cartilage to the sixth rib. The cartilage was then excised, the triangularis sterni muscle divided vertically close to the sternum and the internal mammary artery ligatured. While reflecting the muscle the left pleura was torn, and a clamp applied. This incision giving inadequate room, the fifth and seventh rib cartilages were excised, the rent in the pleura becoming increased to 7 cm., without, however, producing any serious symptoms. At this stage chloroform was administered, and, with the aid of the oxygen pressure apparatus, the wound in the pleura closed. A vertical incision was then made into the pericardium, which contained a considerable quantity of slightly turbid fluid. On palpation the apex of the heart, a little to the right of the interventricular septum, felt somewhat hard, but it was impossible to decide whether this was not due merely to systolic contraction. No scar was seen either on the visceral or parietal pericardium, nor were any adhesions present. Bimanual palpation, through an incision carried vertically downwards through the abdominal wall and diaphragm for 7 cm., gave negative results. Two pieces of catgut were then passed through the apex of the heart, and the organ drawn forwards. The apex of the right ventricle was explored with a needle, and the presence of the bullet immediately detected. A third piece of catgut having been passed through the hinder wall of the right ventricle, the heart was drawn forwards, a vertical incision 3 cm. long was made in the posterior wall, and the bullet removed. Bleeding was slight, and the incision was closed with three catgut sutures.

On the third day after the operation signs of pleurisy and pericarditis developed, and the patient died on the fourteenth day.

Professor Thöle attributes the suppuration to infection of the wound from the bullet, but no pus was visible around the bullet, and a bacteriological examination could not be made.

¹ Bruns's *Kriegschirurg.*, Heft xxxix, p. 634 (1917).

² *Ibid.*, Heft xl, p. 117 (1917).

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON K. M. DYOTT, R.N.

Surgeon Kenneth Mitchell Dyott, R.N., was reported as killed, in the casualty list published on December 20th. He took the L.M.S.S.A. in 1915, and joined the navy soon after.

Wounded.

Surgeon Probationer H. Gordon, R.N.V.R.

ARMY.

Died on Service.

CAPTAIN L. G. CROSSMAN, R.A.M.C.

Captain Lionel Gordon Crossman, R.A.M.C., died in hospital from double pleurisy and pneumonia. He was the younger son of Councillor John Crossman of Penllwyn Park, Carmarthen. He received his education at University College, Cardiff, and St. Bartholomew's Hospital, graduated B.Sc. Wales in 1910 and M.B., B.S.Lond. in 1913, and took the diplomas of M.R.C.S., L.R.C.P.Lond. in 1912. He had held the posts of senior house-physician at St. Bartholomew's Hospital, clinical assistant at the Hospital for Sick Children, Great Ormond Street, and resident medical officer at the Royal Hospital for Diseases of the Chest, City Road. Early in the war he joined the staff of the 1st London General Hospital, and went out with the Expeditionary Force to the East, where he had been for about eighteen months.

Wounded.

Lieut.-Colonel D. B. Cogan, M.C., R.A.M.C.(T.F.).
Major P. A. Maplestone, D.S.O., Australian A.M.C.
Captain A. C. Ainsley, R.A.M.C. (temporary).
Captain G. Allison, R.A.M.C. (temporary).
Captain A. Checchi, Australian A.M.C.
Captain J. V. Cope, R.A.M.C. (temporary).
Captain A. E. Delgado, R.A.M.C. (temporary).
Captain O. T. Evans, R.A.M.C. (temporary).
Captain D. J. Foley, R.A.M.C. (temporary).
Captain E. A. T. Green, R.A.M.C. (temporary).
Captain R. J. Lane, M.C., R.A.M.C. (temporary).
Captain W. C. McArdle, R.A.M.C. (temporary).
Captain P. W. McKeay, R.A.M.C. (temporary).
Captain J. Manuel, R.A.M.C. (temporary).
Captain O. Matthews, Australian A.M.C.
Captain J. F. W. Meenan, R.A.M.C.(S.R.).
Captain P. J. O'Shea, Australian A.M.C.
Captain W. S. Pickup, R.A.M.C. (temporary).
Captain J. R. Tibbles, R.A.M.C. (temporary).
Captain T. A. Townsend, R.A.M.C. (temporary).
Lieutenant B. Knowles, R.A.M.C.(S.R.).
Lieutenant E. C. Owens, R.A.M.C. (temporary).

Missing.

Captain J. Davidson, R.A.M.C. (temporary).
Captain H. S. Fairfax, R.A.M.C. (temporary).
Captain F. W. Fawcett, R.A.M.C. (temporary).
Captain J. Ferguson, R.A.M.C. (temporary).
Captain H. B. Guiding, R.A.M.C.(S.R.).
Captain F. B. Ryan, R.A.M.C. (temporary).
Captain F. M. Walker, M.C., R.A.M.C. (temporary).
Captain C. R. Wills, R.A.M.C. (temporary).
Lieutenant A. S. Gaziwal, I.M.S.

DEATHS AMONG SONS OF MEDICAL MEN.

Alexander, Alan Mansell, Second Lieutenant Scottish Rifles (Cameronians), second son of Dr. S. P. Alexander of Southsea, killed December 8th, aged 21. He got his commission in the fifth Territorial battalion of his regiment on September 26th, 1914, and had been on service abroad for the past fifteen months.

Gough, George Harry Waldron, Second Lieutenant Cheshire Regiment, eldest son of Dr. Harry Edward Gough, M.O.H. Northwich, killed December 15th, aged 23. He got his commission in August, 1915.

Peattie, David, Gunner Tank Corps, only son of the late David Peattie, surgeon dentist, Edinburgh, killed November 23rd.

Stewart, Vernon Radcliffe, Second Lieutenant Army Service Corps, attached Royal Flying Corps, accidentally killed on December 5th, aged 23. He was the elder surviving son of Dr. J. B. Stewart, Haslingden, and was educated at Giggleswick School, where he was a member of the O.T.C. and captain of the Rugby fifteen and cricket eleven. When war broke out he

was at St. Mary's Hospital, and had just passed the first part of the second M.B.Lond. He was given a commission in the A.S.C. in October, 1914, was promoted to lieutenant in March, 1915, and was at the first landing in Gallipoli. For his services there he was given a commission in the regular army. He transferred to the R.F.C. in September, 1916, and went to France, but was invalided to England with dysentery. On his recovery he was passed for home service, and at the time of his death was instructing in flying.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

England and Wales.

UNIVERSITY COLLEGE OF SOUTH WALES.

At a meeting of the Council of the University College of South Wales and Monmouthshire last week the Chairman, Lord Pontypridd, announced that Miss Talbot, of Margam Abbey, had given £30,000 to found a chair of preventive medicine in the college. A resolution of thanks to Miss Talbot for this munificent gift, which would provide a salary of £1,500 a year, was adopted. The resolution set out that in this way an urgent need could be met, inasmuch as the college would be able to appoint a professor with full expert knowledge and wide experience to control and conduct the teaching, research, and public health work of the Institute of Public Health and Preventive Medicine about to be established. The resolution went on to undertake to appoint as the first occupant of the chair the person selected for the office by a board constituted for the purpose by Sir William Osler. It is hoped that this example may be followed by others, so that the Welsh Medical School may be fully equipped and endowed in all departments.

DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES
IN LONDON.

At the meeting of the London County Council on December 18th the Public Health Committee recommended that the experimental scheme for the diagnosis and treatment of venereal diseases formulated a year ago should be continued, with certain modifications, for 1918. Six neighbouring counties and three extra-London boroughs share in the facilities afforded by the scheduled London hospitals, but it has been found that the proportion of London cases dealt with, instead of being 60 per cent., as originally estimated, is about 80 per cent. The total number of cases from all the areas up to September 30th was 11,976, and it is expected that 16,000 persons will have received treatment during the first full year. The scheme is reported by the medical officers and hospital committees concerned to have worked very satisfactorily, and no material revision is necessary for 1918, but it is proposed to reconsider the whole scheme, including the system of payments to hospitals, before the end of next year. The King Edward VII Memorial Institute, Lewisham; the Metropolitan Hospital, Kingsland Road; and the Hospital for Diseases of the Skin, Blackfriars, are to be added to the scheduled institutions. In response to representations that hostels should be established for young women suffering from these diseases, the Council agreed to make grants amounting to £260 in all to the Royal Free Hospital, the Women's After-care Hospital, Clapham, and the Woolwich Medical Home of the Southwark Diocesan Association, which are to provide thirty-two beds between them. The basis of the Council's payment will be at the rate of 30s. a week for, roughly, two weeks, representing the period of infectivity, though the stay of the patients in the institutions may extend some while longer. The estimate made last year of £27,500 for salvarsan and its substitutes has proved to be very much in excess of requirements, and it is probable that not more than £1,000 has been spent under this head during the year. The demand, however, is progressive, and £5,000 has been included for this purpose in the estimate for 1918. That estimate amounts in all, for the County of London alone, to £38,560, of which sum £32,000 represents block grants to hospitals for treatment and pathological examinations. Three-fourths of this expenditure is recoverable from the national exchequer. The

recommendation that the scheme be continued for another year was adopted unanimously after a brief discussion, in which the Rev. Scott Lidgett and other members spoke warmly in support of the hostels proposal.

REMUNERATION OF MIDWIVES.

It was reported to the London County Council on December 18th that the Midwives Act and General Purposes Committees, after considering various memorandums on the subject of a State aided midwifery service and the general conditions of midwifery practice, had both come to the conclusion that no sufficient reasons had been advanced for the adoption of a State-aided scheme. At the same time they agreed that there was considerable evidence that midwives were inadequately remunerated, and thought that this question should engage the serious attention of the authorities concerned, but that it should be dealt with as part of a general scheme for the health of London, such as could be anticipated in connexion with the proposals for the formation of a Ministry of Health. Mr. A. L. Leon moved an amendment proposing that the Government should guarantee to midwives a fee of not less than 20s. a case, leaving it to the Government to arrange for the recovery of part or the whole of the amount. He said that the shortage of midwives was getting more acute every year. Mrs. Wilton Phipps considered that the question could not be detached from the general health services, and, on being put to the vote, Mr. Leon's amendment was lost and the committees' recommendation adopted.

MEDICAL TREATMENT OF LONDON SCHOOL CHILDREN.

It was reported to the London County Council at its meeting on November 27th that the arrangements made for the medical and dental treatment of school children for the year beginning April 1st next included provision for 28,880 eye cases, 13,140 ear, nose, and throat cases, 2,114 ringworm cases, and 30,410 cases of minor ailments, a slight increase in each category upon the figure of the previous year. The dental provision is to be enlarged to admit of the treatment of 90,000 children annually at 44 centres; the arrangements at present provide for 67,760 children at 38 centres. The cost of the proposals will be £43,823, of which sum more than half is on account of dental treatment. Forty full-time district nurses are engaged or proposed to be engaged in the treatment of minor ailments. A further report stated a day class in remedial exercises for stammering children, who number 1,500 in the London schools, is being started; a similar experiment, which has been proceeding for some time at one of the evening institutes, has had excellent results.

THE ENEMIES OF CHILD LIFE.

In the Priestley lecture on "The enemies of child life, with special reference to home conditions," delivered before the National Health Society on November 21st, Sir Arthur Newsholme dealt with his subject under two chief headings—(1) adverse influences prior to birth or within the first month of life; and (2) those arising up to the age of five years. He first challenged the common statement as to equality of health of infants at birth. This was proved to be erroneous by the varying prevalence of congenital diseases; by the different incidence of still-births in different parts of the country, varying as they did between 3 and 8 per 100 live births; and by the unequal death-rate in the first month and first week after birth, at which age prenatal causes of death and causes in connexion with confinement were chiefly in operation. The importance of maternal malnutrition as affecting the unborn infant was great, not only in relation to the health of the infant at birth, but still more as influencing the ability of the mother to suckle. The statement that the death-rate of infants under one month is in the main irreducible, and is fairly constant throughout the country, was next shown to be erroneous. Remedial measures for the maternal and infantile causes of excessive sickness and mortality at this period of life were then discussed, including maternity benefit under the Insurance Act and the rapidly increasing work under the schemes of the Local Government Board. Dealing with the second half of his subject, the lecturer showed that more than half the total deaths in the first five years after

birth are due to infections, including catarrhal diseases of the respiratory tract; the larger part of these deaths, and of the associated much greater bulk of sickness, being preventable. The greater child mortality in towns, as compared with the country, was chiefly caused by the excess of these infections. The lecturer here rebutted the statement that excessive mortality was inevitable in town life and due to any general atmospheric condition affecting crowded centres of population. The problem of child mortality formed a complex social problem, many factors bearing a part. The chief difference between urban and rural life was in housing conditions. Greater opportunities for human organic poisoning and infection were inevitable in towns so long as it remained true that more than six times as many families lived in one-room tenements as in rural districts, and that overcrowding in such small tenements was much greater than in rural tenements of corresponding size. New schemes for housing, although they would give invaluable help, would leave the conditions in the central parts of towns unsatisfactory for many years to come, unless at the same time active additional measures were taken. The chief enemies of the child were within the home itself. Personal faults in the parent, notably intemperance, played an important part in the conditions adverse to child welfare. Again, the industrial employment of women was an obstacle to normal family life, and the problem was how to safeguard the child in its mother's absence under modern conditions. A healthy home could not be secured unless municipal authorities co-operated in many directions. But though urbanization was attended by many drawbacks it presented also certain advantages. The ideal city should be regarded as the larger home in which every family was a co-partner, the need for such continuity between the home and the city being specially marked in time of sickness, when the hospital was the best home for sickness in a large and increasing proportion of the total sickness of the community. In no department was the extension of the hospital home more needed than for parturient women, and for infants under special conditions. Sir Arthur Newsholme forecasted that ere long we should see still more rapid extensions in these directions. Although much had been done in various ways, much more remained to be effected. This would cost money, but health was always cheaper than disease, and within limits the community could have as much health as it was prepared to pay for.

Ireland.

REMUNERATION OF MEDICAL OFFICERS.

We learn from the *Cork Examiner* that the Board of Guardians of Newcastle West, co. Limerick, recently resolved to make a permanent increase of £40 a year in the salaries of the medical officers of the union. At a meeting on December 13th this resolution was rescinded by 25 votes to 18. A proposal was made to grant a war bonus of £30 a year, leaving over the matter of a permanent increase to be decided after the election of the new board. The chairman was about to put this proposal, when he received a letter from the six medical officers resigning their position, and giving a month's notice. The clerk was instructed to advertise for medical officers to fill the vacancies at the next meeting. A correspondent commenting on this suggests that encroachments under the Insurance system should be dealt with "in a similar virile, manly, and instantaneous manner."

PAUPERISM IN IRELAND.

Pauperism in Ireland in November was 1 per 10,000 of the population above the previous month. The increase in the month was mainly in the Cork, Waterford, and Limerick districts. Compared with November, 1916, pauperism in the Dublin district showed an increase of 13 per 10,000, but a decrease in the rest of Ireland, the greatest rate of increase being 9 per 10,000 in Cork, Waterford, and Limerick districts. Pauperism in Ireland differs from pauperism in England and Scotland in respect of outdoor relief. The cases of outdoor relief in England are 23 per cent. more than the cases of indoor relief, and

in Scotland are five times as numerous, whilst the number of cases in both classes of relief in Ireland are nearly equal, the first being equivalent to 91 and the latter to 92 per 10,000 of the population. Pauperism in Scotland is 158 and in England 113 per 10,000 for both forms of relief combined. The highest rate of pauperism in Ireland was in the cities of Cork, Waterford, and Limerick, where it reached a total of 263 per 10,000, but in Dublin it was as high as 260 per 10,000. In Galway it was less than half the rate in the southern and eastern districts, being only 120, and in Belfast it was 70 per 10,000. Pauperism in the London County Council area amounted to 158 per 10,000, but in the central district it reached the enormous rate of 312, and in the east was 211. The employment at munitions and war work has diminished pauperism in England, where it was 12 per 10,000 less than in November, 1916.

Sydney.

THE UNIVERSITY MEDICAL CURRICULUM.

At a recent meeting of the University Senate, on the recommendation of the Faculty of Medicine, and in order that the present fourth year medical students may be afforded an opportunity of enlisting for war service if necessary after graduation, it was resolved that the curriculum for the present fourth year medical students be slightly compressed; and that they be permitted to present themselves for the final degree examination in December, 1919, instead of March, 1920.

THE RED CROSS SOCIETY AND THE RANDWICK MILITARY HOSPITAL.

An interesting account was given to a recent meeting of the Red Cross Society of the efficient and sympathetic Red Cross organization in connexion with No. 4 Australian General Hospital at Randwick carried on for the past two years by an honorary staff of business and professional men. The doctors and nurses at the hospital gave the Red Cross representatives assistance in many ways, while the girls at the Voluntary Aid Detachments lent their aid in serving refreshments for the out-patients as well as the in-patients. The main objects of the Red Cross Society at the hospital were to visit all the wards, so as to ascertain the needs of the patients, and to explain to the men what this society was able to do for them. The operations of the Red Cross Society included a gymnasium for massage treatment, a recreation hall, a library, arts and crafts lessons for teaching leather work, carving, basket work, and cushion making. Book-keeping and photography were also taught. In the way of amusements, concerts, picture shows, and gramophones were provided. There was a room for mending clothes, and conveniences for letter writing. Whenever motor cars were lent the men were taken for drives.

LONGEVITY IN AUSTRALIA.

Mr. G. H. Knibbs, the Commonwealth statistician, has obtained some interesting results from an analysis of the age data for the censuses of 1881, 1891, 1901, and 1911. At the census of 1881 children under the age of 15 represented 38.9 per cent. of the total population of the Commonwealth, the proportion for subsequent censuses being 36.9 in 1891, 35.1 in 1901, and 31.6 in 1911. At the census of 1881 persons aged 70 and upwards represented 1.3 per cent. of the population, 1.5 per cent. in 1891, 2.1 per cent. in 1901, and 2.6 per cent. in 1911. These figures afforded evidence of the increasing age of the population of Australia. The influence of the South African war in 1901 on the age statistics was shown by the fact that while males between the ages of 20 and 30 represented 20.5 per cent. of the total male population in 1891, and 18.7 per cent. in 1911, they represented only 17.3 per cent. in 1901. The high proportion at this age in 1891 is attributed by Mr. Knibbs to the large amount of immigration which took place during the preceding ten years.

THE Spanish-speaking doctors practising in New York have founded an association named La Sociedad Medica Hispano-Americana. The secretaries are Drs. Manuel Uribe y Troncoso and Anibal Zelaya. At each meeting the chair will be taken by some member chosen for the occasion.

Correspondence.

THE MINISTRY OF NATIONAL SERVICE AND THE ARMY.

SIR,—The appeal to the nation in Mr. Lloyd George's speech on December 14th will be of little avail unless it evokes a whole-hearted response from the majority of the members of the community; and the response of individuals can only be made effective through bodies which are representative of sections of the people. One such section is the medical profession; and it seems to me that there are certain bodies pre-eminently concerned with medical interests whose members should ask themselves, "Are we doing all that is in our power to help in winning the war?" These bodies are the Army Medical Department, the Medical Department of the Ministry of National Service, and the statutory professional committees.

How many of the responsible officials of these bodies, after reading the Premier's speech, have thought of its bearing on themselves and their work? How many of the innumerable committees now in existence have paused in their floods of eloquence to ask, "Is all well with us?" Is it perhaps true that heads of departments, members of committees, and secretaries resent new ideas because they involve thought and work; that they drift into routine; and that they swathe themselves with tape which is red, even though it may not be of strict Government hue?

All the bodies mentioned have done and are doing excellent work. But at the risk of being thought censorious, I suggest that human nature is prone to pride itself on what it has done and to forget how much more might be done by using greater effort. Human nature is liable also to suffer from jealousy and suspicion, so that very often the best man is not used for the work which has to be done. Prerogatives are carefully guarded, shortcomings not recognized, interference resented. As a result co-operation is refused, and in the end committees of inquiry are set up which are wasteful both of time and money.

The difficulties of the Army Medical Department have been great. In the face of these difficulties it has rendered immense services, preventive and curative, to the armies, but it has not always been receptive to new ideas. It has not availed itself to the full of the enormous body of highly qualified men who are now serving in the R.A.M.C. It is still jealous of the civilian. It does not make use of the most competent business men in administrative matters. It has not accepted full, open, and unselfish co-operation with medical bodies which could help it in its difficulties.

The statutory professional committees have done a great work in regulating the flow of medical officers into the army, but they have grown old enough to be slow in receptiveness, to be content with routine, to be afraid of action, and to be jealous of prerogatives. They have a tendency to become unwieldy in the number of their members, and to rely on committee meetings instead of hard office work. Moreover, each committee lacks a whole-time secretary, who is so necessary in view of the far-reaching importance of the work.

The Medical Department of the Ministry of National Service is less open to criticism because it is so young. It is displaying wisdom in the confidence it places in voluntary bodies representative of the medical profession and in the use it is making of them. The chief dangers lie in the magnitude of the task that has been thrust upon the department and in the possibility of a hostile attitude on the part of other Government departments as the work of the National Service Ministry increases. At present the Army Medical Department is rejoicing in the idea that a buffer has been established between itself and a critical public. But the buffer has also the function of standing between the public and an Army Medical Department which has not always dealt sympathetically with the civilian side, so that the path of the National Service Ministry is not likely to be smooth.

So far as medical service is concerned, there would have been no need for intervention by the Ministry of National Service if the War Office had treated the statutory professional committees in a more liberal manner and if the committees had thrown themselves more strenuously into the work. But, as the Ministry of National Service

is now a partner in the concern, it is to be hoped that all differences will be forgotten, and that the military and civil sides linked up by the Ministry will work harmoniously towards the same end.—I am, etc.,

December 17th.

X.

PENETRATING GUNSHOT WOUNDS OF THE CHEST AND THEIR TREATMENT.

SIR,—In the interesting remarks on penetrating wounds of the chest and their treatment by Major Gask and Captain Wilkinson, published in your issue of December 15th, there is one statement on which I should like to comment. The authors say that "when the haemothorax is large enough to produce symptoms by its size it is aspirated; otherwise the chest is only needled if the condition of the patient suggests that a haemothorax is becoming infected. . . ."

The after-history of many cases of haemothorax seen in this country shows clearly that such conservative treatment is not satisfactory. Delayed absorption of the blood is very far from being the exception, and when these cases are aspirated some weeks after the injury, it is often impossible to remove more than part of the blood. The recovery of the patient is undoubtedly more complete if all cases of fluid haemothorax are aspirated by oxygen replacement at the earliest possible moment.

No mention is made of the treatment of sterile haemothorax by thoracotomy—a method which I advocated at the meeting of the Medical Society in January, 1916. There are two groups of cases in which it is indicated: (1) When absorption has been delayed as mentioned above. The rapidity of the improvement and recovery of the patient after this treatment is most striking. (2) When the blood has clotted soon after the injury. In such cases it is generally found that the coagulum has formed round a metal fragment or pieces of clothing which are infected, or round penetrating fragments of rib with laceration of the pleura. The early removal of the whole clot before the organisms have spread through it, and the closure of the thorax, will often prevent the development of an empyema.—I am, etc.,

London, W., Dec. 17th.

H. MORRISTON DAVIES.

TREATMENT OF DISCHARGED TUBERCULOUS SOLDIERS.

SIR,—In the report of the Lancashire County Council on the sanatorium treatment of tuberculosis, published in your issue of December 1st, the medical officer states that "the treatment of discharged soldiers and sailors suffering from tuberculosis has not been attended with great success owing to the difficulty of enforcing discipline apart from the military control." I wish to confirm that statement.

After having seen the result of treatment in a large number of cases (both in a civil institution and in a military hospital) I am convinced that better results are obtained when soldiers are treated under military control; and I have pointed this out to the M.O.H. of the county.—I am, etc.,

December 8th.

R.M.O.

HOW IS THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS TO BE MADE?

SIR,—With reference to the great importance of the early diagnosis of pulmonary tuberculosis, I should like to call attention to the limitations of the stethoscope as an aid to early diagnosis.

Laryngologists see a number of cases of early tuberculosis because tuberculous patients are peculiarly susceptible to chronic catarrhal affections of the nose, pharynx, and larynx. For example, frequent and prolonged attacks of laryngitis, with asymmetrical or patchy redness of the vocal cords, or perhaps slight thickening of the posterior commissure of the larynx, always raises the suspicion of tuberculosis, but on inquiry the patient states, "My doctor examined my chest and said it was all right"; or the case is sent to a physician for examination of the chest, with the result that the case is returned labelled, "No physical signs." Subsequent thorough examination of the sputum reveals the presence of the tubercle bacillus, and the

patient's chart shows an evening temperature and loss of weight.

The above type of case is so common that the keenest stethoscope is distrusted, and a negative stethoscopic examination is misleading and worse than useless. When physical signs are detected by the stethoscope, it means that the disease is comparatively advanced. The presence of chronic catarrh of the nose, pharynx, or larynx in a young adult for which no adequate local or general cause can be found, and more particularly if the victim is "run down," should raise the suspicion of pulmonary tuberculosis. In these cases a careful examination of the sputum, temperature, and weight is much more likely to reveal the true condition of the patient than many stethoscopic examinations of the chest by the most experienced exponent.—I am, etc.,

London, W., Dec. 3rd.

EDWARD D. D. DAVIS.

SIR,—Whilst agreeing with much that Dr. Lachlan Grant says in his letter in your issue of December 8th, I should like to point out that haemoptysis occurred as an initial symptom in 18.6 per cent. of men patients in which this matter was inquired into, who at the time of inquiry were suffering from well-marked pulmonary tuberculosis; and pleurisy was found to be antecedent in 18.2 per cent., making nearly 37 per cent. in all, of cases which might have been easily diagnosed. In the case of those suffering from haemoptysis, an average of almost three years had elapsed before they were first treated seriously, and in the case of the pleurisy an average of four years and four months had elapsed before serious treatment was undertaken.

In cases of doubt, where symptoms of fever are present, such as night sweats, the most important thing for the family medical adviser to do is to put the patient to bed, and, if there is a dry cough, to check it appropriately, and not to allow the patient to go about, for, although under the latter regimen he may in time spit up tubercle bacilli, this should not be the aim of treatment. Rest is the sheet anchor in our treatment of early cases. Night sweats—a common symptom in early cases—is due to walking about and exercising diseased foci in the lungs which produces toxæmia, and so fever and then night sweats.—I am, etc.,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, Dec. 10th.

THE RURAL PANEL PRACTITIONER.

SIR,—When I sent my subscription to the British Medical Association at the beginning of this year I also intimated my resignation, to take effect at the end of the year. My chief reason for resigning, after a membership of over twenty years, was a conviction that the interests of the rural practitioners were more or less ignored by the leaders of the Association. At any rate, who can deny that, since the coming of the Insurance Act, the rural doctor has never had fair play compared with the industrial area practitioner? And at the present time his position is worse than ever, owing mainly to the increased cost of travelling and drugs. These two points do not affect the doctors in towns and colliery districts, but they are the most glaring and urgent grievances under the Act, and should be remedied first. Let the Insurance Acts Committee obtain a more reasonable allowance for drugs and mileage, and then press, if they like, for a ten shilling capitation grant. The "big panel" doctors are far better off than they were before the Act in spite of the increased cost of living, and to talk of wholesale resignations is mere moonshine.

I shall be reminded that we have a subcommittee of six appointed to look after rural interests, but we have not yet heard that they have achieved much, and, in any case, some of its members are men practising in towns of 12,000 or 13,000 inhabitants, with panels that are certainly not predominantly rural.

However, of late the Insurance Acts Committee appears to recognize the fact that there are such people as rural practitioners, and that the conditions of working the Act in rural districts are not quite the same as the conditions in populous areas; and, of course, we could not expect action until these facts were recognized. Because this gives a glimmering of hope, and because I find the JOURNAL

useful (mostly for its advertisements) I have decided to withdraw my resignation.

The miserable have no other medicine
But only hope.

—I am, etc.,

December 13th.

TRULY RURAL.

RURAL PRACTICE.

SIR,—In the obituary notices of a medical man I read an appreciation by a colleague, which began thus: "Though only a country practitioner . . ." suggesting that rural practice is always chosen from inability to compete with our town friends. It is strange that the country doctor is so often regarded as of an inferior type. My experience is quite the contrary. Having served at sea and in large practices, I can say that none have taught me more than my country colleagues, and nowhere is self-reliance implanted so firmly.

Take, for example, a difficult midwifery case miles from any help, with no friendly practitioner round the corner to give a hand. Here the responsibility has to be faced alone. Perhaps it will not be amiss to quote my midwifery record during the past year: There were thirty-five cases, and of these eleven were normal. Among the twenty-four complicated cases of labour twelve needed forceps; in one I had no one to give chloroform. There was one case of *ante-partum* eclampsia; three genuine cases of painless labour, in each of which turning was performed; one case of impacted breech; three occipito-posterior cases; one shoulder case with cord presenting; one peculiar case of cardiac dropsy in which the size of the abdomen remained practically unchanged after delivery; one case of persistent fainting attacks; and, finally, a case of difficult delivery, the infant having an enormous syringomyelocoele. In two of the cases I had the kind help of Dr. Welsford of Tiverton. Town colleagues say we should not attempt these difficult cases alone, but the fact is we must, "though only country practitioners." I often think of the couplet:

Luckless is he whom hard Fates urge on
To practise as a country surgeon.

The much advertised inducements of fishing, shooting, golf, etc., seldom, indeed, come our way. Seldom even are we able to attend our local British Medical Association meetings. Here may I say that what strikes me about recent discussions in the JOURNAL is the lack of unity among medical men. I am sure our position would be far better if we did but pull firmly together, headed by our British Medical Association representatives.

So long as this inability to unite continues we shall remain public slaves. Take the infectious notification fee. My last diphtheria case cost me in stamps much more than the miserable shilling. Such is our reward for safeguarding the public with risk to ourselves and our families. Lastly, as to panel work, I may quote one of many such cases. I recently paid twenty visits to a man some six miles or more from my home—one visit at midnight—over the roughest lanes, and this for 11s. a year. With petrol 4s. a gallon, and drugs so expensive, how can it be done?

Need I say that the object of this letter is not to eulogize myself, but to point out a few of the trials and troubles of the country doctor.—I am, etc.,

DAVID H. VICKERY,

Cheriton Fitzpaine, Nov. 24th.

Surgeon R.N. (invalided).

Obituary.

THE death occurred, on December 7th, of Dr. FREDERICK EDWARD WALKER, of Uxbridge, at the early age of 43 years. After studying medicine at Guy's Hospital he qualified M.R.C.S., L.R.C.P. in 1889, and three years later he took the M.B., B.S. degrees of the University of London. He served as civil surgeon during the South African war, and received the Queen's medal with three clasps. He afterwards settled in practice at Uxbridge. In 1912 he became medical officer to the Uxbridge Rural District Council, and during the war acted as medical officer to the urban district and to the Uxbridge Union. He was a member of the Urban District Council, and captain of the local fire brigade. The very large number of organizations represented at his funeral showed the respect in which he was held. He leaves a widow and two young children.

Dr. THOMAS FISHER, of Great Eccleston, who died on December 1st, was the son of the late Mr. John Fisher of St. Michaels, and was educated at Alston College and St. Thomas's Hospital. After taking the diplomas of M.R.C.S. Eng., and L.S.A. in 1876, he settled in practice at Great Eccleston. He was a J.P. for the county of Lancaster, a member of the Blackpool Division of the British Medical Association, M.O.H. for the Garstang Rural District, and medical officer to the Joint Small-pox Hospital, Elswick. In 1916, owing to the great calls on the medical profession caused through the war, Dr. Fisher accepted the appointment of acting medical superintendent of the Lancashire County Council Sanatorium at Elswick. He leaves three sons and one daughter, two of the former being members of the medical profession.

BRIGADE SURGEON WILLIAM NOLAN, Bombay Medical Service (retired), died suddenly at Wallington, Surrey, on December 11th, aged 75. He was educated at Trinity College, Dublin, where he graduated B.A. in 1864, M.B. in 1865, M.D. in 1868, and M.A. in 1883; he took the diploma of M.R.C.S. in 1866. He entered the I.M.S. as assistant surgeon on April 1st, 1867, became surgeon on July 1st, 1873, surgeon-major on April 1st, 1879, and retired with a step of honorary rank on September 24th, 1887. He served in the Abyssinian war in 1868 and received the medal.

ASSISTANT SURGEON THOMAS PARKER SMITH, formerly of the Army Medical Department, died at Reigate on December 4th, aged 81. He was educated at Owens College, Manchester, and graduated M.B. Lond. in 1858 and took the dipl. mas of M.R.C.S. and L.S.A. in the same year. He entered the army as assistant surgeon on March 31st, 1862, but after six years' service, spent partly on the staff and partly in the Royal Munster Fusiliers, retired on half-pay on December 12th, 1868, nearly half a century ago. Before joining the army he had held the post of house-surgeon to the Staffordshire General Infirmary. He translated from the German, for the New Sydenham Society, several volumes, *German Clinical Lectures*, part of *Billroth's Surgery*, and Senator's *Albuminuria in Health and Disease*.

The Services.

HALF-PAY FOR SURGEON-GENERALS.

AN Army Order has been issued providing that a Surgeon-General of the Army Medical Service promoted to that rank after the date of the Order (December 20th) shall be placed on half-pay at the rate of £1 15s. a day after four years' service in that rank.

EXCHANGES.

M.O. attached Northern Command would like to exchange with M.O. attached London Command.—Address, No. 4349, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Medical officer serving in the Northern Command would like to exchange with one serving in the London Command.—Address, No. 4200, BRITISH MEDICAL JOURNAL Office, No. 429, Strand, W.C.2.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE following candidates have been approved at the examination indicated:

THIRD M.B., B.C.—*Part I, Surgery and Midwifery*: I. de B. Daly, R. French, A. R. Hargreaves, C. E. Kindersley, J. G. Lawn, H. Morrison, F. P. Nicholas, A. G. Shurlock, E. B. Verney, C. H. Vernon.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examinations indicated:

FINAL M.B. and CH.B.—C. F. J. Carruthers, J. Charnley, J. C. T. Fiddes, M. C. Paterson, R. S. Paterson, Elizabeth C. Powell, *Forensic Medicine*: T. Colley, S. E. Critchley, F. L. Whincup.

THIRD M.B. and CH.B.—*General Pathology and Morbid Anatomy*: Nooman Abdoh, Elizabeth C. Davies, Kathleen Doyle, Georgiana M. Duthie, Olive M. Gimson, F. G. Hammett, A. Harris, S. Kelly, J. N. Luing, J. G. Nolan, Olga G. M. Payne, F. L. Pickett, Edme Ratner, W. Reikan, Annie G. Thompson, Doris M. R. Tompkins, Ruth A. Wilson. *Pharmacology and Therapeutics*: R. J. Allison, Mary E. Boullen, P. Fildes, A. Harris, A. E. H. Sadek, Ethel D. Willis, J. Yates. *Hygiene*: R. J. Allison, A. M. Cotes, L. B. A. Edleston, A. E. H. Sadek, Ethel D. Willis, J. Yates.

UNIVERSITY OF LONDON.

The following candidates have been approved at the examinations indicated:

M.D.—Branch I (Medicine): Dorothy Chick, H. J. O. Ewing (University Medal), Mary E. Joll, G. W. Lloyd. Branch V (State Medicine): P. Smith.
M.S. Branch I (Surgery): W. E. Tanner.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary Council was held on December 13th, when Colonel Charters Symonds, Vice-President, was in the chair.

Issue of Diplomas.

The diploma of Fellowship was granted to Mr. H. E. Griffiths, M.R.C.S., L.R.C.P., of St. Bartholomew's Hospital, who qualified at the recent examination.

Diplomas of the Licence in Dental Surgery were granted to twenty-two candidates found qualified.

Appointment of Representatives.

The following representatives of the College were appointed: Sir Berkeley Moynihan to the Court of Governors of the University of Birmingham, Mr. D'Arcy Power to the Court of Governors of the University of Bristol, Mr. W. G. Spencer to the Central Council for District Nursing in London.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following gentlemen, having passed the requisite examination, have been admitted Fellows: A. F. Cole, Subodhchandra Datta, S. Forsdike, J. Geoghegan, W. M. W. Shepherd, R. Tennent, N. J. Wigram.

The Liston Victoria Jubilee Prize of £100 has been awarded to Mr. D. P. D. Wilkie, F.R.C.S.E., for his valuable work and contributions with special reference to abdominal surgery.

Medical News.

THE King has conferred the Order of Mercy on Colonel R. J. Blackham, C.I.E., D.S.O., M.R.C.P.E., who is now serving as A.D.M.S. of a Division in Italy.

PROFESSOR F. DE QUERVAIN has been appointed to the chair of surgery in the University of Berne in succession to the late Professor Kocher.

OFFICERS of the United States Army Medical Service while stationed in Dublin or in its neighbourhood are invited by the Royal College of Physicians of Ireland to make use of its library.

THE American periodical *Pediatrics* has been incorporated with the New York *Medical Review of Reviews*, the editor, Dr. W. E. Fitch, having been called up for service in the army.

THE Cuban Red Cross is equipping a hospital unit with one hundred beds for active service on the Western front in France. It is staffed by Cuban doctors and nurses. A fund of £200,000 is being raised for the purpose by Cuban women. A national Red Cross day has been arranged for all parts of the Republic.

As the Viennese medical practitioners have to rely mainly on the electric trams for getting to their patients, and as the trams are often overfilled, it is proposed that the conductresses should be instructed to give practitioners establishing their identity a first claim to a seat.

SIR AUCKLAND CAMPBELL GEDDES, M.D., M.P., Minister of National Service, was sworn a member of the Privy Council on December 21st. As at present arranged, he will introduce the new amending Military Service Bill—the fourth of the series—on the reassembly of Parliament on January 14th. It is not probable that it will affect the medical situation in any way.

THE Department of the Seine intends to expend a sum of £40,000 on the establishment of tuberculosis dispensaries, which will be provided with nurses and health visitors of both sexes. The provision is made in accordance with a law which came into force in April, 1916.

THE annual congress of the Ophthalmological Society of the United Kingdom is to take place in London on May 2nd and two following days. Discussions will be held on the plastic surgery of the eyelids and on contagious diseases of the conjunctiva, and a number of demonstrations will be given. A museum, including a special exhibition of perimeters, is being arranged. Communications on this subject may be addressed to Dr. A. C. Hudson, 50, Queen Anne Street, London, W.1.

AT the seventh clinical Congress of Surgeons of North America, held in Chicago October 22nd to 26th, Surgeon-General Brinistad stated that whereas there were formerly 394 medical officers in the United States Navy there were now 828, the full authorized strength, and, in addition, over 700 in the naval reserve corps. The navy had twelve

hospital units organized under, and in conjunction with, the Red Cross, and five small naval stations. In the four naval hospital corps training schools there were sometimes a thousand men. Two ships were now being converted into hospital ships, and one now in course of construction would be from the keel up of a new type.

In response to medical representations, the Prussian Minister for the Interior has put the muzzling order again into force in greater Berlin. While it was in force very few people were bitten by rabid dogs, but in 1912, after its repeal, 26 cases occurred, and the average annual number of dog-bites notified by the police was about 100 a year.

By order of the Surgeon-General of the United States army an officers' school of oral and plastic surgery has been established for the training of a limited number of the medical reserve and dentists in the care of wounds of the face and jaws. The school is planned for the training and placing of a number of officers sufficient for the care of the face injuries among a million men in hospitals, and eventually a section of the staff will be established in every base and evacuation hospital. The first school has its headquarters at the Washington Medical School (St. Louis), which on the entry of the United States into the war offered to the Government the use of its new laboratories, hospitals, and clinics, and the services of its faculty. The instructors have been chosen chiefly from the faculties of Washington and St. Louis medical schools. The latter offers intensive work in anatomy, operative surgery, anaesthesia, and dentistry. The first course began on October 15th.

THE annual report of Livingstone College for the past year states that the reasons for the temporary discontinuance of the courses of study are, if possible, more urgent now than in August, 1915, when the college was transformed into an auxiliary military hospital. During the past twelve months over 99 per cent. of the beds had been fully occupied, and the admissions since the hospital was opened exceed 1,500. No attempt is made to forecast the programme of the college when it becomes once more a school for the training of missionaries in the elements of medicine, surgery, and hygiene, but the committee believe that, as a result of experiences during the war, a great impulse will be given to the work of Livingstone College.

IN the city of New York during 1915 there were about 15,000 cases of diphtheria with nearly 1,300 deaths, nearly 10,000 of scarlet fever with 291 deaths, over 38,000 of measles with 630 deaths, and only 174 and 95 cases respectively of cerebro-spinal meningitis and acute poliomyelitis. Three quarters of the patients with diphtheria and scarlet fever were treated in their own homes. A great deal of anti-tuberculosis work is done; 33,000 patients were under treatment at the various tuberculosis clinics during the year, under the charge of 67 special physicians and 41 volunteer physicians. As regards venereal disease, the department gives advice freely but undertakes no treatment at all; there are "Wassermann clinics" and a medical adviser, the former dealing with nearly 17,000 patients, the latter with 3,721. Deaths from rabies numbered 22 in the three preceding years; in 1915 only one occurred, though 279 patients were treated at the "Antirabic Clinics," and 103 rabid dogs (laboratory confirmation) were dealt with. There were 3,648 cases of dog-bite reported; 404 of these dogs were muzzled, 440 were on the leash, and 263 were both muzzled and leashed. The American S.P.C.A. collected and destroyed 35,537 dogs during 1915.

AFTER retelling in a singularly interesting manner the story of Burke and Hare, who in 1828 made a vocation of murdering the unprotected waifs and strays of Edinburgh to provide themselves with a livelihood and the dissecting rooms with subjects, Dr. C. W. Burr of Philadelphia discusses (*Annals of Medical History*, New York, 1917, i, 75-82) the psychology of murder. He first clears the ground by ruling out killing in self-defence, in a sudden access of passion, and by the insane; and this done, defines the murderer from the psychological point of view as the man who, without any temporary change in his usual psychical condition, can coldly contemplate and leisurely plan the killing of another for his own apparent benefit; such a one is psychologically a murderer, whether or not he ever kills, if, after planning the deed, he drinks to give himself the necessary courage, or if he hires another to carry out his plan. The one quality lacking in all sane murderers is the moral sense or the realization of a duty towards others who have an equal right to live; the murderer is colour-blind to morals, and never feels remorse or grief on account of his victim. The cause of this want of moral sense we no more know than we know what produces it; it is independent of intellect and environment. The murderer is born not made, and comes of a type apart and distinct from all other men.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the *BRITISH MEDICAL JOURNAL* are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the *BRITISH MEDICAL ASSOCIATION* and *JOURNAL* are:

1. EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aditology*, *Westrand, London*; telephone, 2631, Gerrard.
 2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, *Westrand, London*; telephone, 2630, Gerrard.
 3. MEDICAL SECRETARY, *Mediscera*, *Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.
- The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

Queries, answers, and communications relating to subject to which special departments of the *BRITISH MEDICAL JOURNAL* are devoted will be found under their respective headings.

QUERIES.

INCOME TAX.

C. S. has retired from practice, and has been doing duty as a regimental M.O., having been appointed in a civilian capacity. He points out that though his expenses have been similar to those incurred by military officers, he is taxed at the civilian rates instead of the special "service" rates.

"In the circumstances detailed by our correspondent he seems to be in an unfair position as compared with officers who do similar work, but, being commissioned to the R.A.M.C., obtain the special relief extended to army pay; but the legality of the rate of duty levied depends apparently on the nature of his employment, and if the terms of his engagement with the War Office are such as to constitute his remuneration "civilian" rather than "military" pay, we fear that he has no remedy.

LETTERS, NOTES, ETC.

WANTED—A MUSEUM OF QUACKERY.

DR. EDGAR F. CYRIL (London) writes to suggest that, pending any effort to obtain legislation which may be possible after the war, good might be done by the formation of a museum of quackery open to the general public. He suggests the exhibition, in addition to samples of patent medicines with their selling price and estimated cost of production, preparations of foods which, unaided by anything else, are said to be sufficient to support life and create unheard-of degrees of efficiency.

COWS AND TYPHOID FEVER.

F. L. O. writes that he has been informed by a combatant officer that it is accepted as a well known fact in India that if cows are allowed to drink contaminated water they are capable of transmitting typhoid bacilli through their milk. This opinion is probably erroneous; it rests possibly on some observations by Colonel Fred. Smith, who found agglutinins in the serum of cows. All attempts to cultivate typhoid bacilli from cow's milk proved negative. At the same time it is to be remembered that the udder is liable to faecal contamination, and it is possible that such contamination may occasionally contain typhoid bacilli from a human source, but the risk must be somewhat remote.

TREATMENT OF MALARIA.

DR. EDWARD YEATES, F.R.C.S.I., writes with reference to the note published on November 24th, p. 699: The treatment as set forth is, I believe, correct as far as the administration of quantities of quinine is concerned, but very necessary details are omitted.

1. In almost every case calomel should be administered first, in small or large quantities to suit the patient, otherwise the portal system is liable to become congested when the quinine gets busy on the malarial organism, and most unpleasant symptoms are developed.

2. Quinine should not, in my opinion, be administered by the mouth except in solution; dilute sulphuric acid I have found the best solvent. It can easily be understood that the gastric juice, etc., in the stomach will not be in a normal state when malaria is present or where there is a high temperature; and the quinine not only does not get dissolved, but becomes an irritant to such an extent that I have seen men almost dying from the effects of the so-called remedy.

3. Quinine should, when possible, be given before a rise in temperature; when the temperature is high it causes agonizing headache.

4. Quinine should not be given on an empty stomach. After an experience of over twenty years in malarial countries—Rhodesia, Northern Queensland, parts of America, and China—I have long ago come to the conclusion that tablets of quinine or the powder are unsatisfactory, and more

often than not nothing but irritants, more particularly in cases weakened already by other sicknesses, etc., in a hot climate.

BRONCHIAL ASTHMA.

DR. J. E. MIDDLEMISS, Medical Officer to the Leeds Mental Deficiency Committee, in a letter elicited by Dr. Jepson's memorandum on bronchial asthma (November 17th, p. 650), states that he was particularly interested in the parallel drawn between bronchial asthma and epilepsy. The nervous factor underlying the majority of cases of bronchial asthma, he thinks, is recognized theoretically in medical literature, though not exemplified in some of the therapeutic measures advocated. The treatment by vaccines, for example, he continues, takes no account of this factor; the use of adrenalin injections, on the other hand, which cause constriction of the vessels supplying the bronchial mucosa admits by implication the nervous factor, or at least is compatible with that explanation. Moreover, the practice of removing nasal growths and obstructions in this condition which act as reflex causes of irritation is based on the same principle, and the fact that such operative procedures are frequently nugatory only emphasizes the preponderating importance of nervous instability as the essential cause. None of these forms of treatment, however, take sufficient account of the neuropathic constitution as a whole, but the success which attended the treatment of a case by hypnotic suggestion reported in the *BRITISH MEDICAL JOURNAL* for 1914 (page 194) encourages a more extended trial of this form of treatment. Not all cases will prove amenable to suggestion, but where it can be employed it furnishes a ready means of combating the mental distress, restlessness, dreads, and apprehensions which are so frequently associated with this complaint, and perpetuate its symptoms. As it is possible in susceptible subjects to produce blisters on the skin by hypnotic suggestion (see paper by Dr. Arthur Hadfield, *Lancet*, November 3rd, 1917), there would seem to be no reason why the turgescent bronchial mucosa should not be influenced by suggestion in an opposite direction.

Bronchial asthma and epilepsy are both dependent on a fundamental instability of the central nervous system, but there the comparison ends; for the same remark applies to most functional neuroses, including some forms of chorea (see paper by Dr. Ivy McKenzie, *Glasgow Medical Journal*, June, 1915). Apart from the obvious difference in the gravity of the symptoms and the severity and extent of the nervous disturbance in epilepsy, it may be remarked that the latter disease is practically uninfluenced by suggestion. Moreover, the evidence of a relation between epilepsy and the true psychoses is far stronger and better established than in the case of asthma. The exhibition of potassium iodide has long been customary in this affection, and it usually causes relief of the immediate symptoms, probably, as Dr. Jepson suggests, by producing a "flow of watery mucus from the bronchial tubes." One wonders, however, whether in the last resort this is a desirable or even a rational procedure. Assuming that the symptoms are dependent on congestion and turgescence of the bronchial mucosa, efforts should be directed rather in the opposite direction. Anything which tends to irritate the lining of the bronchi would appear to be contraindicated, even though, as in this case, it procure a temporary relief of symptoms. The practice of electrical stimulation of the nasal mucosa in cases of paroxysmal sneezing is interesting in this connexion, the final object in this case, too, being the promotion of a state of relative insensitiveness of the lining membrane of the nose.

STATE PROTECTION FOR THE APPENDIX.

EVERYTHING is protected nowadays, and it is therefore not surprising to read that an American legislator has drawn up a bill for the preservation of the human appendix. He invites the South Dakota Legislature to place that troublesome survival under State control. He proposes that every appendix removed should be sent to the State laboratory for examination by the official pathologists. If they decide that the removal was justified, nothing further happens; if otherwise, the surgeon gets no fee. The measure is well enough conceived as a check on the over-zealous operator. But it may not unreasonably be asked why the appendix should be singled out for preferential treatment. Is there to be no legislative protection for the tonsil? Or for the teeth against the militant dentist, with his ever lengthening list of disasters due to evil conditions of the gums and other parts within the sphere of his activity?

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *posteo restante* letters addressed either in initials or numbers.

THE
British Medical Journal.

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

EPITOME

OF

Current Medical Literature.

JULY TO DECEMBER, 1917.

London :

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READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma, Epithelioma, Malignant Disease, New Growth, Sarcoma, etc.; Child and Infant; Bronchocele, Goitre, and Thyroid; Diabetes, Glycosuria and Sugar; Eye, Ophthalmia, and Vision, etc.

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AN EPITOME OF CURRENT MEDICAL LITERATURE.

Simulation of Disease.

1. The Psychology of Simulation.

LAIGNEL-LAVASTINE and PAUL COURBON (*Paris méd.*, July 7th, 1917), who begin by defining "simulation," say that all functional or organic disturbances which have their origin in the conscious will of the patient are simulated. They distinguish three categories: (1) Feigned somatic disorders, comprising self-inflicted mutilations or injuries, and self-induced diseases; (2) feigned functional disorders; (3) feigned functional disorders grafted on genuine organic disease. In making a diagnosis the question is whether there is or is not intent to deceive. This is difficult, because every man's inner life is the scene of so many involuntary and unconscious lies that no one can tell the determinations even of his own actions with certainty. Between the man who is genuinely ill and the simulator there is an insensible gradation. The pure type of simulator is the man whose conduct appears to be solely determined by the deliberate intention of avoiding combatant dangers. What the authors call a "mitigated" type is represented by men whose mental constitution causes a certain lessening of resistance to danger. The pure simulator is without excuse; he is a mere selfish coward. In the mitigated type some allowance must be made for mental constitution. The man is moved by the feeling that he cannot face danger. There are several varieties of this type: (a) Emotional, common in those who do not believe in war and are unable to adapt themselves to its conditions; (b) the hypochondriac, who thinks his health unequal to the fatigues of a campaign; (c) the man who holds that he has a right to claim exemption either because he has done enough or because he considers that he would be more useful in a less exposed post—especially common among those who have been at the front and sent back for some injury or sickness; (d) the suggestionable, who simulates at the instigation of his family or friends; (e) the simulator by reaction, who thinks it necessary to keep up a morbid condition in order to prove that he has been wrongly charged with malingering. When real disease or injury is made to appear worse than it is by simulated functional trouble the exaggeration is often more or less unconscious. Under the name of *persévérance* the authors describe feigned disorder following real sickness or injury. In the pure type the patient does exactly the opposite of what is necessary for cure; in the mitigated type the man does not actively keep up his disability but does nothing to get well. In pathomimia, which is the artificial production of disease—for instance, by inoculation—there is also a pure type in which the patient acts with deliberate intention to deceive, and a mitigated type in which the man while wishing to deceive is also to some extent the victim of his own perverted imagination. There are active, apathetic, and sensitive simulators. To the first category belong men who multiply their devices, and thus increase the risk of detection. Instead of waiting till their fraud is exposed they are eager to prove their innocence, and in so doing stumble into pitfalls made by their ignorance of symptomatology. The apathetic acts by the force of inertia; he awaits instead of seeking investigation, and is content to make a passive show of good faith. The sensitive generally tries to avoid examination but submits readily to treatment. The cause of his simulation is separation from home. He acknowledges that he is not ill, and returns without much objection to his unit, but on the march his courage fails, and he again declares that he is ill and tired of life. He faints on the road, and some more or less moving testamentary document is found on him declaring his determination to kill himself. Though there is much hypocrisy in his conduct, it may be associated with a certain amount of sincerity. So while the active simulator is disliked, and the apathetic becomes a bore, the sensitive almost inspires sympathy. While the pure simulator, the constitutional coward, is always a fraud, the others are simulators only owing to circumstances more or

less persistent, but which are always due to some weakening of energy. Many of the authors' patients had behaved well in battle, and even won the Military Cross. Their subsequent failure was due to a change of disposition. Their moral energy, conspicuous at first, became exhausted.

2. Artificial Skin Eruptions.

MILIAN (*Paris méd.*, May 5th, 1917) classifies artificial eruptions as follows: Pustular forms of dermatitis, bullous or phlyctenular eruptions, eczematoid dermatitis, oedemas, factitious ulcers of the legs, and sham mucous patches. Of these, pustular dermatitis is the most common. The elementary lesion is a pustule varying in size from a pin's head to a millet seed; the skin around is healthy or may be slightly inflamed. The pustules are usually fairly abundant but gathered together into two or three patches. These patches are almost always situated on the hairy parts of the face, often on the ears and neighbouring parts, or on the front and left surfaces of the thigh. An important diagnostic point is that the pustules are all in the same stage of evolution, the whole process taking four or five days. For the production of these eruptions croton oil and thapsia are chiefly used. Artificial phlyctenular dermatitis is not common, as it is too easily recognized; the lesions are true blisters. The men do not usually present themselves till the phlyctenulae have shrunk, leaving inflammatory lesions. Sometimes they come in the stage of desiccation and the lesions suggest burns of the second degree. But the patient will not admit any history of burning, and by insisting that the affection came on of itself he excites suspicion. Bullous dermatitis in a stage that might simulate pemphigus is rare. These eruptions are produced by blistering fluids, and the man as a rule aggravates the lesions into true sores. Eczematoid dermatitis is usually seen on the face; the eyelids are generally affected, less frequently the thighs and groin. The skin is red and oedematous, the eyelids often so puffy as to close the eye. Cases of this kind are often sent to hospital with a diagnosis of erysipelas. But the absence of fever and malaise, and of enlarged glands under the jaw or pain on pressure of the patch, makes this diagnosis untenable. The lesions subside in four to six days; the skin quickly becomes quite normal, without any trace of branny desquamation or gloss. But this kind of artificial eruption is difficult to distinguish from dermatitis produced by accidental contact with an irritating substance. The malingerer, however, never reveals the nature of the substance used, and Milian has never succeeded in identifying it; he has heard, however, that the lesion can easily be produced by rubbing the face or forearms with automobile oil. Oedema is produced by tying a wide flat strap on the forearm or the lower part of the leg during the night. The fraud is easily revealed by the mark of the strap on the skin. Artificial ulcer is difficult to recognize. The men come with a history of an injury which has broken the skin. The sore shows no tendency to heal in spite of careful dressing for many weeks. Its refractoriness then excites suspicion of syphilis, and appropriate treatment is employed for three months without result. Milian lays down the principle that such obstinate sores in young men properly treated may, in the absence of special conditions, be regarded as artificial. They are generally situated on the legs at places within reach of the patient's right hand. They are never at the seat of election of varicose ulcer, the lower third of the leg, especially above or behind the internal malleolus. New ulcers appear, the mode of onset serving to indicate their origin. They are caused by a blistering substance or a caustic agent. The diagnosis from gummatous ulcers is the more difficult because sometimes the malingerer is a syphilitic who has in the course of treatment acquired a knowledge of the disease, which he is clever enough to apply for the purpose

of deception. Artificial ulcers have also to be distinguished from the chronic ulceration following ecthyma or infected wounds. In artificial sores which are constantly under the action of caustics there are no granulations. Varicose ulcers, with their pigmented or eczematoid border and their dull, smooth base, have no resemblance to artificial eruptions. A valuable aid to diagnosis is an occlusive dressing; it is sufficient to keep the sore out of the patient's reach for a fortnight. Collodion is the best application for the purpose, but as the retained pus may cause complications, the doctor should himself put on the dressings, sealing up the ends, or keeping a watchful eye on the bandages, after carefully noting the turns and manner of fixing; in this way it will be seen whether it has been undone. Another diagnostic device is to induce the patient to give himself away by producing fresh eruptions. The doctor, on examining the original lesion, says in the man's hearing, "I am surprised that there are not similar lesions five or six centimetres lower, as I have always seen in such cases during the war." Next day lesions duly appear in the place indicated. Artificial mucous patches are produced with the lighted end of a cigarette. They are generally narrower than a cigarette, as the whole end is seldom applied. The lesions are on the left side, and situated on the inner surface of the lower lip not far from the commissure, in the cheek, or on the velum, never on the pillars of the fauces or the tonsils. They consist of rounded, shallow ulcers with a smooth yellowish base, without inflammatory border, raised papules, or surrounding leucoplasia; these features are important in excluding syphilis.

3.—P. SABELLA (*Policlinico*, May 27th, 1917), from observations among men in the fighting line extending over many months, classifies artificial skin eruptions in two categories according to the substances used to produce them. One group includes those in which the irritants were vegetable powders obtained by the trituration of roots or bark or from the juice or oil of the seeds of some ranunculaceous or euphorbiaceous plants. The sudden appearance of the lesions, and the local symptoms, which are sometimes severe, contrast sharply with the complete absence of general reaction. As a rule, in less than twenty-four hours after the application of the irritant there appears a diffuse erythema, often suggestive of erysipelas. The erythematous skin becomes the seat of numerous miliary vesicles due to simple detachment of the epidermis; the walls are thin and the contents like pus. The affected skin is not very painful on pressure. If infection and eczematization are prevented, cure quickly takes place. The vesicles become flaccid and dry into thin crusts, the swelling of the skin subsides, and the epidermis desquamates. Sabella for the first two or three days uses wet dressings of a 3 per cent. boracic lotion; when the discharge has dried up he applies zinc ointment. In most cases the eruption is produced on the face, but Sabella has seen it on the limbs, the trunk, the pubes, the genitals, and on the ear. Such substances applied to the scrotum and inguino-scrotal folds cause inflammation of the skin, which very easily becomes infected and takes on the characters and course of intertriginous or impetiginoid eczema. The second group of artificial eruptions comprises those due to caustic applications; the lesions range in degree from superficial erythema to grave necrosis. When produced by caustics in solution, they may be disseminated in large patches over large surfaces; occasionally they are true burns caused by boiling water or lime. Others occur in the form of sharply circumscribed bullae and phlyctenulae, or patches of cutaneous necrosis. For the most part they are localized on the lower limbs, either because those parts are easily accessible or because injuries in that situation need rest. The bullae and phlyctenulae have sero-fibrinous and sero-haemorrhagic contents, and form adherent crusts; the underlying derma either becomes covered with epithelium beneath these or heals by granulation when the crust separates. The sloughs from canterization of the third degree are thicker and more adherent to the derma or subcutaneous tissue; they separate very slowly, and the sore heals by granulation.

4.—M. CARRUCCIO (*Policlinico*, May 27th, 1917) saw in a skin department during the autumn of 1915 and the following winter more than one hundred soldiers with an acute dermatosis of practically identical nature. Many of the cases came from country places near Rome, where the men had been on leave. Instead of returning to their units at the front, they reported themselves sick. The skin affection was not accompanied by general reaction or

visceral disturbance. Some of the men confessed that the lesions were produced by the application to the skin of vegetable substances such as pounded root of *Daphne gnidium* and the juice of the cactus leaf, which is very common in the gardens of the district. These substances were applied by gentle friction with practised hands over the whole body, rarely on circumscribed areas on the legs or trunk. The applications caused neither general disturbances nor severe local pain such as are produced by mineral acids, croton oil, or turpentine. The eruption begins as a somewhat intense erythema, limited to the site of application. This stage reaches its full evolution within twenty-four hours. Then there sets in a papular phase in the form of elevations about the orifices of the follicles with marked perifollicular infiltration. If this passes on to resemble an acute toxic erythema or a lichen tropicalis, very numerous small superficial vesicles nearly always develop, containing more or less pus. In some cases they tend to become confluent. The pustules, which are mostly seen on hairy surfaces, are due to infection with *Staphylococcus pyogenes aureus*. Carruccio treated all his cases by repeated applications of pure phenol, gram 1; camphor, grams 11; in vaseline oil, grams 100. This checked the inflammatory process and banished the hyperaemia. In the vesiculo-pustular stage the purulent exudation quickly dried up, leaving small crusts. The follicular infiltration subsided gradually; in most cases, after the redness had disappeared, there was still some elevation with brownish discoloration limited to the orifices.

5. Artificial Abscess.

PROFESSOR ATTILIO ASCARELLI (*Policlinico*, June 3rd, 1917) says that among the most common forms of lesions inflicted on themselves by Italian soldiers are abscess and phlegmon produced by injections of petrol, turpentine, benzine, chloride of lime in benzine solution, etc. The parts selected are particularly the lower limbs, most commonly the calf, the instep, and sides of the knee; not infrequently abscesses are seen on the buttocks. Most often the patient presents himself shortly after the injection, and ascribes the swelling to a fall with twisting of the knee or foot, or to contusion from a blow on the knee, or to a therapeutic injection. His general condition is good, the temperature is very slightly raised, and the pulse is all but normal. In a few days, even if the abscess is not opened, the temperature falls and remains low, even in the evening. There is always slight albuminuria without casts but with a few well-preserved red corpuscles. For two or three days the affected part remains red and slightly oedematous; there is no fluctuation, but a doughy feeling on palpation, and sometimes emphysematous crepitation. Local pain is slight. There is no accompanying lymphangitis or lymphadenitis, unless septic complications occur, as they do not infrequently. Nor is there ever any ecchymosis or solution of continuity. After a few days the redness increases and tends to become cyanotic; tension is more manifest; there is no fluctuation, but a peculiar feeling of colligation. The swelling is quite circumscribed, with sharply defined borders; the skin tense and glazed. By exploratory puncture a few droplets only of blood-stained pus can be withdrawn. In slight cases the swelling subsides, and in ten or twelve days all becomes normal; on the other hand, in grave cases the skin becomes more tense and more glossy, and there is a tendency to ulceration. Incision, which even in moderate cases should be performed early, gives exit to a very scanty amount of pus and well-preserved liquid blood, with which are mixed many necrotic fragments of subcutaneous tissue, muscle, and even fascia. After incision inspection will show that the tissues are dissected along the intermuscular spaces. In the great majority of cases the affection runs a favourable course. Sometimes, when much of the irritant substance has been used, the tissues are extensively stripped up between the muscular bundles. Even in such grave cases general complications are not frequent and lymphadenitis is rare. Sometimes recovery is much delayed owing to great loss of tissue, and many patients lie in hospital for many months; sometimes they remain partially disabled. The lesions do not differ much whatever the agent used, but they are particularly severe when produced by petrol. The treatment is the same as that of ordinary abscesses, but reliance must be placed on an exclusively aseptic dressing, no disinfecting substance being employed. Abscesses are sometimes, though more rarely, produced by injection of faecal matter. They are seen chiefly on the legs and neighbouring parts. The result is generally a deep phlegmon accompanied by grave sepsis, general and local. Detection of the cause may be very difficult.

Sometimes, on opening the abscess, a faecal smell is perceived, just as the odour of turpentine or petrol may be detected in the previous cases, and the presence of a red raised point may mark the track of the needle. Complete recovery takes place only after several months. When injections of faecal matter mixed with petrol or benzine are used, the symptoms due to the chemical agent predominate; hence diagnosis is more difficult.

6. Skin Lesions Produced by Caustics.

ASCARELLI, in the article summarized above, deals further at some length with self-inflicted lesions caused by chemical caustics. An excoriation is produced by friction and then a strongly concentrated mineral acid or alkali is applied for some time. The agent most frequently used is soda or potash lye, sulphuric or hydrochloric acid, more rarely chloride of zinc. By the application of these substances an eschar is produced the origin of which is recognized without much difficulty. The places selected are the dorsum of the foot, the back of the hand, and the front of the leg. The patient generally attributes the affection to a contusion caused by a heavy object falling on his foot or the blow of a hammer on the hand. He comes in excellent condition, and neither general inspection nor examination of the urine reveals anything (syphilis, diabetes, syringomyelia, varix) that explains the formation of eschars. The lesions are single or multiple, definitely circumscribed, more or less circular, with sharp margins, sometimes festooned, without trace of oedema or streaks of lymphangitis. The lesion is covered with a dirty grey or blackish slough, very adherent and of leathery dryness. When this has separated a punched-out ulcer with thin borders is revealed; the base is torpid and lardaceous with small necrotic patches, and the sore has the aspect of a trophic ulcer. There is hardly any pain, and functional changes are very rare. Under treatment with physiological solution cure takes place in fifteen to twenty days. After cure there remains a roundish, slightly retracted cicatrix; it is not adherent and is brownish in colour. Mixed forms of self-inflicted contusion and voluntary cauterization are also seen. The patient, before applying the chemical agent, prepares the ground by rapid and repeated blows, which cause a hard oedema. In these cases the eschar lies in the middle of a zone of infiltration of the cutaneous tissues in the form of a hard irregular patch, subcyanotic in colour, or of ecchymosis or punctiform haemorrhages around the necrotic zone. It is very difficult to identify the substance used, as, whatever it is, with the death of the tissues to which it has been applied it produces in two or three days a blackish eschar. These eschars may sometimes be confused with ischaemic eschars. The differential diagnosis must be based chiefly on the history. For the production of a limited contusion with necrosis of the tissues it is generally necessary that the body causing the bruise should be of special shape and should be pressed on the part for a time sufficient to cause intense ischaemia.

7. Artificial Otitis.

G. GRADENIGO (*Giorn. della R. Accademia di Medicina di Torino*, January-February, 1917) says that artificial lesions of the ear are common. Purulent otitis is simulated by the introduction into the ear of substances resembling pus (honey and milk, soft cheese, clotted milk, putrefied yolk of egg, juices of various plants); polypus is simulated by means of the viscera of small animals. These frauds are easily detected by the speculum; if there be any doubt, the nature of the foreign liquid will be shown by microscopic examination. As a rule the affections produced artificially are suppurations; much more rarely the lesion is a perforation of the tympanic membrane which requires nerve and a practised hand. It is easy to set up suppuration of the ear; owing to the thinness of the lining integument, even simple irritants may cause more or less deep lesions, which are liable to suppurate. The cases are divisible into two groups according as the membrane is intact or already perforated as a consequence of an old cured otitis media. In the latter case, when there is more or less extensive dry perforation, the delicate mucous lining of the tympanic cavity is directly exposed to the irritant action of external agents; the instillation into the meatus of a slightly irritant liquid will cause reinfection of the middle ear—a true acute purulent otitis clinically indistinguishable from the real affection. Usually there is no perforation, and then the lesions vary with the nature of the agent used and the site of application. Various solid agents are employed, such as cantharides powder, blistering plasters, small rolls

of paper impregnated with irritating soap, etc. Powders made of tiny fragments of skin from horse-combings are very irritating and form a favourable medium for the development of aspergillus or other mycoses. If the caustic is powerful (concentrated mineral acids or boiling liquid) the membrane is perforated and sometimes destroyed; serious changes are produced in the walls of the tympanic cavity, in the labyrinth, and the facial nerve. Such lesions, however, are seldom seen in soldiers who know the pain of the manœuvres required to produce them and the risks they entail. In the majority of cases moderately caustic substances are employed and only a diffuse external otitis is produced. In the present war benzine, which is easily procured from automobiles, is much used. Among other agents are turpentine, croton oil, dilute acids and alkalis, or perchloride of iron. Irritant vegetable juices are in common use; less frequently tobacco juice or match-heads are employed. In the other group, which is perhaps the more numerous, otitis is produced not by instillation but by the application of caustics to the orifice. This causes ulceration, the lesions being pretty regularly arranged around the meatus, and extending for $\frac{1}{2}$ to 1 centimetre on the walls of the cartilaginous part, and also involving the concha and the tragus. They do not reach the deeper parts of the meatus or the membrane; this, says Gradenigo, is a point of the utmost importance. In slight cases there may be only transient superficial ulceration. A characteristic feature is that the surface is at first covered with a whitish pulpy mass, consisting of macerated epidermis and pus; this is very adherent, and its removal lays bare an ulcerated surface, which bleeds readily. If the caustic action has been severe a whitish eschar forms, which separates many days after the injury, exposing the deep parts of the derma and sometimes the cartilage. In that stage there is more or less violent inflammatory reaction of the adjoining parts of the walls. Suppuration occurs, and later granulations, which grow inwards and quickly tend to block the lumen of the meatus. If left to themselves the lesions give rise to stenosis and even complete obliteration of the passage. The presence in recent cases of eschars, particularly when they extend all round the meatus, the fact that the burns are hardly ever limited to the meatus but also involve the concha and sometimes the preauricular region, the cheek or the chin, and the intense inflammatory reaction, are sufficient for diagnosis. After a few days, however, when the sloughs have come away leaving ulcerated surfaces, there may be difficulty. If the lesions are sharply limited to the meatus and external parts and the tympanic membrane is intact, artificial otitis may be diagnosed with certainty. There is more difficulty when, as happens after the instillation of caustic liquids, the walls of the meatus, even in the deeper parts, participate in the morbid process, and there is a perforation of the membrane with suppuration of the cavity. It must be borne in mind that under the conditions of active service and the neglect of the most elementary personal cleanliness a chronic purulent otitis in a soldier easily becomes acute, and the discharge stagnating many days, or even weeks, in the passage causes inflammatory lesions of the walls and meatus. As such men are as a rule in the upright position during the day, the irritating secretion collects in the dependent parts of the middle ear, and the greatest changes are seen on the inferior wall. Ulceration on the upper, particularly the anterior, wall of the meatus, should give rise to suspicion. An important feature of artificial external otitis is the rapidity with which cure of the lesions takes place when further irritation is prevented by the application of suitably marked starched bandages. Genuine ulceration is made worse by this means owing to the retention of pus. The unwillingness of malingerers to furnish information as to the origin and symptoms of their affection is in itself a suspicious sign.

8.—In Professor ATTILIO ASCARELLI'S experience (*Poli-clinico*, June 3rd, 1917) artificial otitis is very common. The artificial lesions are often grafted on a true chronic otitis. The patient always says that he has had inflammation of the ears since childhood and that the disease has been stirred up into new activity by wet, cold, and fatigue. At first the process is accompanied by evening fever of moderate intensity. In the early period diagnosis is easy as the lesions in the external meatus and pinna are characteristic. An eschar consisting of a grey, dry adherent substance lines the outer and inferior part of the meatus all round. Sometimes, particularly if the caustic has been introduced deeply drop by drop, there is perfora-

tion and destruction of the tympanic membrane. Secretion is generally scanty. Externally, traces of burning may be seen in the form of small phlyctenulae, and eczematoid eruptions on the pinna, tragus and antitragus are prolonged on to the lobule exactly as if a liquid had flowed from the interior to the outside of the ear; sometimes they extend to the cheek. When the eschar has separated, which occurs on the average in a week or a fortnight, a clean superficial sore is left which quickly cicatrizes. If the lesion has affected the whole circumference of the meatus to a certain depth, cicatrization causes stenosis or even complete closure of the passage. If these secondary changes do not occur after separation of the slough the diagnosis is difficult, either because the appearances differ little from those of an ordinary purulent otitis media, or because a genuine chronic otitis again becomes active. In any case the one-sidedness of the lesion and the situation of the cicatrix on the outer part of the meatus are points of great importance. Complications, apart from perforation of the membrane, which is somewhat frequent, and from the occurrence of suppurating otitis media, are not rare and occasionally are very serious. In several cases Ascarelli has seen facial paralysis, in others complete destruction of the whole meatus, in others again mastoiditis. Treatment is simple. Until the separation of the slough all that is required is a protective gauze dressing of the walls of the meatus. After separation the sore should be dressed with gauze smeared with some aseptic ointment to promote epithelialization. Special treatment is indicated for otitis media, perforation, mastoiditis, or other complications.

9. Artificial Conjunctivitis.

VAN SCHEVENSTEEN, in *La Clinique Ophthalmologique* (abstract in *Archives médicales Belges*, March, 1917), says there are two types of artificial conjunctivitis—one produced by powdered ipecacuanha, the other by agents of very various kinds which produce anomalous lesions. The introduction of ipecacuanha causes intense injection, with chemosis; there is only slight secretion. The eyelids are much swollen, especially about the lower cul-de-sac in which the irritant is generally placed. The reaction subsides in a few days, but the mucous membrane long retains the salmon tint that reveals the origin of the lesion. Subsequent applications are better tolerated whilst producing still more characteristic appearances: considerable thickening of the conjunctiva of the lower cul-de-sac, salmon tint, blurring of vascular outlines. Lastly, ectropion with lacrymal stasis supervenes. If the applications are repeated these phenomena persist for a long time. In view of the well marked character of the inflammation it is unnecessary to seek for ipecacuanha with the microscope. Complete recovery is the rule when the application of the irritant is discontinued. Further treatment by cold compresses, and an occlusive collodion dressing is all that is required. In the case of other agents used to produce conjunctivitis the duration and abnormal course of the affection should arouse suspicion.

10.—J. BOLLACK (*Presse méd.*, abstract in *Arch. méd. Belges*, March, 1917) says that the cytological examination of the secretion in ten cases of conjunctivitis, presumably artificial, revealed in all the existence of numerous polynuclear eosinophiles. Localized eosinophilia is exceptional in ordinary conjunctivitis, and it never attains the intensity of that observed in the artificial affection; therefore eosinophilia may be taken as strongly suggestive of the latter. It comes on relatively late. Its intensity is proportionate to the duration of the affection, and especially to the number of applications of the irritant. It does not depend on the nature of the agent (ipecacuanha, insecticide powder, etc.). The other clinical signs suggestive of an artificial origin are, almost unfailing onesidedness, frequency of eczematous lesions about the external commissure and the lower lid, predominance of the lesions in the lower part of the conjunctiva, refractoriness to treatment, especially if the patient is not kept under close supervision, scantiness of the secretion, total or almost total absence of pathogenic germs in the secretion, and the military antecedents of the patient.

11.—ATTILIO ASCARELLI (*Policlinico*, June 3rd, 1917) says that artificial conjunctivitis is very common in the Italian army. Among the irritants employed for its production the most common are seeds of the castor oil plant and powdered ipecacuanha; infusion of tobacco and grains of sand are also used. The ricinus seeds are shelled and powdered, and a little of the powder is introduced into the

conjunctival cul-de-sac. The lesions with which the men present themselves are slight oedema and reddening of the eyelids, with muco-purulent discharge. The conjunctiva of the lower lid is hyperaemic and thickened, with whitish-grey false membranes, which on removal leave superficial loss of substance, some chemosis, and a notable diminution of transparency. Generally nothing of this kind is seen on the upper lid, and this limitation of the process with the formation of small sloughs on the conjunctiva of the lower lid is characteristic. Very slight eczema in the periorbital zone is common. The voluntary injury is often grafted on a true chronic conjunctivitis, distorting its characters, and making the diagnosis difficult. The course of the affection is very rapid. The symptoms subside in six or seven days, leaving, however, small whitish cicatricial striae on the lower lid. Very often the fraud is repeated when recovery is almost complete, and sudden relapses, with violent exacerbations, take place without apparent cause. If this is continued, the conjunctiva of the upper lid becomes hyperaemic and thickened, and shows small granulations. The treatment is the same as that of ordinary conjunctivitis; sometimes a few applications of a simple lotion are sufficient. As a precaution against repetition starched bandages may be placed over the eyes, sealed and signed. More than anything else, however, strict supervision of the patient is necessary.

12.—MARIO CONDORELLI-FRANCaviglia (*Policlinico*, June 3rd, 1917) gives details of a case of acute catarrhal conjunctivitis in a soldier produced by the ash of castor oil seeds, and records some experiments on the effects of that agent. He found that the toxalbumin contained in the seeds exerts a very powerful irritant action on the conjunctiva, manifesting itself in an acute catarrhal muco-purulent inflammation. This affection differs from the natural disease in the unequal distribution of the inflammatory process which is more intense on the lower lid and corresponding cul-de-sac. The bulbar conjunctiva participates in the process, but only to a moderate degree in ordinary cases; in the more serious forms there is chemosis and a raised border round the cornea. The hyperaemic conjunctiva has the colour of washed flesh, and not the scarlet of true inflammation. In serious cases, when the inflammation is intense, small eschars in the form of whitish transverse striae are seen on the lower lid and in the corresponding cul-de-sac. Oedema of the lid may or may not be present, according to the intensity of the inflammatory process. Contrary to what occurs in cases of genuine catarrhal conjunctivitis, the artificial form may be one-sided.

13. Simulation of Diabetes Mellitus.

GEORGE BLUMER gave particulars of a case of simulation of diabetes mellitus in the *Boston Medical and Surgical Journal* of January 13th, 1916. Blumer's case was a married Irish-American woman of 33, who twenty months before rather suddenly developed pruritus vulvae. Examination showed an absence of general physical changes. The fact of simulation was finally proved by testing a catheter specimen of her urine. Simulation of diabetes mellitus may take one of three forms—(1) the addition of sucrose to the urine, (2) the addition of glucose, or (3) the production of artificial glycosuria by the consumption of phloridzin or phloroglucin. Detection of the simulation depends in the first place on the occurrence of some suspicious factor; this simulation is commoner among soldiers than civilians. Detection of sucrosuria is simple if the urine be examined fresh; in this case there is no inversion of the sucrose and no copper reduction, and we have a high specific gravity urine with large amounts of dextro-rotary sugar shown by the polariscope, which on artificial inversion splits to dextrose and levulose. Examination of a catheter specimen in the female and of urine passed by the male patient in the examiner's presence proves the fact of simulation. Detection of feigned glycosuria is more difficult if the patient is intelligent enough not to put in too much glucose. Nowadays patients use a chemically purer product than formerly. When suspicion is aroused, catheterized specimens will clear up the case; but in a case recorded by Abeles and Hoffmann the patient actually introduced the glucose into her own bladder. Therefore the catheterized specimens must be obtained when the patient does not suspect their purport. Finally, if there be suspicion that an artificial glycosuria is being produced by consumption of phloridzin or phloroglucin, the patient should be isolated from possible supplies of these drugs.

AN EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

14. The Treatment of Hyperthyroidism.

GRIER (*Amer. Journ. of Roentgenol.*, June, 1917) divides cases of hyperthyroidism into four groups: (1) Simple hyperthyroidism, or a persistent exaggeration of the physiological hyperthyroidism which occurs at adolescence and is occasionally seen in adult life during the menstrual period or during pregnancy; (2) acute exophthalmic goitre; (3) chronic exophthalmic goitre; (4) hyperthyroidism developing on an old goitre, either hypertrophic or cystic. In the first group of cases operation is not only unnecessary but absolutely contraindicated. The author claims 100 per cent. of cures in this type of hyperthyroidism by x-ray treatment. Medical treatment is successful in the majority of such cases; x-ray treatment is satisfactory in practically all of them. In the second group, x-ray treatment is the most satisfactory; medical treatment is inadequate, and surgery unnecessary. These are the cases of exophthalmic goitre in which the patient is acutely ill, and in which the symptoms are gradually but progressively becoming worse. Out of 22 cases of acute exophthalmic goitre the author treated by x rays 20 were discharged as cured. In the third group the choice lies between x-ray treatment and operation. The x-ray treatment of these cases is apt to be slow, but there is not so much danger in producing a subsequent hyperthyroidism as by operation. The final choice of treatment in this class of chronic case will depend largely on individual circumstances. In the fourth group, where hyperthyroidism develops in an old goitre, x-ray treatment is only palliative. The danger of producing myxoedema is also greater here, and the proper treatment for these cases is surgical. As a whole the two factors which appear to have the greatest bearing on the prognosis under x-ray treatment are the length of time the condition has existed and the softness of the enlargement. Speaking generally, the longer the disease has been present and the harder the gland the greater will be the difficulty in obtaining a satisfactory result. Under x-ray treatment the first improvement is in the nervousness and in the pulse-rate. In the early stages of the disease, when the exophthalmos is largely due to engorgement of the blood vessels of the orbit, the exophthalmos also will disappear under treatment, but later in the disease, when the exophthalmos is due to deposition of fat in the orbit, it will not be influenced by x-ray treatment.

15. The Cerebro-spinal Fluid in Mumps.

THAT the meningitis which may complicate mumps is cytologically lymphocytic, like that now recognized to be characteristic of acute poliomyelitis, was pointed out in 1904 by Chauffard and Boidin. Among 635 soldiers with mumps transient meningeal symptoms were noticed in 23 per cent., and from cytological examinations of the cerebro-spinal fluid in sixteen of these cases MASSARY, TOCKMANN, and LUCE (*Bull. Acad. Méd.*, Paris, 1917, 3 sér., lxxviii, pp. 6-8) found that there was no relation between the gravity of the meningitic symptoms and the number of the lymphocytes—in fact, the clinical manifestations may be alarming when the number of lymphocytes is small. Further, examination of the cerebro-spinal fluid of forty other patients with mumps, but without meningeal symptoms, showed a lymphocytosis of the same character as in patients with meningeal manifestations, and clinical changes, such as an increased content of albumin lasting for a long time, thirty or even fifty days. These results are interesting because puzzling and await elucidation.

16. Changes of Voice and Speech in Shell Concussion.

N. WYROUBOW of Moscow says (*Rev. Neurologique*, November-December, 1916) that changes of voice and speech in war psychoses produced by shell concussion are,

as a rule, associated with marked impairment of hearing which, especially at the outset, may amount to complete deafness. The loss or impairment of hearing after concussion lasts from several hours to several weeks; where there is dumbness the hearing improves a little before or at the same time as speech is recovered. Changes in the voice or speech may be classified into: (1) Dumbness; (2) whispering speech; (3) falsetto voice. Patients belonging to the first category cannot utter any sound; most of them do not even attempt to make movements corresponding to the production of sounds; it is only by gestures, by shaking the head or tight closing of the lips that they are able to indicate that they cannot speak. Redness of the face due to play of the muscles betrays the efforts made. Wyroubow in three cases of complete dumbness observed weakening of the muscles of the tongue. Whereas deafness came on immediately after the concussion, dumbness might appear at different times. Most frequently its onset coincided with that of deafness, but not seldom the deafened patient began by calling out without hearing his own voice or that of others; only after some time did he become entirely unable to utter sounds. Deafness might last from four to eight consecutive weeks. Recovery of speech took place in different ways. In some instances the patient suddenly began to speak in his natural voice, a little fainter than before. This might occur under the stimulus of a strong emotion. Often, too, speech was restored by gently inducing the patient to pronounce sounds after the doctor. In other cases the man regained the power of whispering, and it was only by degrees that the voice became stronger. Of the other changes in speech whispering was most common; it came on at the same time as the deafness, immediately after the concussion or after a short interval, during which the patient spoke in shrill cries. Normal speech returned after a more or less prolonged period of dumbness. The rapidity of whispered speech was generally diminished, and the rhythm was usually irregular with interruptions and delays, and even well-marked stammering. Whispering speech might persist for several weeks, and recovery of the voice was slow; for a long time it remained feeble, and when rhythm was affected it still presented traces of the former irregularity. The falsetto voice might coincide with the onset of deafness, or come on a short time later. In either case it might last several weeks, but its duration was shorter than that of the whispering voice. The rapidity of speech was increased and the rhythm always irregular and interrupted. In other cases there was sharp disarticulation of words, amounting sometimes to real stammering. Recovery of normal speech in such cases is slow and gradual.

17. Urinary Disorders in Wounded Men without Organic Lesion.

PROFESSOR POUSSON of Bordeaux gives in the *Bulletin médical*, March 21st (abstract in *Journal de méd. et de chir. prat.*, May 10th, 1917), the results of a study of certain forms of urinary trouble without lesion of the urinary apparatus which he has seen fairly often in wounded men. The cases fall into various groups. When there is a lesion of the spinal cord the symptoms vary according to the seat of injury. In a second group of men in whom there is no trace of external wound but who have been exposed to detonations at close range the most common trouble is incontinence of urine; much more rarely there is retention, in some also there is pollakiuria. In these cases there is probably a hysterical element. In another group the trouble sometimes consists in retention, but in most cases there is incontinence of urine by night, sometimes also by day, more often pollakiuria. Most of these patients are old incontinent in whom the infirmity, which had ceased at the age of 18 or 20, returned on mobilization; they were all men aged from 25 to 30. The recurrence was

attributed to the general weakness consequent on fatigue, chill, and other physical causes, all these factors being combined with mental strain, which produced neurasthenia. It is not surprising that in persons in whom incontinence of urine had ceased on the establishment of a perfect balance of all organic functions as a result of physiological development, the equilibrium should be upset by the strain of war. In regard to the pathogeny of this variety of urinary trouble, the author thinks the patients should be classed with those suffering from commotion; similar treatment is therefore indicated, and they should be dealt with in the same way by the medical boards.

18. The Soldier's Heart in War.

AN abstract in *Rev. Neurologique*, November-December, 1916, summarizes observations by LEON BINET on the effects of war emotions on the cardiac rhythm. These show themselves in various ways. There may be no modification in the pulse, and no emotional reaction. More often on the explosion of a shell, a torpedo, or a mine, the heart's action is slowed, the pulse-rate falling to 60, as a result of excitation of the vago-bulbar system. In other cases stimulation of the sympathetic causes acceleration of the heart; this emotional tachycardia has been noted particularly in soldiers recently arrived at the front, and in men of "moderate" courage. War injuries, including concussion, also act on the cardiac rhythm. The emotional shock, haemorrhage, and pain combine to induce moderate tachycardia. This is the general rule, which does not, however, hold good for certain cases of wound of the head and chest. In some cranial cases a notable slowing of the cardiac rhythm (to 65 or 60, or even 55) occurs very shortly after the infliction of the wound; this symptom indicates the existence of serious lesions, and calls for immediate intervention. In the chest cases there is almost always marked tachycardia, unless the heart is involved, when there is sometimes progressive bradycardia. The nervous shock following explosion of a large shell at close range, without external wound, expresses itself by disturbances of varying character, including alterations in the pulse. In 56 out of 100 men exhausted by prolonged fatigue, slowing of the pulse was noted. The cardiac rhythm also varies in flying men. In a rapid ascent, and particularly in a sudden descent, the pulse is decidedly slowed. In such cases there is excitation of the vagus causing a so-called vago-bulbar syndrome (bradycardia, hypotension, tendency to syncope).

19. Traumatic Scarlatina.

S. KORACH (*Dent. med. Woch.*, January 18th, 1917) has contributed the following case to the literature of traumatic scarlatina: A medical man, aged 24, had already suffered from measles and whooping-cough. In the course of his medical training he had frequently been in contact with cases of scarlatina, and for the preceding two months he had helped the author almost daily in his scarlatina department. On November 15th the patient injured the ball of his right thumb, the skin of which was slightly abraded. On the evening of the same day he assisted in examining fresh cases of scarlatina. Next day the right hand was painful, and the abrasion on the thumb was slightly reddened and tender, but not swollen. On the third day a bright red line, 3 cm. broad, could be seen running from the abrasion along the flexor aspect of the forearm, up to the elbow. The evening temperature was 39.2°C., the pulse 118 to 132. He vomited frequently, was very thirsty, and the tongue was dry, but there was no angina faucium. The neck now showed an incipient scarlatinal rash. On the fourth day the rash had extended considerably, and the throat had begun to be sore. Twenty-four hours later the clinical picture of typical scarlatina was complete.

SURGERY.

20. Primary Removal of Projectiles.

STABSAZT PROFESSOR REHN has discussed (Bruns's *Kriegschir.*, Heft, 1917, xxxv, p. 220) gunshot wounds from the point of view of the primary removal of lodged projectiles. While primary removal should never be undertaken in uncomplicated wounds of the thorax, in wounds of the extremities, when produced by fragments of large or medium size, it constituted the standard treatment. On the other hand, in presence of a widely open pneumothorax with laceration of the lung primary removal was desirable, while in cases of multiple grenade wounds

of the extremities and of the superficial soft parts of the body generally no systematic removal should be undertaken, as the small fragments either become encapsulated or readily discharged if suppuration occurred around them. Operation on the abdominal cavity was never performed solely with a view to removing the projectile. The time for operating must largely be determined by external circumstances, but removal of a lodged projectile should be carried out in the primary stage whenever possible, since operative measures were frequently useless after the lapse of a few days. Operation in the intermediate stage, which commenced about thirty-six hours after wounding, was especially to be avoided. During this period there occurred a renewed bacterial invasion and greatly increased vulnerability of the tissues, most distinctly marked in wounds of the head, but no less dangerous in those of the extremities and body cavities. *Brain*: Expectant treatment was as a rule adopted, even where the foreign body had been precisely localized. In specially favourable conditions, when the fragment was of such size and in such position as to be easily reached, and was of a kind suitable for the use of the magnet, extraction was permissible in the primary stage. In the intermediate stage, all intervention not imperatively called for was avoided, any additional injury inflicted in this stage being liable to be followed by rapid spread of the infection to the vital centres or ventricles, or, in more superficial injuries, by extensive prolapse. The rule, therefore, was that removal of the projectile in the primary stage was permissible in certain conditions, but inadmissible in the intermediate stage. *Abdomen*: In penetrating wounds of the peritoneum, with wound of the viscera, operation was directed to the injuries inflicted rather than the removal of the projectile. The preliminary localization of the latter was therefore omitted, since it increased the depression of the patient. Moreover, it was unwise to place too much reliance on indications derived from the x rays, for wounds which appeared to be purely superficial often proved to be accompanied with contusion of the viscera, perforation of the peritoneum, and subcutaneous prolapse through small peritoneal wounds. Penetrating wounds of the abdomen were preferably treated at the main dressing station, reinforced with a small operating section from the Feldlazarett. The erroneous view was still held by some surgeons that it mattered little whether an abdominal case was transported five or fifteen miles, the delay in operating being but trifling. The time of operating was, however, of small importance compared with the depression in the patient's condition resulting from prolongation of the transport. Operation was not undertaken during the period of shock, nor immediately on the improvement in the patient's condition which followed the use of stimulants and intravenous injection: unless this improvement persisted for several hours, time, which could be devoted to other patients, was not wasted on the case. Except where the peritoneum was extensively contaminated with faeces, irrigation was restricted as much as possible, especially when evidences of localization of the inflammatory process existed; unnecessary displacement of the viscera was avoided. Clinical indications often served as a guide to the internal injuries, but in the absence of these no prolonged search for the projectile was made, for as a rule it was readily found in all cases where its removal was possible. By a strict adherence to these details Rehn succeeded in reducing the mortality in abdominal wounds with lodged projectiles to 50 per cent. *Extraperitoneal wound of the large intestine* was suitable for primary operation, but this was often impracticable owing to difficulties in diagnosis, except when a primary faecal fistula was present. Primary removal was also performed in extraperitoneal wounds involving the bones of the pelvis. Delay in operating in these cases beyond the first twenty-four to thirty-six hours exposed the patient to general infection from the loose cellular tissue of the pelvis. *Thorax*: In the primary stage expectant treatment was, as a rule, adopted, and in uncomplicated cases operation was restricted to aspiration, even in presence of severe infected haematoma, until adhesions had securely fixed the lung and isolated the effusion and pulmonary wound—that is, until the nineteenth day. This rule was necessarily discarded in cases complicated with grave haemorrhage (lungs, heart, great vessels) or open pneumothorax. The customary treatment of open pneumothorax was to open up the pleural cavity widely. But this course was followed by numerous failures attributable mainly to three causes: (1) Loosening of the sutures between lung and chest wall, with consequent incurable secondary pneumothorax; (2) death from the third to the fifth day, with signs of commencing general

infection; or failure to rally after the operation, due to traction on the hilum of the lung caused by the lung fixation; (3) the shock of the operation superadded to that of the injury and subsequent transport. Rehn based his treatment on a consideration of these facts. Wide opening up of the pleural cavity was adopted only where severe haemorrhage was present or the chest wall had been extensively ripped up by the injury, and in such cases alone was an attempt made at primary removal of the projectile. The danger of dragging on the hilum of the lung was avoided by the use of percutaneous sutures for lung fixation; this had the additional advantage of bringing large areas of the pleural surfaces evenly into contact. The sutures were placed in the third or fourth intercostal space anteriorly, laterally in the fourth or fifth, and posteriorly in the fifth, and were left in for eight days. Open pneumothorax without great loss of substance in the chest wall received purely expectant treatment, the patient being placed in a suitable position and excision of the wound being dispensed with. Percutaneous fixation of the lung was performed in such cases when there was severe infection of the wound, in view of the possibility of secondary pneumothorax arising. Cases of open pneumothorax somewhat severer than these were treated by excision and primary suture of the wound with lung fixation as above described. For expanding the lung in these cases careful aspiration of the pleural contents was preferable to the use of pressure apparatus. Rehn reckoned the intermediate stage in wounds of the thorax as extending from the second to the nineteenth day. In this stage treatment was as far as possible expectant. Apart from severe secondary haemorrhage the only condition that could give rise to doubt as to the line of treatment was acute empyema. This condition, complicating an even temporary pneumothorax, was much graver than the ordinary infected haemothorax, and if neglected might be succeeded by a rapidly fatal general infection. In spite, therefore, of the danger from secondary open pneumothorax and post-operative general infection which operation in the intermediate stage involved, rib resection was performed if the case appeared to be urgent. The resection was carried out after the fourth day, when the empyema might be considered to have become localized. In the secondary stage conditions were favourable for the removal of a lodged projectile. Rehn deferred the description of the method to be employed, merely stating that he was in favour of early removal, at the same time giving a warning that it could not be successfully undertaken in the absence of clear indications, and an appreciation of the difficulties to be encountered.

21. Treatment of Abdominal Wounds.

R. BASTIANELLI has furnished a report (*Polieclinico*, February 11th, 1917) on 277 cases of abdominal wound treated in a third surgical unit of the Italian army between June and November, 1916. Fifty-four cases were non-penetrating; of these two died from infection of the abdominal wall. In some of the penetrating wounds the aperture of entry was in the thigh, in others in the upper intercostal spaces, in others again in the buttock. In the 223 cases of penetrating wound, recovery took place in 76 (34 per cent.). Operation was performed upon 140 cases, with 61 recoveries (about 43.5 per cent.); among these there were 12 without any visceral lesion, although in some the bullet had gone right through. In 83 no operation was done, and in 15 (19 per cent.) of these recovery took place. In none of these was there a lesion of the gastro intestinal canal, and in 3 there was no visceral lesion, the projectile being seen free in the belly, and causing no abdominal symptoms. Of 128 patients operated on for visceral lesion 50 (39 per cent.) recovered. Of the 80 not operated on 12 (15 per cent.) recovered, and of these none had lesions of solid viscera. In 108 cases of lesion of the gastro-intestinal canal operation was performed, with 36 (32.4 per cent.) recoveries; 20 cases of wound of other viscera (liver, kidney, spleen, and bladder) were operated on, with 14 (70 per cent.) recoveries. Sometimes even a late intervention has been successful, but Bastianelli is convinced that for many wounds there is a very brief period of time, probably less than one hour, after which infection is incurable. Immediate operation might save cases otherwise inevitably doomed. It is therefore necessary to create advanced stations for laparotomy close to the fighting line. Referring to post-operative complications, Bastianelli points out that sepsis of parietal wounds may be produced by the surgeon as well as by the missile. Incomplete suture and plugging of the wound did not always suffice to prevent it. He limited his incisions, except in case of necessity, to the middle line and the outer border of the rectus, so as to avoid complex

muscular wounds in which necrosing and gaseous infections readily develop. He endeavoured to protect the laparotomy wound and to disinfect it almost continuously during the operation by means of Dakin's or Giannettasio's solution, but with uncertain results. Bastianelli believes that infection of the abdominal wall is caused by inoculation during the operation, and also afterwards by a microbic invasion which passes from the peritoneum through the stitch of the serous coat. This peritoneal infection is present in varying degree shortly after the injury, and the fate of the wounded man depends on whether it develops or not. The mechanical work of the surgeon only prevents a later pouring in of infective and toxic material, but can do nothing against that which has already taken place. The author seldom used lavage of the peritoneum; more often he employed drainage or plugging, but without obtaining decisive advantages.

22. The Alternating Use of Antiseptics.

CHARLES RICHET holds on theoretical grounds that a surgeon should never use a particular antiseptic solution for two consecutive days in the treatment of a wound (*C. R. de l'Acad. des Sciences*, 1916, p. 589). He showed in 1914 (*ibid.*, clviii, p. 764) that microbic organisms (the lactic ferment) developing in abnormal solutions—that is, those which contain feeble quantities of a toxic body—become accustomed very quickly, sometimes in twenty-four hours, to the unfamiliar substance applied, and Richet believes that when a given antiseptic solution is used for a wound for several weeks the microbes become gradually adapted to it, so that its antiseptic action is notably weakened. A daily change of the antiseptic solution is therefore a rational procedure. He groups antiseptics thus: (a) Oxidizing antiseptics, such as hypochlorites, hypobromites, iodine, chlorine, oxygenated water, ozone, and potassium permanganate; (b) metallic antiseptics—namely, salts of mercury, silver, zinc, copper, iron, etc.; (c) aromatic derivatives, phenols, salicylates, thymol, naphthol, creosote, etc.; (d) diverse antiseptics, such as formol, chloroform, essences, chloral, fluorides, boric acid, etc. He suggests the use of a substance out of groups a, b, c, and d, respectively, on four successive days, followed by a different member of each of these groups on the next four days, and so on. He holds that the great advantage of a daily change of antiseptic solutions is that the microbes which multiply in the wound have each day to strive against a different poison, so that they have no time to acquire tolerance. He thinks the same principle should apply to remedies for internal diseases also. Just as in tuberculosis each new remedy may give a good result for some days, he suggests that the parasites of malaria, syphilis, or typhoid fever, may possibly acquire a tolerance of drugs taken by the mouth.

23. Effects of Malaria on Wounds.

VANDENBOSCHE, in a thesis presented to the University of Lyons (abstracted in the *Journ. de méd. et de chir. prat.*, April 25th, 1917), records his observations at Salonica of the effects of malaria on wounds. In patients who have suffered from malaria even slight wounds may bring on an attack of fever. Operation may have the same effect, the attack coming on from one to six days afterwards. The effect is more constant when general anaesthesia is employed, and the anaesthetic may of itself bring on an attack. In tropical countries chloroform has a specially injurious action on the liver, and as that organ is very often affected in malarial subjects the frequency of post-chloroform jaundice in such people is explained; ether, which is less toxic, should therefore be used. In intensely malarious regions the latent paludism is all the more dangerous, since in those districts persons having all the appearance of health may carry the parasites in their blood without ever having had any manifestations of the disease. In the hospitals at Salonica the most diverse haemorrhagic phenomena were observed in old-standing malarious patients. Some suffered from epistaxis, which was occasionally fatal; others had haemoptysis or haematuria; others came covered with petechial and ecchymotic patches. Every malaria patient must, says the author, be regarded as a "bleeder"; he should therefore be operated on only with the strictest precautions. Malarial attacks, of course, blur the clinical picture produced by a wound or its complications. Unless the possibility of malaria be borne in mind, fever in a wounded man may mislead the most experienced surgeon into enlarging the wound. Vandenbosche further calls attention to malarial gangrene, which is fortunately rare; he also mentions cases in which a malarial attack simulating appendicitis has brought the patient to the operating table.

24. Penetrating Wounds of the Vertebral Column.

EHRENPREIS (*Rev. Neurologique*, November-December, 1916) reports 27 cases of penetrating wounds of the vertebral column, 10 of which were in the cervical, 12 in the dorsal, and 5 in the lumbar region. In 18 cases no operation was done beyond enlargement of the wound, with the usual local and general treatment; of these, 16 died and 2 were evacuated. In more than half the cases death took place before the seventh day, either from multiple serious injuries to the cord or from meningomyelitis. For the prevention of bedsores and bronchopneumonia, which, with vesico-renal infections, were the chief causes of death, the author recommends a bed designed by J. R. Proust; it consists essentially of a framework of wood, on which are stretched straps, which can be shifted as required, so as to avoid too prolonged pressure over one spot. The frame can be raised or lowered by a special mechanism, and the wound is thus easily accessible. In 7 cases operated on there were 5 deaths; one (fracture of the third and fourth cervical vertebrae with the Brown-Séquard syndrome) was completely cured; and one (incomplete division of the cord at the level of the seventh cervical vertebra) was greatly improved. In all the seven cases the operation consisted in a long mid-dorsal incision for the extraction of splinters of bone, fragments of shell, bits of cloth, etc., without any attempt being made to secure union. Ehrenpreis thinks the prognosis of wounds of the cord extremely gloomy. All the surgeon can do is to intervene immediately in the hope of checking the infection, which is the principal cause of death.

25. Syphilis and Appendicitis.

THE importance of the two extremely common chronic and persistent infections, tuberculosis and syphilis, in producing morbid changes not obviously of a specific nature is perhaps sometimes overdone. The late Professor Landouzy, in probably his last published article, pleaded for tuberculosis as the cause of appendicitis, and GÄRCHER (*Bull. Acad. Méd.*, Paris, 1917, 3 sér., lxxvii, pp. 387-389) now brings forward cases in support of his contention that congenital syphilis plays a part in familial appendicitis. In a striking instance there were eight children in a syphilitic family, three died soon after birth and the remaining five had appendicitis. He also quotes a family to show that several cases may occur in the second generation of congenital syphilis. In the discussion on this subject JALAQUIER (*ibid.*, pp. 425-427) quoted 80 cases of appendicitis in which the Wassermann reaction had been applied. Out of 60 children it was negative in 52 and positive in 8, but allowing for the fact that in congenital syphilis the Wassermann reaction may be negative in 5 per cent., the positive figure is corrected to 11; in 20 adults the reaction was positive in 6 and negative in 14. Therefore, as the Wassermann reaction was positive in but 17 out of 80 operative cases of appendicitis, it appears that syphilis and appendicitis may sometimes occur together but are quite independent.

26. Amputation for Trench Foot.

TEMPORARY LIEUT.-COLONEL G. A. WRIGHT (*Journal of the Royal Army Medical Corps*, February, 1917) refers to the question of amputation in men suffering from gangrene due to trench foot. In a number of cases a decision had to be made as to the best procedure when part, or the whole, of a foot was lost, and a large raw surface remained. Where the bones are seen bare and dead on the face of the stump surrounded by an area of granulating, or cicatrized, soft parts, the author thinks the best practice is to remove only those structures obviously dead, although a secondary operation must of necessity be performed later. If any formal operation is done at once, either too much or too little may be taken away. Moreover, any disturbance of wounded tissues in such patients is apt to be followed by an acute septic process. As little as possible should therefore be done until the extent of actual complete destruction is determined, and the patient's general condition is improved by rest and care. Large and irregular scars may, however, remain. In some cases the amount of destruction of soft tissue leaves no choice, and a formal operation at a higher level is called for. It is too soon to say whether the stump left by "trimming" trench feet will be serviceable, but if a useful foot can be preserved, Professor Wright maintains that it is better to keep it than to sacrifice it for the sake of doing a formal operation. He recognizes the hardship inflicted upon the men by repeated operation, and fears that this cannot always be helped in the case of trench feet.

PATHOLOGY.

27. Prolongation of Immunity against Tetanus.

VALLEI and BAZAN (*C. R. de l'Acad. des Sciences*, June 25th, 1917) draw attention to the short duration of passive immunity given by antitetanic serum and to the need for devising a method for prolonging immunization. The method they propose is to immunize by means of tetanus toxin attenuated by iodine, according to Roux's plan. A toxin lethal to guinea-pigs in the strength of one hundred-thousandth of a cubic centimetre to 2.50 grams of body weight was used, and the iodine solution consisted of 1 grain of iodine and 2 grains of potassium iodide in 200 c.cm. of water. Seven black wounded soldiers were treated by injections of the toxin-iodine mixture at intervals of five days. The first injection was 1 c.cm. of a two-thirds toxin and one-third iodine solution; the second injection was 2 c.cm. of the same solution; the third injection was 5 c.cm. of a three-fifths toxin and two-fifths iodine solution. Seven rabbits were treated with the same doses at the same intervals. After ten days the rabbits resisted a 2,000 minimal lethal dose of toxin. Another batch of rabbits treated with one-third of these doses resisted a 200 minimal lethal dose at the end of ten days. The authors point out that for primary injection reliance should be placed on antitoxin, as the immunity from vaccine does not reach its maximum until after ten days. It will be necessary to determine the relative duration of immunity following repeated vaccinations. If the period of immunity proves satisfactory this method should overcome the grave inconveniences of serum rash and serum sickness. Other observers have obtained satisfactory results in the immunization of horses upon the same plan.

28. Ferments in the Cerebro-spinal Fluid.

E. LESCHKE and L. PINCUSOHN (*Deut. med. Woch.*, January 18th, 1917) have found glycolytic and diastatic ferments in the cerebro-spinal fluid. The glycolytic ferment did not survive aspiration for long, and could not be demonstrated in the cerebro-spinal fluid on the third day after lumbar puncture. In four cases of diabetes of moderate severity there was not a trace of this ferment, although the diastatic ferment was found. Small quantities of diastatic ferment were found in the cerebro-spinal fluid of all the healthy persons examined, and also in a great variety of diseases, including tabes, general paralysis, cerebro-spinal and meningeal syphilis, tuberculosis, diabetes, neurasthenia, nephritis, tetanus, and epidemic cerebro-spinal meningitis. The nature of the disease had no apparent effect on the quantity of the diastatic ferment, which was also independent of the cellular contents of the cerebro-spinal fluid.

SKIAGRAPHY.

29. Lateral Skiagraphy of the Spine.

HICKEY (*Amer. Journ. of Roentgenol.*, March, 1917) states that in patients who have suffered traumatism of the spinal column he examines with x rays, not only in the antero-posterior direction, stereoscopically, but also in the lateral direction. He does not consider that the flat plate alone sufficiently accentuates the pathological condition which is so often present. The difficulties in the examination of the spine laterally, which have made many workers content only to take stereoscopic plates in the antero-posterior direction, are due, in the first place, to getting suitable penetration of tube, and, in the second, to the natural exaggeration due to the distance of the examined part from the plate. Recent improvements in tube construction have made it possible to get sufficient penetration to radiate the body satisfactorily from side to side, while distortion can be obviated by increasing the distance between the tube and the patient. One of several cases mentioned illustrates the value of the lateral view. A young medical officer was about to proceed overseas for war service when he met with a railway accident. Physical examination of his back revealed no evidence of injury, although he was examined by some eight or ten medical men. An antero-posterior plate showed a slight change between the eighth and tenth dorsal vertebrae; but a lateral plate showed a very marked example of compression fracture. The author believes that many lesions of the spine which are inconspicuous or almost unobservable on the antero-posterior plate will show on the lateral view a good clear reading.

AN EPITOME OF CURRENT MEDICAL LITERATURE.

War Number.

MEDICINE.

30. "Big Belly" in Soldiers.

DÉSIRÉ DENÉCHAU and HENRY MATTRAIS (*Ann. de méd.*, March-April, 1917) have seen men suffering from abdominal disturbances, mild in themselves but accompanied by symptoms suggestive of serious disease. They describe the condition under the quaint name of "les gros ventres de la guerre." The patient is almost always a soldier sent back from the front complaining of ill-defined functional troubles, such as discomfort after meals, breathlessness on the march, and abdominal distension. These symptoms are often so pronounced as to lead the medical officer astray. Details of nineteen cases are given. The authors describe several types. One patient with a long history of dyspeptic disturbance came with the diagnosis of Pott's disease. The abdomen was excessively prominent, recalling that of a woman seven or eight months pregnant. There was no real projection of the vertebral column, no painful point, no dullness. Radioscopic examination confirmed the absence of organic disease, and the condition was attributed to muscular action. The man, by straightening his spine and flattening his thorax while the pelvis was pushed forward, made his abdomen project by pressure on the viscera. This he could do in the upright position and while on the march by keeping his knees slightly bent. By forcible flexion of the thighs in the recumbent position, the pelvis was made to swing backwards and the abdomen recovered its normal size. With the patient on all fours the same effect was produced, though less completely. In another type the lumbar curve was exaggerated to a degree amounting to lordosis, which disappeared under forced flexion of the thighs. Analysing a further group of cases, the authors note that the only constant symptom was the "big belly," with variable accompanying disturbances—hyperchlorhydria, diarrhoea of colitic type, sometimes aërophagy and sialophagy. In most cases there was faulty position of the pelvis and dorso-lumbar spine, with active contraction of the diaphragm. The abdominal wall showed general relaxation, especially at the level of the oblique and transversalis muscles, and even at the quadratus lumborum. On radioscopic examination, at the moment of relaxation, whether spontaneous or as the result of hyperflexion of the thighs, the diaphragm showed a normal curve and respiratory movements of regular amplitude. The authors think there is no question of simulation in these cases; but there is often exaggeration, and especially auto-suggestion as the sequel of a gastrointestinal affection, which leaves some abdominal discomfort. This, when the patient begins to take food, directs his attention to his digestive apparatus. He begins to suffer from sialo-aërophagy. From this to the auto-suggestion that he is affected with a serious disease of the abdomen is but a step. How is the simple-minded man to convince a sceptical doctor of the reality of these disturbances unless by exaggerating the size of his abdomen, which is the principal seat of his sufferings? Therefore it is with the belly thrust forward, the chest drawn in, the elbows held back, and the hands pressed to the sides of the abdomen, as if it were being carried, that the man presents himself. Diagnosis is based on the contrast between the abdominal enlargement and the slightness of the coexisting general and functional disturbances.

31. The Future of the Trephined Soldier.

THE Société de Neurologie some time ago passed a resolution that, as a general rule, men who had been wounded in the skull should not be sent back to the front; many of them, however, could be employed in the auxiliary services at a distance from the noises of the firing line. At a meeting of the society last October (*Revue Neurologique*, November-December, 1916) A. SOUQUES and J. MÉGEVAND gave details of two soldiers, trephined twelve months before and presenting only subjective symptoms, who were able to do duty fifteen to twenty kilometres behind the firing line. But after being two or three kilometres from the front line during an intense bombardment, continual and severe headache began, with incessant vertigo, mental confusion, and losses of consciousness.

When taken to the rear they soon improved. Jean Camus and Nepper, in a previous communication to the society, had shown by graphic records of respiratory and cardiac rhythms, vasomotor disturbances, and tremor, that there was exaggeration of emotional reactions in trephined men. Souques and Mégevand conclude that trephined men who suffer only from slight and passing subjective disturbances should not as a general rule be discharged, as most of them are capable of doing useful work in the auxiliary services; they may even be utilized at the front provided they are not exposed at close range to violent and prolonged cannonading. Further, they must be kept under medical supervision, so that they can be sent to the rear if necessary. In the discussion A. Charpentier pointed out that the prognosis of cranial wounds is always much more serious when the dura mater has been opened.

32.—MARTIMOR investigated the question whether in the *petits trépanés*—that is, men who after trephining show only slight nervous sequelae—there is any mental change likely to affect their future. The results are given in a thesis presented to the University of Lyons and analysed in the *Journal de Médecine et de Chirurgie* of May 10th, 1917. The method employed was to test the mental functions—memory, association, judgement, attention—on a standard plan so that patients could be compared in regard to the quality and rapidity of their intellectual operations. Investigation of 40 cases showed that it is quite exceptional for men with skull wounds to manifest any serious mental disturbance; in particular, Martimor never saw a case of the general pseudo-paralysis described by other observers; nevertheless, almost all skull wounds produce psychical changes. Clinically, these mental sequelae are almost identical; they consist essentially in slowing of the intellectual processes with increase of emotivity and liability to fatigue. In certain cases the responses to the tests were more defective and the changes of temper more marked a year after the wound than they were after six months. A much longer experience is required for certainty in prognosis, but Martimor draws the provisional conclusion that soldiers so injured should be discharged from the army or placed in an auxiliary service. The present tendency is to do this. Even if the danger of motor, labyrinthine, or convulsive disturbances did not exist, the mental state of many men with skull wounds would warrant their being kept away from the front. So emotional are they that the slightest defonation produces disturbance out of all proportion to the cause, with transient inhibition of the mental functions and of will power.

33. "Captivitis."

PROFESSOR CH. JULLIARD of Geneva (*Rev. méd. de la Suisse Romande*, July, 1917) describes a peculiar mental state observed in prisoners of war. The Germans call it "barbed wire psychosis." During an inspection of seriously wounded men in France by the Swiss repatriation committee he saw a case which presented close analogies to accidents in workmen. This suggested to him that under the influence of captivity a mental state might be produced similar to that described by Brissaud. For this condition he proposes the term "captivitis." The patient was an Austrian civilian prisoner, aged about 40, who was under treatment in a military hospital for various symptoms. He had been examined several times by the committee, which arrived at no definite decision. The man, who kept his bed, complained of vague pains in the chest with difficulty of breathing and headache. His urine was loaded with phosphates. The pains, which flitted about from one region to another, were of a nature likely to induce the committee to recognize the case as one suitable for repatriation. A minute examination, confirmed by the careful and prolonged observation of the doctor under whose care he was, showed no objective lesion except slight chronic bronchitis and emphysema. The man was extremely voluble in the endeavour to persuade the committee of the gravity of his condition. Repatriation was a fixed idea. A true psychosis could be excluded. Julliard, however, thought the diagnosis of simulation might be put aside, as, in spite of all that seemed to suggest it, the man struck

him as being in good faith. On the other hand, auto-suggestion was evident. As in labour accidents, the origin of the mental state was an erroneous idea of compensation. This notion was kept up, as in accident cases, by the careful treatment given him and repeated examinations by a number of doctors. As no decision was come to, recovery was delayed for months and no treatment was of use. Repatriation could not be advised, as the committee was convinced that the so-called disease would disappear with the cessation of the captivity. Nor could there be any question of punishment, as there was no simulation. Continuance of treatment would merely fix the false idea more deeply in the man's mind. The only solution of the problem seems to be to remove all hope by informing him that he was not considered a case justifying repatriation and that he must be placed in a concentration camp. Julliard suggests the presence in such cases of a kind of "mental foreign body," a fixed idea, producing certain psychical reactions.

34. Artificial Oedema of Limbs.

MÉRIEL (*Paris méd.*, June 30th, 1917) calls attention to an elephantiasis-like oedema of the limbs following slight wounds (small shell fragments, burns of the second degree, superficial contusions, incomplete fractures of radius and fibula). The infiltration is larger and more durable than that seen after similar injuries in civil practice; and owing to the condition many men have been discharged as permanently unfit. Cases having recently come in greater numbers before medical boards, Mériel became suspicious, and discovered that the oedema was generally the result of constriction for many days consecutively by a piece of string or cloth. The artificial origin of the oedema was proved by its disappearance under a plaster bandage left in position for a fortnight. In some cases the artificial oedema when recent is slight and curable; more often, when the constriction has been kept up, trophic lesions are produced which become permanent or take a very long time to disappear. The lesion is a more or less considerable oedema, always segmental, on the hand or foot, going upwards to the forearm or the leg, variable in consistence, sometimes hard but most frequently soft, pitting on pressure; the skin is glossy, thin, cold, sometimes bluish, sometimes white. The swelling, whatever be its upper limit, is always bounded by a well-defined cushion, beyond which the tissues are perfectly healthy. There is great impairment of movement of the fingers. They are thick and sausage-like, or are kept apart by enormous lymphatic infiltration, which after a time causes trophic lesions due to neuritis. Sometimes there is segmental anaesthesia; sometimes sensation is normal, or there may be slight hyperaesthesia. Apart from the clinical signs of various sensory disturbances a proof of these neuritic lesions is furnished by the x ray, which reveals well-marked decalcification of the bones of the hand and foot. But while neuritis is indisputable, it is secondary and not primary. This, according to Mériel, proves that the oedema is not due to neuritis following nerve injury, but that it is oedematous infiltration caused by induced vascular lesion causing the neuritis. The neuritis does not retrocede like the oedema; it persists much longer, and in time inevitably produces the disability desired by the patient.

SURGERY.

35. Rocket Pistol Wounds.

AMONG the rarer varieties of shot wounds must be reckoned those due to the discharge of pistols used, in the trenches and elsewhere, for the firing of rockets either as signals or for the purpose of lighting up enemy lines at night. W. KESSLER (*Volkman's Samml. klin. Vorträge*, No. 729; *Chir.*, No. 199, 1917) comments on the scantiness of the literature of these cases, and describes in full detail an instance coming under his own observation. Brief notes of ten others are added, and reference is made to nineteen more reported from the German navy. The rocket pistol is described as having a bore of about an inch, with a fairly short barrel. The rocket takes the form of a cartridge, made of zinc in the case of star lights or light rockets, and closed with a cork. Kessler describes various lesions that may result in cases of injury by the discharge of such pistols and cartridges. Burning of the tissues is usually the most prominent feature, as the special composition of which the combustible mass of the rocket is formed contains its own supply of oxygen, and so gives rise to flames and heat that cannot readily be quenched. If the patient is wounded at short range, fragments of the rocket casing may act as projectiles, and burning portions of the rocket may be blown

into the tissues and generate gases that will act on the tissues as poisons. At very short range the firing of the explosive charge in the cartridge behind the rocket will also have a burning and toxic effect on the injured tissues. All these features were observed in the case seen and reported by Kessler himself. The man received the discharge of a rocket pistol in the region of the right buttock at very short range. Two hours later, when seen at the field dressing station, he was unconscious, with clenched jaws, foam at the mouth, and a slightly irregular but full pulse beating 160 to the minute. There was a burn of the second and third degree in the mesial and lower part of the right buttock and upper and inner part of the right thigh, with a wound 3 cm. long in that part of the buttock. There was extensive surgical emphysema, most conspicuous on the left side of the back and the right thigh, extending up to the xiphoid process in front. The wound was dirty, and was laid freely open; the tissues were seen to be much altered in appearance; the muscles looked pale and dull, as if cooked and dry, and the muscular bundles had separated from one another. The patient was twice bled, and oxygen inhalations were given; he did not regain consciousness, but became very restless and morphia was given. About twenty incisions, each an inch long, were next made for the relief of the surgical emphysema, and perforated drainage tubes a foot in length were carried through between each pair of incisions, some twelve hours after the original injury had been received. Signs of gangrene appeared in both lower extremities and there was evidence of oedema of both lungs within a few hours; these phenomena were attributed by the medical consultant to embolism. The patient died within twenty-four hours, with shallowing respiration and weakening pulse. At the autopsy about twelve hours later rigor mortis was present, with pallor, cyanosis of the ears, considerable reddish-blue post-mortem staining, and a dark cyanotic discoloration of the scrotum. The surgical emphysema was absent in the region of the incisions made for its relief; fragments of foreign bodies were found in the neighbourhood of the enlarged wound in the right thigh; the skin and subcutaneous tissue had been stripped up and separated from the subjacent fascia by gas generated in the wound by the rocket, and were greyish-green in colour. Considerable separation of the tissues in the neighbourhood of the wound in the right thigh had taken place. Spectroscopic examination of blood taken from the patient during life showed the presence of carbon monoxide, and Kessler notes that a peculiar sweetish smell developed in the operating theatre while the patient was first being examined and bled; so much so, indeed, that the operating surgeon and his assistant were suddenly overtaken with feelings of anxiety, nausea, and a desire for fresh air, and had to sit down. They felt an inability to use the thoracic respiratory muscles that lasted twenty minutes, and for more than an hour had weakness in the knees, headache, and nausea. Kessler comes to the rather surprising conclusion that the cause of death in this severely burned, shocked, embolized, and gangrenous patient was carbon monoxide poisoning. It appears that the mortality of rocket pistol wounds is high; death occurred in 8 out of the 30 cases he mentions. In one instance the cork disc with which the rocket cartridge is closed was blown into the femur, lodging in the medulla of the bone. In another case a lieutenant suddenly saw a red cloud fly down on to his left knee. This proved to be a light-ball, and it produced a burn the size of a hand, in the middle of which was a hole the size of half a crown leading down to the calf, opening up the knee joint and dissecting out the muscles, and lined with slimy masses and metallic particles. The wound was opened up freely and cleaned, and after four months of treatment only a small granulating wound was left. A curious distribution of the cutaneous lesion resulting from the discharge of these pistols is recorded in two instances occurring in the navy. In one the central burn, 3 to 4 cm. in diameter and red and green in colour, was surrounded by a pale yellow ring 3 cm. wide, and this in turn was surrounded by a dark blue ring 2 to 5 cm. in width. In the other a central area of uninjured skin 1 cm. across was invested by a ring of blackened skin 1 cm. wide limited by an annular split in the skin; outside this was a ring of unaltered skin $1\frac{1}{2}$ cm. in width, and outside this again was a zone of burnt and blackened skin 2 cm. wide.

36. Paralysis of Peripheral Nerves in War Wounds.

E. DUROUX, in a paper abstracted in the *Revue Neurologique*, November-December, 1916, summarizes his observations on the various kinds of paralysis of peripheral nerves resulting from wounds. Under the head of

paralysis due to division of the nerves he says the incidence of true section is not more than 10 per cent. For the re-establishment of continuity between periphery and centre the surgeon has several methods at his disposal. Suture has given the author good results. He also employs neuroplasty. Nerve grafts are necessary when the loss of substance is considerable. The prognosis of paralysis due to section appears to depend on the method of intervention. It is better to operate before trophic and articular disorders become irremediable. In this way very rapid restoration of sensibility is sometimes secured, though this is exceptional in regard to motility. The trophic processes are greatly influenced by the restoration of a nerve, and cyanosis, ulceration of the skin, and changes in the nails often disappear before any sign of return of movement. Speaking generally, a year is required for a "satisfactory" recovery of motor power and two for complete restoration. In paralysis due to embedding in scar tissue good results are obtained by clearing the cicatricial focus, toilet of the nerve and immobilization in healthy tissue, or protection by a graft. Failure is due to changes in the nerve. If it is evidently destroyed at the point of burial in scar tissue, section followed by suture will give the best results. Paralysis is sometimes caused by neuroma; here there can be no question of resection, and intraneural neurolysis is indicated; longitudinal clefts must be made in the nerve so as to allow of extirpation of the cicatricial tissue running into healthy tissue. The author also discusses paralysis due to compression by aneurysm or fracture.

37. Gunshot Wounds of the Chest.

COLONEL A. B. SOLTAU and CAPTAIN J. B. ALEXANDER contribute to the *Journal of Quarterly Medicine* (July, 1917) an interesting paper on 139 cases of gunshot wound of the chest as seen at a base hospital in France. They discuss in some detail the three main conditions which may occur, either singly or in association, in penetrating wounds of the lung—namely, haemorrhage, pneumothorax, and collapse. Haemorrhage was comparatively common, and its size varied within wide limits, but the amount of blood bore little relation to the severity of the wound. In their quest for the factor determining the limitations of size of haemorrhage the authors formed the view that beyond the mechanical haemostatic effect of pressure of the effusion there is a condition of active collapse—either massive collapse or partial deflation—of a protective nature, tending to control haemorrhage. With regard to clotting of the haemorrhage, observation of this series of cases suggested that a partial clotting or at least a deposition of fibrin is constant, but that a true massive clot is extremely rare. Pneumothorax was less common than haemorrhage in this series—thirteen cases being observed as against eighty. An important distinction is drawn between early and late pneumothorax. In the former there is air in the pleural cavity; in the latter there is nearly always gas from a gas-producing organism. The former seldom gave rise to anxiety, while the latter was, of course, a very grave complication. Surgical emphysema occurred in 15 per cent. of the series; it caused little trouble, and soon vanished. Of collapse all stages were seen up to massive collapse. As many as 48 per cent. of the cases showed deflation in some degree, often closely simulating the physical signs of fluid, at other times resembling pneumonic consolidation. A condition to which the authors draw attention is contralateral collapse, frequently observed by them in the undamaged lung associated with collapse of the injured lung. Twenty-four examples were noted in the series, but the causation remains obscure; in the absence of other evidence the suggestion is made that the condition might be due to reflex nervous action.

PATHOLOGY.

38. Cicatrization of Injured Nerves.

A. PITRES, in a paper summarized in the *Revue Neurologique* for November-December, 1916, gives the results of histological investigations of the processes which follow division of a nerve in the connective elements and in the nerve fibre. In the former there is rapid cicatrization by the formation of a collar or band; if the wound is infected a vicious cicatrix is produced which may hinder or prevent regeneration of the nerve fibres. The nerve fibre after passing through the phase of Wallerian degeneration may take the direction of definitive atrophy, or more frequently it may proceed towards structural and functional regeneration. Numerous neuro-fibrillar filaments become detached from the axis-cylinder of the central end, and traverse the cicatricial connective tissues to lose themselves in the peripheral segment where they grow inside the old

sheaths, becoming covered with a coating of myelin; at the same time reabsorption of cellular elements which had accumulated in Schwann's sheath takes place. When this process is complete in the whole of the nerve, signs of functional recovery begin to appear, the voluntary movements being the first to return. Pitres concludes that connective cicatrization is absolutely different from nervous restoration; it only re-establishes the physical, not the functional, continuity of the nerve. He lays stress on the advantage of rapid and aseptic cicatrization in facilitating nerve regeneration. The notion that immediate or very rapid restoration of function in a divided nerve can sometimes be obtained is ill founded. Late suture seldom gives good results; *a fortiori*, resection is absolutely contraindicated.

39. Late Sequels of Skull Wounds.

IN a communication to the *Réunion méd.-chir. de la 1^{re} Armée*, DUPLANT (*Revue Neurologique*, November-December, 1916) related a case in which meningococcal abscess of the brain and cerebro-spinal meningitis supervened twenty months after the date of a wound of the skull. The patient was a soldier who was wounded by a projectile in the retro-mastoid region in 1914; he appeared to be completely cured and had returned to duty. In the early summer of 1916 he began to suffer from headache and vomiting. On admission to hospital clouding of the mind and Kernig's sign were noted; there was hypertension of the cerebro-spinal fluid, which contained meningococci. These micro-organisms were also found in the rhino-pharyngeal exudates. Improvement was brought about by intraspinal injections of meningococcal serum, and eventually the fluid became clear and sterile. Nevertheless the mind continued clouded. The urine contained 40 grams of sugar to the litre, the glycosuria doubtless being of bulbar origin. On June 11th coma supervened and the man died. On *post-mortem* examination there was found infection of the liver, with old subpleural pulmonary granulations; the cerebro-spinal fluid was cloudy, and there was meningitis, particularly marked at the base. There was a large abscess of the occipital lobe communicating with the posterior cornu of the lateral ventricle. There was a large inflamed exostosis of the retro-mastoid part of the temporal and pachymeningitis in that region. On the outer table the periosteum was intact and completely cicatrized. On scraping it two bits of lead the size of a glass pin's head were found. The pus contained an abundance of meningococci and some streptococci. Summing up, Duplant points out that this old wound of the skull, which had caused a tiny lesion of the external table, had given rise to an exostosis of the internal table with late infection. The abscess was due to the localization of the meningococcus at a point of low resistance in the course of a cerebro-spinal meningitis. This got well, but the abscess caused death. A guarded prognosis should therefore be given as to the remote issue of skull wounds, even when the lesions appear to be trifling.

40. Labyrinthine Concussion.

PRENANT and CASTEL (*Paris méd.*, March 10th, 1917) have investigated experimentally the effects of the detonations of explosives on rabbits and guinea-pigs. When deafness was produced by near exposure to gunfire the middle ear was, as a rule, uninjured. The Bárány test gave negative results in ten cases. On *post-mortem* examination no effusion was found in the middle ear or brain. The most frequent lesion was dislocation of the cochlea, particularly in the first and second spiral turn. The organ of Corti was often much damaged and evidence of considerable recent haemorrhage was often seen, with apparent atrophy of the cells, in the first few spiral turns. The cells of the spiral ganglion of Rosenthal were shrunken; in one case there was ascending degeneration of the cochlear nerve. The vestibular organs never showed any trace of injury. The authors conclude that the gravity of war deafness is due to damage to the cochlea.

41. Coincidence of Infectiousness with a Positive Wassermann Reaction.

J. TRINCHESE (*Deut. med. Woch.*, January 11th, 1917) points out that many authorities have maintained that, provided a symptom-free patient has been treated for syphilis sufficiently long and vigorously, a positive Wassermann reaction is not adequate proof, *per se*, of infectiousness. In support of his argument that this view is incorrect, he gives details of six patients who had infected their wives and begotten syphilitic offspring, three to five years after contracting syphilis. They had been "adequately" treated, and were symptom-free. One of his patients contracted syphilis at the age of 25. He underwent four courses of injections (presumably of mercury),

and every symptom, except slight swelling of the inguinal glands, soon vanished. Eight years after infection Wassermann's reaction was still markedly positive, and the patient accordingly underwent a course of inoculation before getting married with the consent of his medical attendant. Eleven months later a healthy child was born, and Wassermann's reaction was negative, both for mother and child. Two years later another healthy child was born, and again the reaction was negative for mother and child. Ten months after the birth of this child—that is, about twelve years after the original infection—the mother developed a typical roseola, and the reaction was definitely positive, as it was positive also in the husband, although he showed no other sign of his old infection.

OPHTHALMOLOGY.

42. Sympathetic Ophthalmia in War.

L. WEEKERS (*Arch. méd. Belges*, March, 1917) notes the extreme rarity of sympathetic ophthalmia in the present war, notwithstanding the great frequency of wounds of the eye. Among more than eight hundred cases of such wounds he himself has not seen a single instance of sympathetic ophthalmia. This fact is not in harmony with the statistics of previous wars; in 1870, for example, sympathetic ophthalmia occurred in 55 per cent. of wounds of the eye; while it is generally agreed that in time of peace this complication is relatively frequent. In the surgical records of the present war Weekers has found only one case in the French army (Valude, *Ann. d'oculistique*, 1916, p. 89). On the German side only a few have been reported. Apart from these cases all the surgeons in the enemy armies who have recorded their experience mention the absence of sympathetic ophthalmia in eye wounds. The cause of this rarity was incidentally discussed at a meeting of the Paris Société d'Ophthalmologie in April, 1916, when Morax expressed the opinion that it was due particularly to the early performance of enucleation. De Lapersonne attributed it to the same cause, but especially to more efficient antisepsis. Poulard thought total enucleation should be replaced by partial removal. Kalt believed that exenteration alone was sufficient to prevent panophthalmia, an affection which moreover involved no danger to the other eye. Published statistics as to the frequency of sympathetic ophthalmia present wide divergencies. The principal cause of this, according to Weekers, is the confusion which has long existed between sympathetic inflammation properly so called and sympathetic irritation. The symptoms of the latter condition are entirely different from those of iridocyclitis or true sympathetic uveitis; the two things have nothing in common, notably in respect of pathogeny. When all cases of typical inflammation, characterized particularly by uveitis giving rise most often to exudation in the anterior chamber, are excluded from statistics of sympathetic ophthalmia, it will be noted that the figures indicating the frequency of that affection are considerably reduced. Most observations record only functional disturbance. In only 17.9 per cent. of the cases do the German statistics for 1870 indicate the existence of organic lesions, and of most of these it can be argued that they were not examples of sympathetic ophthalmia; the lesions were optic atrophy, detachment of the retina, bulbar injection with opacity of the cornea, and so forth. In short, of all the cases recorded under the head of "sympathetic ophthalmia" in those statistics there was not one presenting the characters of a typical sympathetic uveitis. Weekers, however, does not deny the reality of sympathetic ophthalmia, which may supervene even when every precaution has been taken to avoid it; but it is so rare as to be a curiosity. It was more frequent formerly than now, and it is time to discard the fears which were then justified. The diminution in frequency is primarily due to the more rigorous observance of the precepts of asepsis and antisepsis in the treatment from first to last. Removal of the injured eye, even when it is destroyed from the functional point of view, is not justified as a prophylactic measure against sympathetic ophthalmia. By temporizing it is often possible to save eyes which at first appear doomed to enucleation. The surgeon should in this respect be as conservative as possible, whilst bearing in mind that it is better in a doubtful case to remove an eye in which vision is lost than to expose the patient to sympathetic ophthalmia even when the risk of this complication is of the slightest. When ablation is necessary, preference should be given to exenteration, which offers as good guarantees against sympathetic ophthalmia as enucleation, and gives better aesthetic and prosthetic results.

THERAPEUTICS.

43. Chloroform in the Re-education of Functional Deaf-mutes.

In a paper abstracted in the *Revue Neurologique* for November-December, 1916, A. J. RAYNEAU and ANDRÉ BOUTET discuss the inhalation of chloroform in the cure of functional deaf-mutes. The patients may recover spontaneously after the first whiffs of the anaesthetic or immediately on awakening. Recovery may occur later, for instance after twenty-four hours, the cure taking place in two stages—one in which a very slight result follows the administration, a second more remote in which recovery is completed. In some cases spontaneous recovery is never quite complete, the patients remaining for a short time partially deaf, more on one side than the other, with a stammer which disappears after a few days of re-education. The authors had the ears of all their patients examined by specialists, and in every case the drumhead was reddened and depressed; if the lesion was unilateral, hearing was only partially restored on that side, whereas the use of the other ear was fully regained more rapidly. It would seem, therefore, that in all these cases there is an organic and functional association, the organic lesion being in itself quite insufficient to cause the serious disturbances noted, while quite capable of producing secondary functional disturbances.

44. Local Injections of Alcohol in Neuritis.

J. A. SICARD (*Revue Neurologique*, November-December, 1916) has tried the injection of alcohol into the affected nerve trunks for painful conditions left by war wounds. The results of a year's experience encourage him to recommend the method. The technique consists in injecting 1 to 2 c.cm. of alcohol at 60° C.—or 80° C. if the pain is of old standing—into the exposed nerve, at least 3 centimetres above the lesion; the injection should also be made into all the tributary branches within the painful area. As alcohol paralyses both the motor and the sensory fibres, the treatment is applicable only when the pain is so sharp and continuous that the patient clamours for intervention of any kind, even amputation. Motor paralysis caused by alcoholization of the nerve is of little importance when there are grave nervous lesions which have already induced almost complete sensori-motor paralyses.

SKIAGRAPHY.

45. Stereoscopic Radiography of the Limbs.

GAGE (*Arch. Radiol. and Electrother.*, June, 1917) suggests a simplified method of stereoscopic radiography for the examination of fractures to determine the position of the fragments and the presence of sequestra, their number, position, and relationship to sinuses. It is often desirable to obtain first a radiographic image of the skin by careful bandaging with gauze that has been smeared with zinc oxide or mercuric ointment, or impregnated with nitrate of silver or collargol. Smearing the skin with metallic ointment has also been found effective. A small metallic object may be used to mark the sinus, and an indicator should be placed upon the anterior surface of the limb. A plate is now taken, half of which is placed under the limb in the usual position with the film towards the tube, while the other half of the plate is covered by sheet lead. The tube is centred over the whole limb and afterwards displaced 3 cm. laterally. After the first exposure the plate is carefully withdrawn without disturbing the limb, and the unexposed half of the plate inserted, this time with the glass side towards the tube. The second exposure is then made after the tube has again been displaced 3 cm. on the opposite side of the centre. The best stereoscopic results are obtained by increasing the displacement for a thin limb, like the forearm or hand, to as much as 4 cm. on either side of the centre; while for the thigh the displacement should be diminished. The height of the tube also has some influence upon the stereoscopic effect; the closer the tube is to the plate the less displacement is required. To view these plates two mirrors, some 8 in. by 10 in. in size, are placed back to back and bound with a piece of adhesive tape. The mirror should be placed in the centre of the two pictures, and the observer should close an eye until he sees one picture clearly reflected; on opening the eye, a stereoscopic projection of the contour of the limb, rendered visible by the application of the metal-impregnated bandage, is seen, as also is the position of the sinus (marked by the metal disc) and the sequestra, which stand out in their relationship to the sinus, the bone, and the skin.

AN EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

46. The Nervous Symptoms in Polycythaemia Vera.

IT is important to insist on the nervous manifestations in the disorder variously called polycythaemia vera, splenomegalic or myelopathic polycythaemia, erythraemia, Vaquez's or Osler's disease, as otherwise they may be regarded as due to an organic brain lesion, and even lead to an operation for cerebral tumour. Although a characteristic case is unlikely to escape recognition, the patients are not necessarily cyanosed or abnormally red; out of ten cases observed by H. A. CHRISTIAN (*Amer. Journ. Med. Sci.*, 1917, cliv), who has recently written on this subject, five when seen at the hospital did not show the cutaneous colour that would suggest the diagnosis of polycythaemia. The patients may, indeed, be pale, and in such instances the nervous symptoms, which are usually the reason why medical advice is sought, may easily be referred to an operable cerebral growth. The nervous symptoms are very frequent. They were noted in all but one of Osler's nine collected cases, and out of Christian's ten cases eight showed definite nervous manifestations, such as headache, dizziness, asthenopia, blurred vision, transient blindness, scotomas often scintillating, diplopia, hemianopsia, slight swelling of the optic disc, paraesthesias, pareses, and paralyses suggesting a focal lesion. One patient was for ten years under neurologists and ophthalmologists, cerebral tumour being often suspected before polycythaemia was recognized, and in another its existence was discovered only after an operation for cerebral decompression had been performed. The blood changes probably exist for a long time before the onset of nervous symptoms, which are at first due to simple circulatory changes, but later depend on cerebral softening, haemorrhage, or thrombosis. There are as yet but few data as to the age at which polycythaemia usually appears, but it is remarkable that Christian's ten cases were all between 45 and 63 years of age, and that eight were between 50 and 56.

47. Malarial Amnesia.

FROM his experience in Beyrout DE BRUX (*Presse méd.*, Paris, 1917, xxv) insists on the frequency of loss of memory as the result of malarial infection, as shown by its presence in nearly a third of the patients under his care in a military hospital there. It is indeed remarkable that so little attention has been paid to this manifestation. It may, however, be easily overlooked, especially when it is unaccompanied by other nervous symptoms. Sometimes it is combined with headache, giddiness, cramps, tremors, formication, and be a prominent symptom of malarial polynuritic psychosis. The occurrence of loss of memory may be considered under the two heads of (1) the febrile paroxysm and of (2) the subsequent periods. During the fever there may be complete loss of memory, so that a complete gap is left. This may involve the events of a few hours and is then permanent and absolute, or the duration of amnesia may be prolonged for weeks and is then less complete, and there may be a transitional stage between the period of good memory and that of more or less complete blankness. After the fever patients may have lost their memory for events before the malarial attack, and this may extend back to childhood, or their loss of memory may affect the events of the recent past and the present, so that the patients are obliged to write everything (notebook sign); there is then considerable loss of maintaining attention.

48. Electrical Tests in Peripheral Nerve Injury.

ADRIAN (*Arch. Radiol. and Electrother.*, May, 1917) discusses the physiological basis of electrical tests in peripheral nerve injury. For prognosis or diagnosis little is to be gained by elaborate testing methods. The presence or absence of excitable nerve fibres can be detected well enough by the ordinary faradic coil; when the nerve has degenerated the faradic current becomes ineffective, and this test is the all-important factor in treatment and prognosis. As to paralysed muscle, faradic and galvanic currents do not give all the information it is possible to

obtain, and here a method based on the use of condensers of different capacities should be able to determine the progress of the muscle after the nerve supply is cut off, and might give useful information as to the effects of treatment; but for deciding whether the nerve has degenerated or not condensers seem to have no advantage over the simple faradic coil. Whether the nerve is growing towards the muscle or is prevented from regenerating by scar tissue is a question for the neurologist and the surgeon; the most elaborate electrical tests can give no answer. Cases of incomplete nerve injury, contusion, compression, and the like are readily distinguished as a rule by neurological tests. In a few cases the nerve is much less excitable below the seat of injury than above it, and when this occurs the response to short currents is more readily obtained by stimulating above the level of the injury. Theoretically it should be possible to measure changes in the conductivity of the nerve fibres not great enough to abolish conduction. Such changes would not necessarily be accompanied by any alteration in excitability except in the immediate neighbourhood of the injury. In isolated muscle nerve preparations a very small change of conductivity can be detected readily enough by measurements of the least interval for muscular summation, with two stimuli separated by a short time interval, but there are considerable difficulties in the way of such estimations in the human subject.

49. Gastric Ulceration in Lymphadenoma.

S. F. REIMANN (*Cleveland Med. Journ.*, 1917, xvi) describes the case of a boy aged 14 years with widespread lymphadenoma of the superficial, mediastinal, and mesenteric glands and of the spleen, in which the walls of the stomach were infiltrated by lymphadenoma and the mucous membrane showed four small circumscribed punched-out ulcers with raised edges. The rest of the alimentary canal was normal. The histological appearances were those of lymphadenoma, though less well marked in the stomach than in the lymphatic glands. There were no gastric symptoms. References are given to four other cases of gastric ulceration in lymphadenoma, the author's case being the youngest.

50. Adrenal Indigestion.

LOEPER, BEUZARD, and WAGNER (*Bull. et mém. Soc. Méd. des Hôp. de Paris*, 1917, 3^e sér., xli) describe under this heading the gastro-intestinal symptoms associated with the slighter forms of adrenal insufficiency. As in Addison's disease, the symptoms depend on atony of the stomach and intestines. Gastric distension, often associated with swallowing of air, comes on half an hour to two hours after food and the HCl is deficient, and constipation is troublesome. Though an associated low blood pressure, melanoderma, and "the white line" (the reverse of the *tachocérébrale*) suggest the underlying cause, the most certain means of diagnosis is the response to hypodermic injection of $\frac{1}{2}$ to 1 mg. of adrenalin once or twice daily. As a result the gastric peristalsis is seen by means of an x-ray examination to become vigorous, and the amount of HCl in the gastric juice is increased, while constipation and the other symptoms diminish.

51. Orchitis of Mumps Complicated by Abscess Due to *B. coli*.

TROUDE (*Bull. et mém. Soc. Méd. des Hôp. de Paris*, 1917, 3^e sér., xli) reports the case of a médecin-major, aged 29, who, fifteen days after seeing some patients with mumps, had fever and painful swelling of the left testis. Two days later the parotids became swollen—an inversion of the usual sequence of events. After a further interval of eight days an abscess in the left testis was opened with evacuation of 8 c.cm. of creamy pus containing *Bacillus coli*, but without any special odour. The wound slowly healed, the testis atrophied and became nodular. The epididymis was not involved in the inflammatory process. Suppuration in the orchitis of mumps is very rare, three cases only being quoted; and as a bacteriological report does not appear to have been previously made, this case is

important as showing that suppuration when it does follow is due to a secondary infection superimposed on that of mumps.

52. Artificial Pemphigus.

At a meeting of the Medico-Chirurgical Society of Bologna (*Policlinico*, June 10th, 1917) F. DE NAPOLI described a number of cases of artificial skin affection simulating pemphigus seen among Italian troops at the front. The site is almost always the legs and the feet, particularly the extensor surfaces; sometimes the arms or face were affected; only once the back. The elementary lesions are bullae resembling those of pemphigus; they vary in size from a hazel nut to a turkey's egg and are generally tense and full of lemon-yellow fluid, in some cases opalescent, never haemorrhagic, rarely purulent. Mingled with the bullae are small vesicles, in some cases confluent, in others disseminated over large patches of papular erythema resembling eczema. The affection lasts a week and mostly ends in complete recovery; in some cases, however, the duration is longer owing to secondary suppuration. In nearly every case the affection appeared in epidemic form among men from the same region. It was discovered that it was produced by the application of a paste made by the trituration of a plant growing abundantly in the territory occupied by the regiments in which the eruption appeared. This plant was identified at the botanical garden of the University of Bologna as *Ranunculus acris*, which, like all the ranunculaceae, has an irritating and blistering action on the skin.

SURGERY.

53. Gunshot Wounds of Kidney.

PATEL (*Paris méd.*, September 29th, 1917), after describing two cases of gunshot wounds of the kidney and hilum, says that wounds of that organ alone are relatively rare. In two years of work in a large hospital at the rear he saw only three cases of old wound of the kidney. Two of the patients had a fragment of shell in the renal pelvis, with clinical signs exactly resembling those of calculus. At the time of the injury there was no sign of serious haemorrhage, only an outflow of liquid, probably urine, through the wound. The surgeons at the front had not thought intervention called for. Patel after localization by radio-scopic removed the fragments by a true pyelotomy; both patients recovered. In the third case a fragment of shell was buried in the renal substance; the man died of infection and secondary haemorrhage before Patel thought of operating. When, as is mostly the case, other organs—intestine, liver, or lung—are seriously injured at the same time lesion of the kidney is likely to escape notice. The diagnosis of renal lesion presents difficulties. The seat of the injury—lumbar or lower thoracic region—is a useful guide. Abundant bleeding through the wound suggests injury to a large vascular trunk, but it is not possible to determine the source more precisely. Haematuria is a sign of capital importance. The absence of all peritoneal reaction in the two cases reported warrants the assumption that the peritoneum had not been touched. As in all cases of war wounds, a precise diagnosis is arrived at by direct exploration of the lesion. In both cases Patel performed nephrectomy, which he considers to be the only possible treatment. The men were admitted in such a condition of anaemia that the immediate arrest of haemorrhage was imperative; in an extensive wound of the kidney plugging would have been inadequate; even if the first gush had been stopped secondary haemorrhage would almost certainly have occurred. In both cases the operation was well borne, and the flow of urine was at once established.

54. Recurrent Tetanus.

AN instance of recurrent tetanus has been recorded by HERMANN MEYER (Bruns's *Kriegschirurg.*, H. xxxix, p. 673, 1917). The patient developed stiffness of the lower jaw twenty-four days after receiving a bullet wound of the right leg. Serum injections were immediately administered, and were repeated on the two following days without producing any obvious effect. On handling the wound, which was discharging freely, twitches occurred in the affected leg, and two days later some rigidity of the back was noticed. On the tenth day, after eight preventive doses and one curative dose of serum had been administered, the symptoms began to decline and the patient made uninterrupted progress towards recovery, except for an attack of severe pain in the leg and thigh,

which occurred on the thirty-seventh day. On the eighty-first day slight trismus recurred, together with twitching of the right leg; two days later twitching occurred in the left leg also, and the abdominal muscles became rigid. These symptoms subsided after a course of serum injections. On the hundred and thirteenth day twitching recurred in the right leg, with marked rigidity of the muscles on attempting to move the limb. These symptoms persisted with little change for five weeks. On the hundred and fifty-fourth day severe and painful spasms occurred in the right leg, back, thorax, and abdominal wall, and there was abundant sweating, with normal temperature. Movements of the arm and jaw were unaffected. At this stage the patient came under Meyer's care; he was then pale and wasted. On the inner aspect of the right leg there was a scar 5 cm. long, and on the outer side a somewhat longer scar, beneath which fluctuation could be detected. Both feet were in a position of extreme equino-varus and immovable; the right knee and hip were flexed, and the whole musculature of the limb rigid. The dorsal and abdominal muscles showed extreme rigidity, but those of the arms and thorax were normal. The masseters became rigid only on opening the mouth widely. The x rays showed the presence of two sequestra beneath the scar on the outer side of the leg. This scar was excised, and an incision into the inner cicatrix opened a cavity, which was lined with granulation tissue and contained opaque serous fluid. From this cavity two sequestra were removed, and mice injected with some of the contents developed the symptoms of tetanus. There was no return of the spasms subsequent to the operation, and the muscular rigidity gradually declined, leaving, however, a certain amount of contracture, which necessitated surgical treatment. The treatment of recurrent tetanus Meyer considers should be purely surgical—excision of all suspected scars, removal of foreign bodies and sequestra, even where these have apparently healed in completely; free opening up of all infected foci, the cavities being allowed to granulate up, in order to prevent the inclusion of spores in the cicatrix. Meyer has appended to his article a description of thirteen cases of recurrent tetanus which have been previously recorded.

55. A Displacement Operation for Wounds of Nerves.

I. F. S. ESSER says that during 1915 he performed displacement operations on the radial and ulnar nerves in thirteen cases (*Amer. Journ. Surg.*, June, 1917). His object was to protect the nerve from the surrounding scars and latent inflammation by displacement, instead of the usual procedure of surrounding it with protecting calf's arteries and veins. An envelopment of the nerve with a pedicled muscle flap seemed theoretically preferable, but even this procedure was not as satisfactory as displacing the nerve into a healthy muscle interstice. Esser very carefully frees the nerve for a long distance, both at the seat of injury and above and below it; in this procedure recourse must often be had to the chisel, as the nerve ends are very often surrounded by callus and bone splinters. The nerve ends must be freed from every particle of connective tissue. To do this thoroughly Esser always operated under plexus-conducting anaesthesia, so that half an hour more or less was of no consequence. The plexus anaesthesia demands extreme precision, patience, and much practice, but its results are worth the time and trouble expended. In all his thirteen cases Esser found remnants of the nerve connexions of both ends. In no case was impairment of nerve function proved by examination of the active movement and the electrical susceptibility and response immediately after operation. The following was his technique: After scrupulously clean preparation of the injured nerve, the ends were joined by sewing the nerve sheaths together with the finest vessel sutures. Then the thin connexion, carefully prepared beforehand, hung like a free loop. The brachialis internus and biceps were next sewn together beneath the raised nerve, and the liberated nerve was laid in the groove between those muscles and covered only with subcutaneous fat and skin.

56. Treatment of Wounds of Peripheral Nerves.

G. LUSENA, in a communication to the twenty-fifth congress of the Italian Surgical Society held at Bologna (*Morgagni*, June 23rd, 1917), stated that between August, 1915, and the date of his report he had treated 55 cases of lesions of peripheral nerves. The operations were done at a minimum of twenty-nine and a maximum of 508 days from the time of injury. By means of simple neurolysis two complete and two almost complete cures were obtained; neurolysis and resection with direct suture gave three complete, seven almost complete cures, and seven

of notable and progressive improvement; resection and distant suture yielded one case of complete cure; simple resection in two cases of pure syndrome of sensory irritation brought about the immediate cessation of the subjective symptoms with the necessary consequence of regional anaesthesia. In many other cases signs of amelioration were observed; among these were some operated on two months before—all instances of lesion of the ulnar nerve. Lusena pointed out that from statistics of other surgeons it might be inferred that in about 80 per cent. of cases restoration of function takes place naturally; in his own series this result was observed in 75 per cent. Regeneration occurs naturally by restoration of nervous conductivity along the injured trunk. It is not seen when a permanent obstacle to conductivity is formed at the seat of the lesion. In gunshot wounds the obstacle is seldom due to division of the nerve with separation of the ends; less rarely it is due to a dense mass of connective tissue surrounding and stretching the nerve; much more often it is caused by the interposition of dense connective tissue between the ends. It is extremely rare for natural restoration to begin after the first six to ten weeks; later this is quite exceptional. If it does not begin within two to eight weeks muscular changes, beginning with mechanical hyperexcitability and going on to complete reaction of degeneration, occur. If these become more marked, intervention is indicated. In regard to the choice of procedure, if Lusena finds a mass of dense connective tissue surrounding the nerve trunk, he performs neurolysis; if there are one or two masses of dense fibrous tissue, he practises resection followed by direct suture, either stretching the ends or bringing the stumps together with fine catgut. The region of operation should be surrounded with muscular bundles parallel to the nerve trunk. If these methods prove ineffective, recourse may be had to the interposition of transplanted nerves—free, autoplasmic, haemoplastic, or heteroplastic. Lusena does not use a haemostatic bandage from fear of subsequent haemorrhage and the production of other nerve lesions, especially in the arm. Resections are confined to some bundles of a nerve if these are the seat of cicatricial masses which interrupt conductivity. Reaction of degeneration persists many weeks or even months after clinical cure. Electrical treatment should be begun as soon as the operation wound is healed. The application of a movable apparatus to prevent excessive stretching of the paralysed muscles by the force of their antagonists is often useful. To establish the fact of clinical recovery the restoration of motor function must be investigated, since the return of sensibility, particularly in the primary anaesthetic zone, is not a sign of restoration of nervous conductivity.

57. Cheap Dressings.

FRANÇOIS DEBAT, head of the dermatological centre of the 8th French region (*Paris méd.*, May 26th, 1917) states that he has effected a considerable economy in the cost of dressings by using strips and squares cut out of old bed-linen instead of gauze compresses, tarlatan, and cotton bandages, etc. The advantage is that whereas gauze, tarlatan, and cotton are very dear and can be used only once, old linen costs nothing, and after sterilization and washing can be used over and over again. In his service of 180 beds the dressings have to be renewed almost every day, and the monthly cost, which used to be £56, is now a little over three guineas—a reduction of more than 90 per cent., representing a total saving of more than £600 a year. The old bed-linen is supplied for nothing by the military hospitals and by private charity. It is cut into pieces of suitable size and sterilized by boiling. After a trial of three months during a period of very active work, Debat declares that the method has no disadvantages in the treatment of superficial sores and skin affections. The work of the nurses is facilitated, the dressings being easy to make and taking little time.

THERAPEUTICS.

58. Treatment of Epidemic Jaundice.

In a communication to the Royal Academy of Medicine of Turin CARLO FOÀ (*Morgagni*, September 22nd, 1917) said he had tried the drugs generally credited with remedial properties in protozoal diseases in a number of cases of epidemic jaundice. He divided the patients into seven groups, all the cases chosen being in the early stage of the disease and almost all showing the symptoms in equal intensity. To one group of 5 cases quinine bisulphate

was given in daily doses of 1.5 grams by the mouth for six consecutive days. To a second group of 5 cases crystallized chemically pure methylene blue was given by the mouth in daily doses of 8 centigrams divided into four equal cachets for six consecutive days. To a third group of 7 cases a daily intramuscular injection of 2 centigrams of methylene blue dissolved in 1 cubic centimetre of distilled water was given for six consecutive days. To a fourth group of 10 six intramuscular injections of atoxyl (0.30 gram each) were given on six consecutive days. To a fifth group of 2 cases three intravenous injections of Billon's novarsenobenzol (formula of neo-salvarsan) were given on three consecutive days in increasing doses (0.15, 0.30, and 0.45 gram) dissolved in 5 c.cm. of a cold sterilized solution of sodium chloride (4 per cent.). To a sixth group of 11 cases an intramuscular injection of mercury bichloride in doses of 1 centigram each was given on six consecutive days. To a seventh group of 40 cases a single intramuscular injection of calomel was given. The results were as follows: In the first six groups the remedy produced no appreciable effect, and such improvement as took place was the same as might have been expected without any treatment: the illness had the usual duration of twenty to thirty days. The calomel injection was followed by distinct improvement, starting from the fourth or fifth day; this showed itself in the colour of the skin, mucous membranes, and urine, and went on increasing so that at the end of ten or twelve days hardly any visible trace of the disease remained. In 3 cases the cure was delayed till about the twentieth day.

59. X Rays in Rhinoscleroma.

MACKEE (*Amer. Journ. of Roentgenol.*, April, 1917) considers rhinoscleroma a typical example of the group of dermatoses in which x rays or radium offer the best means of permanent cure. As a large total dosage of x rays is required, unless the disease is in its early stage, an intensive technique is indicated. Deep therapy is also called for, so that filtration is required. If the disease is limited to the alae nasi, an unfiltered ray may be directed into the nasal orifices; two or three doses of from $\frac{3}{4}$ to 1 Holzknecht unit will usually suffice for a cure. In extensive cases it is advisable to divide the nose into several areas for the purpose of cross-firing, each area to receive from $\frac{1}{4}$ to 2 H., filtered through 3 mm. of aluminium, every four to six weeks. The hardness of the ray should be Benoist 9-10. In addition, a radium plaque may be placed against the hard palate, and a dose of gamma rays also administered. Several—perhaps eight or ten—series of cross-fire treatments may be required to produce the desired result in extensive and long-standing cases. Lesions situated in the nose, at the posterior nares, or in the pharynx, will usually disappear as a result of deep therapy applied to the nose. If necessary, this treatment may be reinforced by the application of radium to the pharyngeal walls or the x rays may be applied to these parts through a metal mouth tube.

60. Electricity in the Treatment of Scars.

SREUWEN (*Arch. Radiol. and Electrother.*, October, 1917), writing of the treatment of the wounded by means of electricity, says that when a scar is painful or adherent, or both, he gives massage thrice a week, preceded by an application of hot air or radiant heat. The duration of the hot air or radiant heat treatment depends on the sensibility of the scar and of the patient. If after three or four minutes' hot air application the skin around the scar becomes pink, the time has been sufficient; otherwise the application may continue for five or six minutes if the patient can stand it. Radiant heat may go on for longer—even for ten or twenty minutes. On the other days of the week, alternating with the massage, ionization with a 2 per cent. solution of sodium chloride or potassium iodide is given. The active electrode is made with at least twelve layers of gauze, slightly exceeding the size of the scar, well soaked in hot solution. The indifferent electrode, as large as possible, is soaked with plain hot water and placed on the back or chest; in some cases, instead of a pad electrode, a bath is used for arm or leg. The intensity of the current varies from $\frac{1}{2}$ to 1 milliampère for each square centimetre of the active electrode, or nearly 3 to 6 milliampères to the square inch. The application lasts about fifteen to twenty minutes, sometimes longer. The results of this combined treatment have been very satisfactory; the first sign of improvement is generally a diminution of the pain. The average duration of treatment for the simple uncomplicated scar has been from six weeks to two months. The reason why many scars remain painful and unhealthy is because other foreign

bodies than those which the x-ray plate can detect—such as small quantities of dust and very tiny bits of clothing—remain embedded in the tissues.

PATHOLOGY.

61. Persistence of Intestinal Amoebiasis.

THE carrier question in amoebic dysentery has come into special prominence during the war, and valuable work has been done by Clifford Dobell, under the aegis of the Medical Research Committee, in showing the necessity for more extended examination of the stools for *Entamoeba histolytica* than had previously been thought necessary before the infection could be regarded as "cured." These investigations were made in this country on patients sent home from the Eastern Mediterranean, and there is therefore need for information on the problem of the carrier question in the tropics. For example, very little is known about the results of systematic examination of the stools of troops in India for *Entamoeba histolytica*. From the protozoological findings in the stools of over 2,000 men, chiefly of the Mesopotamia Field Force, carried out at Deolali, India, MACADAM and KEELAN (*Indian Journ. Med. Research*, Calcutta, 1917, v. pp. 239-272) have drawn some important deductions. In the first place it appears that, after applying Dobell's appropriate "figure for correction" to those results obtained on a single examination method, at least 33 per cent. of the troops that have been in Mesopotamia are "healthy" or "unhealthy" *histolytica* carriers. Further, it is disquieting to find that there is a fallacy in concluding from protozoological examination of the stools in hospital that the patient is clear from infection. In hospital the possibilities of intestinal irritation are reduced to a minimum; but when the patient is discharged, coarse food, excessive exertion and fatigue, and the lack of hospital discipline as regards diet and drink may cause intestinal catarrh, and the reappearance of *histolytica* cysts in the faeces. This difference was also seen in the case of hospital and convalescent camp patients, the percentage of carriers being higher in the camp patients whose conditions formed a faint replica of active service. Further, the percentage of carriers was higher in men who had been a week in the camp than among those just admitted. In order to test for the presence of latent infection the authors make a routine practice of giving a mild saline to all convalescent dysentery patients, thereby causing some intestinal irritation. Although the softer condition of the faeces may lead to a more equal distribution of the cysts, it is probable that the flooding out of the cysts due to the flushing of the mucous membrane of the intestine is an equally important factor. The high percentage of *histolytica* infection among men not suspected of any intestinal disorder, and the apparent failure of hypodermic courses of emetine to rid men of this infection, throw considerable doubt on the utility of attempting to "clear" by a series of protozoological examinations of the stools only, those cases of amoebic infection which have had sufficient intestinal disturbance to demand hospital treatment. Among 87 *histolytica* carriers in the convalescent dépôt with a history of previous dysentery there was an average interval of 8.5 months between the first attack and the examination of the faeces. The authors come to the conclusion that the segregation of any but the "gross" human carriers is impossible and futile; and that, as light and intermittent infections appear to be present in at least a third of the troops, it is doubtful if the isolation of a few gross carriers will be of much use in prophylaxis.

62. Serum Treatment of "Bacillus welchii" Infections.

IN a preliminary paper¹ it was shown that the *Bacillus welchii*, like *B. tetani* and *B. diptheriae*, produces an exotoxin, and further, that injection of this toxin into animals yields an immune serum, which prevents and controls infections with both the spore and vegetative forms of the bacilli. C. G. BULL (*Journ. Exper. Med.*, Baltimore, 1917, xxvii) now brings forward more extensive and systematic experiments, which show that in all probability a passive immunity to *B. welchii* of at least two weeks' duration can be conferred on man by a single injection of the antitoxic serum; and in the light of the results obtained in treating the infection in guinea-pigs, that the serum will also exert a curative action. The immunity conferred by a single injection will be sufficient in most instances, since the majority of cases of infection with *B. welchii* occur within forty-eight hours of the

injury, and sporadic examples only are seen after an interval of ten days. The serum is now prepared in the horse, and the method employed and the standardization will be described in a later communication.

SKIAGRAPHY.

63. X-ray Characteristics of Shrapnel Balls.

HOWARD PIRIE (*Arch. Radiol. and Electrother.*, October, 1917), on a basis of 10,000 x-ray findings, compares the characteristics of the x-ray image of shrapnel balls with that of bullets and other foreign bodies. He states that shrapnel balls, which are most usually of lead, though sometimes of iron, may be found entire without any alteration of shape, and every stage of deformity may be met with until an appearance is obtained as if the ball had exploded into fine particles. Only two bones, in the author's experience, have proved impenetrable to shrapnel balls, namely, the femur in its shaft, and the vault of the skull; he has no record of a case in which a shrapnel ball entered the brain. The x-ray characteristics of a shrapnel ball when broken up are rounded or slightly ragged edges, scarcely if at all serrated; one piece may show part of the round outline of the ball, and minute fragments like dust are noticeable along its track. In the broken-up bullet the larger pieces are very ragged; one piece may show something of the form of the bullet, and there are minute dust-like fragments. In multiple iron foreign bodies the edges are serrated like broken cast-iron; the fragments are not so numerous as in the broken-up ball or bullet, and when numerous fragments are present they are more widely separated, and there are many separate wounds of entry; dust-like particles are absent. The contrast between damage done by a bullet and that done by a shrapnel ball is very marked in cases where a direct hit is made on the femur or on the skull. A bullet hitting the femur splinters the bone as it does a glass bottle; at the same time the bullet breaks into pieces, and its fragments and those of the femur are scattered through the limb. In the case of the shrapnel ball, when the femur had received a direct hit, the ball was broken into two or more pieces, and had just roughened the bone surface.

64. The Pathological Gall Bladder.

GEORGE and LEONARD (*Amer. Journ. of Roentgenol.*, July, 1917) state that only when some pathological change has taken place in the walls of the gall bladder or its contents can its shadow be demonstrated on the x-ray plate. When the shadow of a gall bladder is "visualized" it must be pathological, by which they mean that either the walls of the gall bladder are thickened or that the bile content is of greater density than normal, or greater in quantity, or that it contains stones or calcium in some form. The authors further maintain that the operating surgeon cannot determine by simple palpation and inspection whether or not the gall bladder is normal, and that even if the gall bladder be opened, simple inspection of its interior is not sufficient to determine the presence or absence of disease. Only by removal of the gall bladder and microscopic examination can the absence of disease be made certain. Some workers have claimed that normal gall bladders are visible on the x-ray plate. To this it is replied that just as some "normal" individuals may show gall stones, so a few healthy persons may have technically pathological gall bladders without clinical symptoms.

GYNAECOLOGY.

65. Cancer of the Cervix after Subtotal Hysterectomy.

RALPH WORRALL (*Medical Journal of Australia*, June 23rd, 1917) reports a case of cancer of the cervix uteri in a patient in the Sydney Hospital upon whom subtotal hysterectomy for fibroids had been performed elsewhere three years previously. The growth was a papillary form of squamous-celled epithelioma. Wertheim's radical operation was performed on March 1st and was followed by favourable convalescence. The author suggests that subtotal hysterectomy for myoma should be abandoned in favour of total hysterectomy by the abdominal method, which he now performs—when such an operation is indicated—in all cases associated with diseased or injured cervix. The time has come, he thinks, when the type of operation for such cases should be reconsidered by gynaecologists.

¹ Vide annotation, BRITISH MEDICAL JOURNAL, 1917, ii, 432.

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SUPPLEMENT

CONTAINING

PROCEEDINGS OF COUNCIL

REPORTS OF STANDING COMMITTEES

MEETINGS OF BRANCHES AND DIVISIONS

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SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL.

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British Medical Association.

CURRENT NOTES.

Emergency Committee.

At its last quarterly meeting the Council of the Association appointed an Emergency Committee consisting of the officers of the Association, the chairmen of the Medico-Political, Public Health, Hospitals, and Insurance Acts Committees, with the addition, at the Chairman of Council's discretion, of the chairman of any other committee concerned. The duty of this committee will be to take such immediate action as may be necessary with regard to matters which are the subject of recommendation by a Standing Committee or which come within the scope of more than one Standing Committee.

Payment of Medical Officers to V.A.D. Hospitals.

With reference to the payment of medical men who render services at Voluntary Aid Hospitals, it may now be stated that—

1. Every man so employed may be paid.
2. The discretion of the D.D.M.S. of each command is twofold: (a) He may decide that the work could be carried on efficiently without the full staff employed at a particular hospital. Thus, if three medical men render services which could be done by one, it is within the competence of the D.D.M.S. to pay only one. (b) The amount of pay given is decided by the D.D.M.S. It appears to vary in different commands from 10s. a day to 2d. or 3d. a day for each occupied bed.
3. Whatever sum is given is *pay*, and not reimbursement of out-of-pocket expenses. In certain commands an attempt has been made by the D.D.M.S. to adopt the latter view, and to suggest that the sum allocated is for the purpose of covering cost of petrol, etc. This is not so.
4. It is left to the county directors to inform medical men of the possibility of payment.

Thus it will be seen that every medical man whose services are used in a Voluntary Aid hospital is entitled to be paid, provided those services are necessary to the carrying on of the hospital. The unfortunate mystery in which the original decision to grant pay, if desired, was shrouded has led to a very anomalous state of affairs. Hence it would be only fair that payment should be made retrospective where desired. But great difficulty would arise from the financial side of the War Office, and it may be doubted whether it is possible now to calculate amounts due on a retrospective basis. We understand that in some areas medical men are disinclined to accept payment for their services to V.A.D. hospitals. Consequently, we must remind our readers that Deputy Directors of Medical Services have the whip hand wherever they are able to get men who do not desire payment to take over the work at such hospitals. Whether the position in which the whole question now stands is acceptable to the majority of the profession we do not know. But if it happens to be a fact that a majority of medical men are disinclined to accept payment, this would make it somewhat difficult for any professional body to press for a proper arrangement. It will be of great interest to see what view is adopted by the Representative Meeting on July 26th.

Civil and Military Needs.

It will be remembered that when the War Office in the third week of last April decided to call up all medical men of military age, the procedure laid down by the military authorities was that a practitioner ready to accept a commission in the R.A.M.C., and proceed at once on active service, should sign a form of contract and await instructions, holding himself in readiness to join for service at forty-eight hours' notice. But owing to the strong representations made by the central professional bodies, Lord Derby agreed that the procedure hitherto prevailing with regard to the selection of doctors should be continued, and that no commission would be given to any doctor except on the recommendation of one of the professional bodies. In the meanwhile, however, a number of medical men under the age of 41 had been called up and accepted by the Army Medical Department, some being sent direct to the new R.A.M.C. dépôt at Blackpool. Needless to say, it took some time for the Central Medical War Committee to recover from the dislocation of business caused by the action of the War Office and its subsequent reversal.

We have received a number of letters from readers with regard to the effect upon the civil population and medical profession of the repeated and insistent calls for more medical men for the army, of which Lord Derby's letter to the profession on April 21st was perhaps the most urgent and emphatic. Dr. Vaughan Pendred (East Sheen), writing on this subject, expresses in forcible terms a point of view which we know to be widely held. After pointing out that the civil hospital staffs are depleted, and the ranks of private practitioners dangerously thinned in many places, he challenges the military authorities to defend the use to which they have put the greater number of practitioners taken from civilian work. He maintains that in Malta, Mesopotamia, Egypt, and India there are hundreds of medical men kept in reserve for emergencies which never arise, who are doing next to nothing, and often nothing at all. "We are as patriotic a profession as exists, but these useless demands for very expensive services—services that are not required—is irritating the profession beyond endurance." As an instance he quotes the case of a member of a busy partnership—already reduced from three to two—who was sent to Blackpool at the end of April, "and is still there doing nothing." Dr. Pendred, in conclusion, claims that if the scheme for summoning medical men at forty-eight hours' notice, as soon as their services were really needed, and not before, had been put into action, the difficulty would have been solved, and the present resentment so keenly felt would have abated.

SPECIAL NOTICE TO MEMBERS.

Every member is requested to preserve this SUPPLEMENT, which contains matters specially referred to Divisions, until the subjects have been discussed by the Division to which he belongs.

By Order,

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MATTERS REFERRED TO DIVISIONS.

British Medical Association.

SUPPLEMENTARY REPORT OF
COUNCIL, 1916-17.

(A) Preliminary.

OBITUARY.

159. Since the publication of the Annual Report the Council has received with much regret intimation of the deaths of Dr. J. Mitford Atkinson, a former representative of the Hong Kong and Malaya Branches on the Council; Inspector-General Robert Bentham, at one time representative of the Royal Naval Medical Service; Lt.-Col. Davie Harris, a former representative of the Royal Army Medical Corps; and Dr. Major Greenwood, who for many years has been a most active and valued member of the Association, a member of the Council, a Representative, and a member of the Insurance Acts and Public Health Committees.

HONOURS CONFERRED ON MEMBERS OF THE COUNCIL.

160. The Council has heard with great pleasure of the conferring of the C.B. on Col. James Galloway, representing the Metropolitan Counties Branch on the Council, and the C.M.G. on Lt.-Col. W. T. Hayward, representing the Australasian Branches.

(C) Central Medical War Committee.

NEW MEMBERS.

(Continuation of paragraph 21, p. 86, of Annual Report of Council, Supplement to *B.M.J.* of May 5th, 1917).

161. In its last Report the Committee reported the resignation of Major Russell Coombe. The vacancy has been filled by the appointment of Lt.-Col. J. Michell Clarke of Bristol. The Committee has further increased its membership by the addition of the following five gentlemen:—

Drs. H. J. Campbell (Bradford), H. J. Cardale (Cubitt Town), T. W. H. Garstang (late of Altrincham), Arnold Lyndon (Hindhead), and H. J. Starling (Norwich).

These additions were made because the large number of appeals pending and the necessity of dealing with them without delay rendered it very desirable that a larger number of members should be available for appeal purposes. As appeals are being heard nearly every week, and sometimes two days in the week, it is not always easy to keep together the quorum necessary for each of the two sections sitting. It is now possible to divide the Committee into three sections for appeal purposes. Through an alteration of the Order in Council these changes apply not only to the Central Medical War Committee but also to the Central Professional Committee for England and Wales under the Military Service Act.

Opportunity was taken, in adding to the Committee, to secure representatives of certain important areas, which up to then had not been represented on the Committee. These additions will, it is believed, not only make the Committee capable of dealing with its work more expeditiously, but will bring into the common stock much local and personal knowledge of the profession which will be invaluable.

SUPPLY OF MEDICAL MEN FOR THE ARMY.

(Continuation of paragraph 24, p. 81, of Annual Report).

162. After the reply from Lord Derby of April 25th, which was quoted in the last report of the Committee, the Committee informed him that it was unable to guarantee to supply his demands in the time stated, though it would do its utmost; and that the recent action of the War Office had disorganised the machinery of the Committee very considerably, thus making the task even more difficult. Lord Derby's attention was called to the urgent need of economies in the use of doctors (1) in all kinds of civil employment, and (2) in the Army Medical Department, and the Committee stated its opinion that many such economies might be expected from thorough co-operation between the military authorities and the Central and Local Committees. To this Lord Derby replied on April 28th agreeing with the Committee as regards the measures it thought the Government should adopt, and promising to fall in as far as he

NOTE.—The Sections numbered (A), (C), etc., of the Supplementary Report are continuations, respectively, of the similarly lettered sections of the Annual Report, published in the SUPPLEMENT of May 5th, 1917. The paragraphs of the Supplementary Report are numbered consecutively to those of the Annual Report.

possibly could with any suggestions the Committee might make. On June 2nd the Committee informed Lord Derby of the methods by which it was proceeding to estimate and call up the maximum number of medical men who could be spared for the Army with due regard for minimum civil requirements, and stated that it was doubtful whether under existing powers and conditions the number of men at present demanded by him could be provided at any time. The Committee again pressed on his attention the measures which it had previously indicated as being necessary if more men were safely to be released, namely (1) legislative compulsion for the civil employment of medical practitioners, (2) economies in the use of doctors in the Army, and (3) co-operation between the military authorities and representatives of the civil medical profession. The Committee also drew attention to the announcement that large numbers of American doctors were shortly to be available at the front, and suggested that these should be able to relieve the pressure on the profession in this country. To this the only reply that has so far been received from Lord Derby is a letter of June 12th, recognising the extreme difficulty of freeing the number of doctors required, and also that it may prove impossible to release that number, and enquiring as to the definite date after which, with due regard to the needs of the civil population, the Committee can supply no more doctors. The Director-General A.M.S. has stated that it would be unsafe and unwise to permit the advent of assistance from the United States to modify in any way the demands that have to be made on the British profession.

In order to ascertain the maximum number of men who can be released, a Local Arrangements Sub-Committee under the Chairmanship of Dr. T. W. Shore is closely scrutinising the names of all men of military age in each area in England and Wales, with the help of all the information the Committee has in its possession, and often with the personal assistance of representatives of the Local Committees who are asked to attend for this purpose. The Committee then decides, on the report of this Sub-Committee, which of the men it is obvious cannot be spared, which are doubtful, and which seem *prima facie* spareable, and the men in the two latter classes are then given their right of appeal. This is very laborious work, but when it is completed, as it is hoped it will be within the next few weeks, it will be possible to say that with few exceptions the military authorities have in their hands all the eligible men of military service age who under existing powers and conditions can safely be allowed to leave civil practice. It may interest the profession to know that up to June 21st, the Committee has dealt with 512 appeals.

À LA SUITE TERRITORIAL OFFICERS.

163. Questions have been raised from time to time by Local Medical War Committees as to the position of Territorial Medical Officers who are *à la suite* of Territorial General Hospitals, and have accepted the imperial service obligation to serve abroad when called upon. When these officers were appointed it was contemplated that they would remain available for the civil needs, hospital and private, in their area. But by accepting the imperial service obligation they have placed themselves at the disposal of the military authorities, and may be called upon at any time to take service abroad. This position has caused considerable alarm in some areas in which, if the military authorities exercised their right, the localities would find themselves almost entirely deprived of skilled specialist professional assistance, and in some cases of necessary general practitioners. On May 18th the Committee received a deputation from the British Hospitals Association which asked for the assistance of the Committee in securing so far as possible, that the War Office would not call on the officers in question for foreign service without previous consultation with representatives on the civil side. A letter has therefore been addressed to the Director-General, A.M.S., asking that his Department should inform the Committee whenever any action in the way of calling upon those officers for foreign service is contemplated, and that he should suggest means whereby Local Committees can be assured that a sufficient supply of specialist assistance will be retained in their areas.

DEMOBILISATION.

164. The Committee has commenced consideration of the important and intricate question of demobilisation as it will affect the medical profession, and has appointed a small Sub-Committee to make a preliminary survey of the whole position.

PAYMENT OF MEDICAL OFFICERS OF V.A.D. HOSPITALS.

165. At the last Representative Meeting a motion was moved on the consideration of the report of the Committee, in favour of the principle of payment for the services of practitioners working at V.A.D. Hospitals, but it was evident that there was considerable diversity of opinion on the subject, and the motion was allowed to drop. Since that time the subject

has again been revived, partly because the duration of the War has compelled some of the practitioners concerned to reconsider their position as unpaid officers, but mainly owing to the fact that though authority had been given by the War Office to Commanding Officers to make payment to such practitioners as asked for it, no steps had been taken to secure that practitioners concerned should be aware of this. The Committee has endeavoured to obtain from the War Office the instructions on the subject which were issued to Commanding Officers so far back as June 1915, but without success. In the opinion of the Committee the action of the authorities in this matter has been far from happy, as the air of mystery with which these instructions were surrounded has given rise to misunderstanding and irritation which might and should have been avoided. The Committee has now been informed by the War Office that medical officers in V.A.D. Hospitals who wish for such remuneration should make application on Form P. 62 through the Commandant of the hospital to the General Officer Commanding in Chief of the command in which the hospital is situated. It is hoped that the arrangements are sufficiently elastic to enable the payments to be made with due regard to the time and trouble involved in rendering the services, and it is considered that under all circumstances the payment to such as desire it should be made retrospective.

RENEWAL OF THE MANDATE OF L.M.W.C.S.

166. Most of the Local Medical War Committees now in office were appointed so far back as August and September of 1915. Some of them have since been modified in composition by meetings of the local profession; many have from time to time called meetings of the whole local profession and rendered an account of their work. In view of the length of time that has elapsed since the election of most Local Committees, and of the increased responsibilities that have been imposed on them during the past year, and the possibility of still further additions if the war continues much longer, the Committee feels that it would be a politic and useful thing for all Local Medical War Committees (excepting any that have recently been elected or re-elected) to call a meeting of the whole local profession at which they would render an account of their stewardship and give an opportunity to the meeting to renew the mandate under which the Committee represents its constituents. To this meeting every local practitioner should be summoned, whether a Member of the Association or not. The Central Committee has conveyed this instruction to the Secretary of every Local Committee in England and Wales, accompanying it with an expression of its thanks for the invaluable assistance which those bodies have rendered not only to the Central Committee but to the medical profession and the State.

Proposed Loan Fund for Assistance of Practitioners Suffering Loss by taking Naval or Military Service.

167. At its October Meeting the Council considered a proposal to form a Loan Fund, and arrived at the following conclusions:—

1. That a case has been made out for the formation of a Fund to assist by loans those medical practitioners who suffer financial loss owing to taking service with the Navy and Army.
2. That an *ad hoc* Committee should be appointed to take all necessary steps to create such a Fund.
3. That the Fund should be initiated and administered so that the liability of each contributor is limited.

The Special Committee was elected and invitations sent to other representative medical bodies, asking them to take part in determining the character of, and initiating the proposed Fund.

Constitution of Committee.

Royal College of Physicians of London; Royal College of Surgeons of England; Royal College of Physicians, Edinburgh; Royal College of Surgeons, Edinburgh; Epsom College; Royal Medical Benevolent Fund; Scottish Committee of the B.M.A.; Irish Committee of the B.M.A.

The British Medical Association: The President, Chairman of Representative Meetings, Chairman of Council, Treasurer, Chairman of Central Medical War Committee, Lt.-Col. R. A. Bolam, Dr. William Collier, Mr. N. Bishop Harman, Dr. C. O. Hawthorne, Dr. R. McKenzie Johnston.

The Corporations appointed respectively:—

Royal College of Physicians of London (Dr. Sidney Phillips, *pro tem.*); Royal College of Surgeons of England (Mr. H. J. Waring); Royal College of Physicians of Edinburgh (unable to appoint a representative as they had not sufficient information with regard to the proposals to warrant them in committing the College in any way); Royal College of Surgeons of Edinburgh (Dr. R. McKenzie

Johnston); Epsom College (Sir Henry Morris, Bart.); Royal Medical Benevolent Fund (Dr. Samuel West); Scottish Committee of the B.M.A. (Dr. John Adams); Irish Committee of the B.M.A. (Dr. T. Hennessy).

The Committee generally reviewed the question and appointed a Sub-Committee to investigate the best methods of initiating and administering such a Fund.

Report of Sub-Committee.

The Sub-Committee, under the chairmanship of Mr. Bishop Harman, held three meetings and collected much valuable data.

It formulated a report which was circulated to the Council, but the Sub-Committee decided that it would be inadvisable to proceed with the launching of the scheme since: (1) it would clash with the issue of the War Loan; (2) its success might be affected by uncertainty concerning the possible mobilisation of the medical profession. The members of the full Committee were consulted and endorsed the opinion of the Sub-Committee. The Council accordingly resolved that no further action should be taken at present.

Medical Recruiting Boards.

168. The Council had before it on June 27th the report of the debate in the House of Commons on June 21st, when severe strictures were passed on the medical examination of recruits. The Council has appointed a small Committee to watch the proceedings of the Select Committee which has been appointed to examine into the working of the Review of Exceptions Act, and the method, conduct and general administration of medical examinations under the Military Service Acts. The Committee appointed by the Council has been given power to take such action as may be necessary.

(D) Organisation.

GROUPING OF DIVISIONS FOR ELECTION OF REPRESENTATIVE BODY, 1917-18.

(Continuation of para. 38, p. 84, of Annual Report.)

169. The Council has settled the list of Constituencies in the R.B., 1917-18, having grouped the Divisions in the same way as for 1916-17 (Supplement, July 3rd, 1915, p. 9), making necessary formal adjustments in respect of changes in Division areas effected since the 1916-17 grouping was decided.

GROUPING OF HOME CONSTITUENCIES FOR ELECTION OF 12 MEMBERS OF COUNCIL.

(a) Council, 1917-18.

170. Acting on the authority conferred by Min. 176 of the A.R.M., 1916, the Council has grouped the Home Constituencies for election of 12 members of Council, 1917-18, in the same way as for 1916-17.

(b) Council, 1918-19.

171. The Council recommends:

Recommendation.—That, as in the case of the 1917-18 grouping, the grouping of Constituencies for election of 12 members of Council, 1918-19, be left to the Council.

REPORTS OF DIVISIONS AND BRANCHES FOR 1916.

(Continuation of para. 40, p. 84, of Annual Report.)

172. Notwithstanding the War conditions, reports have, up to June 20th, been received by the Council as follows:—

	Total	No. which have reported.
Home Divisions ...	207	141
Home Branches ...	41	37
Oversea Divisions ...	16	1
Oversea Branches ...	43	13

GRANTS TO BRANCHES.

(Continuation of paras. 42-4, p. 84, of Annual Report.)

173. In all, up to June 20th, the Council has allotted grants, varying from 1s. to 4s., to 31 of the 41 Home Branches. Of the remainder, 6 Branches required no grant, having in hand, from 1916, balances sufficient for financing their current work. The question of grants to the remaining Branches is held over by the Council pending receipt of reports by these Branches for 1916.

MEMBERSHIP.

(Continuation of para. 41, p. 84, of Annual Report.)

174. During the period January 1st to May 31st, 1917, 397 new members joined, and the Association lost by arrears (201), resignation (233), death (101), and expulsion (1), 536, a net decrease of 139, as compared with 402 in the same period of 1916. On May 31st, 1917, the total membership of the Association was 20,296, as compared with 20,710 at the same

date last year. A gratifying number of applications for membership has been received since May 31st.

DIVISION AND BRANCH AREAS.

175. A new Division of the Yorkshire Branch, the Dewsbury Division, has been formed. Wallingford has been transferred from the Oxford to the Reading Division of the Oxford and Reading Branch.

CONFERENCE OF SECRETARIES.

176. In view of the War conditions the Council has decided, as in 1915 and 1916, to hold no Conference of Secretaries in 1917.

EXECUTIVE PROCEDURE OF ASSOCIATION.

(Continuation of para. 50, p. 85, of Annual Report.)

177. The Council has considered the fact that after the War the position of every practitioner, in whatsoever class of practice he or she may be engaged, may be gravely affected by legislation or social schemes, and the question of what, if any, change should be made in the executive procedure of the Association so that it may be possible to take the promptest and most effective action in cases of medico-political urgency.

In this connection the Council has also considered the views of a deputation from the Oldham Division as to the need for an 'Intelligence' Department of the Association. The deputation expressed the view that the Association should make more use of the lay press in educating the public as to the views of the profession on matters affecting public health, e.g., the Ministry of Health suggested by the Government, and the whole-time State Medical Service advocated by the medical correspondent of the *Times*, to which there had not been a counterblast in any other paper. The deputation felt that the Association should endeavour to obtain by means of an agent of its own or a subsidised representative of a newspaper in the lobby of the House of Commons, the latest information as to proposals for legislation, prior to such being embodied in Bills. The Chairmen's Committee pointed out to the deputation the existing procedure of the Association in obtaining up-to-date political information affecting the profession, and the parliamentary work generally of the Association, a work naturally somewhat curtailed owing to the depletion of staff due to the War, and to the extra work thrown on the Medical Department by the activities of the C.M.W.C. The Committee assured the deputation that the question upon which they urged action was one to which the Council attached great importance.

The deputation further urged that, while it was possibly not politic to publish all information broadcast in the *Journal*, the Council should provide for early confidential information being issued periodically to Division and Branch Secretaries, in order that they might watch and report to the Head Office as to local occurrences of medico-political interest.

To provide more effectively for the class of cases where the necessity of urgent action arises as to matters which must be the subject of recommendation by a Standing Committee to the Council and/or Representative Body, or cases which come within the scope of more than one Standing Committee, the Council has appointed an Emergency Committee consisting of the Officers of the Association, the Chairmen of the Medico-Political, Public Health, Hospitals and Insurance Acts Committees, with the addition, at the Chairman of Council's discretion, of the Chairman of any other Committee concerned. The duty of this Committee will be to take such action as they may think desirable in respect of any such emergency.

UNDER CONSIDERATION.

178. Question of Association subscription in Ireland.

(F) Science.

INCREASED LENDING LIBRARY FACILITIES.

(Continuation of para. 46, p. 85, of Annual Report.)

179. The Council has made arrangements whereby books relating to all branches of medical literature and general science are now obtainable on loan by members of the Association, free of charge (other than postage), from the Lending Department of the Library, 429, Strand. The new facilities include, besides works on medicine, surgery, anatomy, physiology, bacteriology, dentistry, hygiene, obstetrics, and the other branches of medical and surgical science, the subjects of astronomy, biology, botany, chemistry, electricity, engineering, geology, microscopy, mining, physics, philosophy, sociology, technology, voyages and travels, zoology, etc. All such books issued will be latest editions, new books and new editions becoming available immediately upon publication.

The new facilities are additional to those which were already available for the loan to members, of medical journals and periodicals, scientific reports of hospitals and laboratories,

transactions of societies and congresses, and reports issued by States and municipalities, including those of commissions and committees appointed by States, municipalities, and legislative bodies.

The rules in respect of the new facilities, of which a considerable number of members are already availing themselves, are similar to the previous rules. Copies of the rules and all other information may be obtained on application to the Librarian.

ACCESS TO LIBRARY FOR MEDICAL OFFICERS OF DOMINIONS OR ALLIED FORCES.

180. The Council has intimated to the authorities concerned that the Association will be glad to welcome to the Library any Medical Officers attached to the Forces of the Dominions or of the United States; also to furnish through the officials of the Association any information or assistance that can be given.

MIDDLEMORE PRIZE.

(Continuation of para. 55, p. 85, of Annual Report.)

181. The Council has awarded the Middlemore prize for 1917 to Capt. William Clark Souter, R.A.M.C. (T.F.) for his essay on "Disorders of the eye and of its functions induced by War injuries not directly affecting the eye."

BRITISH PRISONERS OF WAR BOOK SCHEME.

182. The Council has had much pleasure in presenting to the British Prisoners of War Book Scheme (Educational) duplicate copies from the Library of certain books required by that Scheme.

(G) Medical Ethics.

ACTION AGAINST THE ASSOCIATION AND OTHERS.

(Continuation of para. 62, p. 86, of Annual Report.)

183. The trial of the action referred to in para. 62 of the Annual Report of the Council has been further postponed.

(H) Medico-Political.

MATERNITY AND CHILD WELFARE.

(Continuation of para. 77, p. 90, of Annual Report.)

184. The approval of the Association was sought by a lay organisation to an Infant Consultation Centre for educated mothers to be established in London. The Council, however, intimated that the Centre could not meet with the Association's approval, as it purported to provide consultations and advice for mothers and children belonging to classes of the community (i.e., mothers whose husbands were in professions, business, trade, or were officers in either Service) which were quite able to consult their family doctor. At the same time appreciation was expressed of the value of the work proposed to be carried out by the Centre in arranging lectures on infant management.

DUNDEE MATERNITY AND CHILD WELFARE SCHEME.

185. As the result of local and central action the salary for the post of a Woman Practitioner to take charge of the Maternity and Child Welfare Centre in Dundee was raised from £300 to £350, the latter being the minimum recognised by the Association for such work.

MEDICAL CERTIFICATES FOR MUNITION WORKERS.

186. As a result of the recommendations to the Minister of Munitions of the Health of Munition Workers Committee, a form of certificate was issued by the Ministry to national factories and controlled establishments for use in connection with absence of workmen on account of illness. The form was issued by various establishments to the practitioners of the area, with a letter in practically all cases to the effect that the Ministry desired that all future certificates as to absence of workers through illness should be on the prescribed form. A considerable number of practitioners communicated with the Association, and were advised that any fee for the certificate appeared to be payable by the munition worker, and that its amount would vary in the different areas according to the local scale of medical charges. Subsequently the Deputy Medical Secretary interviewed two medical officers of the Welfare and Health Section of the Ministry on the subject, with the result that a letter was received from that Section regretting that the form of certificate was presented to some members of the profession for use before steps had been taken to approach the Association, and asking whether the Association was of opinion that medical practitioners would accept a fee of 1s. for filling up the certificate.

In reply the Council has informed the Welfare and Health Section of the Ministry that in its opinion the fee of 1s. for a medical certificate in the form now suggested by the Ministry of Munitions would not be considered adequate

by the members of the profession, but that the whole matter would be raised at the forthcoming Annual Representative Meeting.

MEDICAL EXAMINATION OF WOMEN SEEKING EMPLOYMENT IN MUNITION FACTORIES.

(Continuation of para. 81, p. 91, of Annual Report.)

187. The Council has urged upon the Ministry of Munitions that the fee for the medical examinations of women seeking employment in munition areas should be 5s. per case instead of the present fee of half a crown, which it considers inadequate payment having regard to the importance of the work, and not likely to attract the best type of medical practitioner. The Ministry, in reply, states that it has had no difficulty in getting the desired medical services at the fee of 2s. 6d.

The Council has reminded the Ministry of Munitions of the importance attached by the latter to medical certificates as to munition workers (Annual Report of Council, page 91, par. 80) and the need urged by the Ministry for special care being taken by doctors as regards the giving of medical certificates.

MEDICAL CERTIFICATES IN CONNECTION WITH POSSIBLE PENSIONS OR GRATUITIES TO DEPENDANTS OF SOLDIERS AND SAILORS KILLED ON ACTIVE SERVICE.

188. The A.R.M. 1916 resolved:—

Minute 55.—That in connection with the giving of certificates by medical practitioners as to the degree of capacity to earn their own livelihood of dependants of deceased soldiers or sailors for the purpose of establishing their claim to pension or gratuity, it is desirable:—

(i.) That there should be a uniform standard of estimating disability to earn;

(ii.) That the work of certification should be done by a board of local practitioners, and should be paid for.

Minute 56.—That it be urged upon the Government that the above proposal would be conducive to public economy and efficiency.

These resolutions were forwarded last autumn to the Statutory War Pensions Committee. No satisfactory result having been noted, the Council has drawn the attention of the Pensions Minister to *Minute 55*, pointing out that individual practitioners are still being requested by dependants of deceased soldiers to fill in the certificates in question, and find it very difficult to do so satisfactorily in the absence of a common standard.

MEDICAL CERTIFICATES ACCOMPANYING APPLICATIONS FOR GRANTS UNDER NAVAL AND MILITARY WAR PENSIONS ACTS.

189. Representations have been made to the Pensions Minister that provision should be made by the State for payment for the medical certificates which some local War Pensions Committees are demanding should accompany applications for grants to meet cases of temporary distress or emergency on the part of the wives, children, or other dependants of soldiers or sailors. From evidence received it appears very desirable that practitioners should make a stand against the assumption which seems to be so common, namely, that these certificates are of such small consequence that practitioners will without demur grant them gratuitously. If it were merely a matter of charity to the dependants of men who have fought for the country, the members of the profession would, of course, be as willing to give their services as they always are in suitable cases. But no question of charity arises. The dependants of soldiers and sailors are under the care of the State, and the State has no right to demand the services of any class of the community as a charity.

QUESTION OF RECOGNITION BY THE ASSOCIATION OF MEDICAL AID INSTITUTES IN SOUTH WALES.

190. As a result of conferences between representatives of the Association and of the South Wales and Monmouthshire Alliance of Friendly Societies in July, 1915, as to the possibility of an understanding being arrived at between the two bodies in connection with the various classes of medical aid organisations throughout the Kingdom, the A.R.M., 1915, resolved:—

Minute 121.—That it is inadvisable to take objection to the acceptance by members of the Association of appointments at those existing institutions in Wales and Monmouthshire recognised under Section 15 (4) of the Insurance Act which will conform to the following conditions:—

(a) Salaries or other forms of payment to be satisfactory to the Association;

(b) Free choice of doctor by patient and of patient by doctor to be allowed;

(c) The Institution doctor to be placed as nearly as

possible in the same conditions as the panel doctor as regards complaints by patients;

(d) The rules of the Institution, so far as they affect the doctor, to be approved by the Association, before any member is allowed to accept or retain appointment;

(e) Some guarantee to be obtained that the Institution is not using the Insurance Funds to finance the medical attendance on the dependants, thereby lowering the rate which the outside profession would be able to secure for the same work;

Minute 122.—Resolved: That the strongest opposition be offered to any extension of similar Institutions or Schemes, and especially to those Schemes formed in South Wales under Section 15 (3) of the Insurance Act.

The Association has now obtained from the Alliance, or direct, information as to the following Workmen's Medical Aid Institutions in South Wales:—Abertyswg, Blaenavon, Rhymney, Tredegar and Ebbw Vale.

In dealing with the matter the Council has also had regard to (i.) the following resolution of the A.R.M., 1913:—

Minute 141.—That the Representative Body adopt the following principles as essential to the formation of any schemes for the provision of medical attendance and treatment of uninsured persons:—

(1) That, in general, in considering the necessity for obtaining the approval of the Council for schemes for the treatment of uninsured persons upon contract terms, the following principles and conditions must be adhered to:—

(a) Free choice of doctor by patient, and of patient by doctor;

(b) Remuneration to be not less than that which is deemed by the Council to be equivalent to that paid in respect of insured persons—that is, 9s. per annum, including medicines;

(c) Persons with a total income from all sources of £104 per annum or upwards, or the dependants of any such person, not to be treated under contract terms at all.

(2) That the Representative Body realises that the conditions in certain areas will not allow of the above terms being obtained, and that in these circumstances the approval of the Council may be given provisionally to a scheme involving a less payment when the local profession can show that the economic conditions in the area demand it.

(3) That one of the conditions necessary for the approval of schemes containing lower rates of payment shall be the inclusion amongst the rules, in a prominent position, of a statement that approval by the Association has been given to the rates only because of special economic conditions;

and (ii.) the following rules adopted by the Council in January, 1915, in connection with the above *Minute 141* of the A.R.M. of 1913:—

(a) That no scheme or scale of charges be considered which is not submitted through a Division or Branch of the Association.

(b) That in all cases where schemes and terms for the provision of medical attendance and treatment of uninsured persons are approved by the (Medico-Political) Committee, the local Division must undertake to forward to the Central Office a copy of the final print of the rules (if any) or agreement, so as to enable the Committee to satisfy itself that its wishes in connection with such conditions have been embodied in the rules.

(c) That where any of the terms are lower than those approved by the Representative Body, there be included amongst the rules or in the agreement, in a prominent position, a statement that the terms mentioned had only been provisionally approved by the Association in view of the economic conditions of the area concerned to which the local profession had drawn attention, and

(d) That the Division concerned be asked to forward not later than eighteen months from its approval by the Association, a report upon the whole scheme.

The Council has come to the conclusion that none of the medical aid institutions which have submitted their rules, etc., conform to the terms laid down in *Minute 121* of the A.R.M., 1915.

PREVENTION OF TREATMENT OF VENEREAL DISEASES BY UNQUALIFIED PRACTITIONERS: VENEREAL DISEASE BILL OF THE GOVERNMENT.

(Continuation of para. 71, p. 89, of Annual Report.)

191. In connection with the Venereal Disease Bill of the Government, one clause of which was intended to prohibit the

sale of medicines, drugs and appliances for the treatment of venereal disease, except on prescription of a registered medical practitioner, the Council became aware that there was a possibility of objection being raised to the clause in the House of Commons by pharmacists, unless a quid pro quo was secured in the form of a provision prohibiting medical practitioners from dispensing. A conference was accordingly held between representatives of the Association and of the Pharmaceutical Society, with a view to an agreement whereby it would be possible to avoid the threatened opposition in Parliament. The representatives of the Society stated that while pharmacists as a body were in sympathy with the proposed legislation they felt that the clause in question would deprive pharmacists of a certain amount of business, e.g., the sale of various articles in demand by private customers, whereas the proposed legislation would not interfere with dispensing by medical practitioners, who, in fact, would probably dispense the identical articles which the pharmacists were to be prevented from selling. The representatives of the Society therefore urged that the two bodies should agree that no chemist should prescribe, and no practitioner dispense. On behalf of the Association it was pointed out that the position under the Bill would not be quite as stated, inasmuch as the treatment of venereal diseases in the case of patients of the industrial classes, hitherto given to a considerable extent by general practitioners, would largely go to the new State Clinics, and the early treatment of these diseases thus brought about meant, to the medical profession, a very considerable loss of income at present obtained from the treatment of the sequelae of these diseases; further, that the business which the pharmacists alleged they would lose under the Bill would in any event be lost to them in the near future, in that the treatment of venereal disease by ordinary internal medication was being superseded. It became apparent that an understanding could not be arrived at between pharmacists and the Association as to the clause.

Amendments having been tabled in the Commons at the instance of representatives of the pharmacists, the effect of which would have been to prevent medical practitioners from dispensing remedies for treatment of venereal disease, the views of the Association were placed before the members of the Standing Committee dealing with the Bill. The amendments were lost.

UNQUALIFIED PRACTITIONERS.

192. Arising out of information supplied by the Division of the Association primarily concerned, joint action taken by the Association and the Medical Defence Union against a person who kept a herbalist's shop, resulted in his being fined £25 and 10 guineas costs for using the titles "M.B." and "medical practitioner."

RECOGNITION OF BONE SETTERS.

193. A letter was sent to the Government in connection with the recent agitation in a section of the lay press and of Members of Parliament for utilisation of the services of a certain "manipulative surgeon" in the treatment of the wounded. The letter pointed out the logical consequences of such recognition by the State. The Council is glad to note that the Government has up to the present taken up a firm attitude on this question.

CENTRAL EMERGENCY FUND.

194. The following is an audited statement of the receipts and payments of the Central Emergency Fund for the year ending 31st December, 1916:—

Jan. 1st, 1916.		Dec. 31st, 1916.	
To Balance—	£ s. d.	By Grants	£ s. d.
„ Cash at Bank ...	18 9 4	„ Cash with Bankers ...	102 8 7
„ To Deposit Account ...	325 0 0	„ Current Account ...	12 13 5
„ Loan to British Medical Association ...	600 0 0	„ Do. Deposit ...	325 0 0
To Subscriptions and Donations from 1st January to 31st December ...	60 9 6	„ British Medical Association Loan Account ...	600 0 0
„ Interest ...	36 3 2		
	£1,040 2 0		£1,040 2 0

(I) National Health Insurance.

CONFERENCE OF REPRESENTATIVES OF LOCAL MEDICAL AND PANEL COMMITTEES.

195. Many important matters will require to be discussed with the Local Medical and Panel Committees before Insurance practitioners can be recommended to renew their agreements for 1918. In addition, it is important that the Association should receive renewed authority from the Local Medical and Panel Committees to continue to act as their representative in central negotiations. The Council therefore proposes to call, probably in October, a Conference of Representatives of the Local Medical and Panel Committees.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

(Continuation of para. 95, p. 92, and para. 1, p. 93, of Annual Report).

196. The Council arrived in April at the following provisional conclusions:—

(1) That the question of wounded disabled soldiers and sailors, whether insured or not, is one to be dealt with by the State as a special national problem outside the Insurance Acts.

(2) That in any scheme adopted for dealing with these men, it should be arranged (a) that for any discharged disabled soldier or sailor who becomes employed, and is therefore an insured person, a grant should be made to his Insurance practitioner from the Special Discharged Disabled Soldiers' and Sailors' Fund, to supplement the payment received under the Insurance Act; and (b), that for any discharged disabled soldier or sailor who remains unemployed and consequently not insured, an agreed annual payment should be made to a doctor of his own choice towards the cost of his domiciliary attendance.

(3) That it is preferable that these persons should be detained for treatment under military or naval discipline until such time as they are considered (i.) to be fit to earn their own living, or (ii.) as unlikely to benefit any further from treatment obtainable.

(4) That any financial arrangement put into operation by the State in connection with the treatment of wounded disabled soldiers and sailors, whether insured or not, should be retrospective, so as to bring within the scope thereof such soldiers and sailors as had already been discharged.

(5) That payment for medical attendance should be made for each person to the doctor attending him, on a scale agreed between the B.M.A. and the Government.

By instruction of the Council, these provisional decisions of the Council were considered by the Chairmen's, Hospitals, and Insurance Acts Committees jointly. The members of the three Committees met and discussed with Mr. George Barnes, M.P., the Pensions Minister, on May 15th, 1917, the question of medical attendance and treatment of discharged soldiers and sailors. (A report of the proceedings of the deputation was published in the *B.M.J.* Supplement of May 19th, 1917, p. 115.)

At this deputation to the Pensions Minister it was ascertained that the provision of general practitioner medical attendance and treatment had been handed over by the National Insurance (Part I. Amendment) Act to the Insurance Commissioners to carry out through the machinery of the Insurance Acts.

Subsequently, by invitation of the Commissioners, the Insurance Acts Committee resumed discussion of the subject with them on May 24th. The Committee agreed substantially to the proposals for new Regulations as to the treatment of discharged disabled soldiers and sailors who are not insured persons, but pressed again for adequate payment for the treatment of discharged disabled soldiers, both insured and non-insured. While failing to obtain any assurance that this request would be favourably considered by the Treasury, the Committee obtained an undertaking from the Commissioners that they would place its views before the Treasury. The Committee pressed that the same income limit (£160) as applied to voluntary contributors should apply also to discharged disabled men who were not insured persons, which view the Commissioners appeared to agree to, and also to the contention of the Committee that the new arrangements should not exclude practitioners who had hitherto abstained from Insurance practice from undertaking the treatment of discharged disabled soldiers and sailors.

To facilitate submission by the Commissioners to the Treasury of the views of the Insurance Acts Committee with regard to increased payment for treatment of discharged disabled soldiers and sailors, the Committee forwarded to the Commissioners the statement of the case of the medical profession for such increased payment. This was published in the *B.M.J.* Supplement of June 16th (see Appendix VIII).

It is understood that, as a result of the discussion between the Commissioners and Treasury, the latter is willing to agree to an arrangement whereby medical practitioners shall be paid on a per attendance basis for this treatment, the money being obtained from a pool made up of the 9s. at present available under the Insurance Acts, any excess of the doctors' accounts over the total of such pool being paid by the Treasury. This arrangement will apply automatically to all disabled soldiers and sailors who are discharged in the future, but as regards those who have already been discharged, as it is impossible to identify them individually, it will be optional to the doctor concerned to decide, when they present themselves for treat-

ment, whether he will retain any such persons on his capital list or treat them on the per attendance system. The proposals of the Commissioners on the subject are appended (see Appendix I¹).

FEDERATION OF LOCAL MEDICAL AND PANEL COMMITTEES.

197. The attention of the Council was drawn to the action of Local Medical and Panel Committee in circularising other Committees in its vicinity suggesting federation of those bodies. The Council has intimated that while it realises fully the desirability of communication between one Panel Committee and another, it is of opinion that such communication between individual Committees should be made direct, and not by any separate definite organisation or federation, a form of organisation which would only tend to divert the energies of the profession from the Insurance Acts Committee as the co-ordinating body.

NEW ADVISORY COMMITTEE.

(Continuation of para. 114, p. 95, of Annual Report.)

198. As a result of negotiations with Sir Edwin Cornwall, Chairman of the National Health Insurance Joint Committee, it has been arranged that the Statutory Advisory Committee under Section 58 of the 1911 Act shall consist of two Sections, viz. (a) General, (b) Medical, and that these Sections shall ordinarily meet separately to consider matters affecting primarily their respective interests. The General Section will consist of the present 30 members, together with 2 or 3 medical representatives nominated by the Medical Section from amongst their number. The Medical Section will consist of about 12 doctors, with one representative of institutions approved under Section 15 (4) of the Act, one or two chemists, and one or two members nominated by the General Section from their number. Of the 12 doctors, not less than 8, including one woman, must be actually engaged in practice under the Acts, and amongst the 8 there must be represented practice in the metropolitan area, rural areas, industrial areas, Scotland, Wales and Ireland. Of those not Insurance practitioners, it is intended that there shall be representatives of physicians, surgeons, pathologists and of the public health services, with one general practitioner not practising under the Acts.

Sir Edwin Cornwall has decided that the nominations for the Advisory Committee shall be obtained by the Insurance Acts Committee from the Local Medical Committees. Each of these has therefore been asked to nominate not more than 12 persons, who in its opinion would be most capable of representing the views of the profession on the Advisory Committee, and who would among them comprise the various types of practice mentioned. Obviously, as regards the 4 who are not Insurance practitioners, it will require the exercise of considerable judgment to combine the various types of practice, in the persons of four practitioners. When the nominations are received, the Insurance Acts Committee will select from amongst them (bearing in mind the above points, and guided by the preferences shown by the nominations) names which it will forward to Sir Edwin Cornwall, who will make the appointments.

MEDICAL PROFESSION AND FUTURE OF INSURANCE PRACTICE.

(Continuation of para. 104, p. 93, of Annual Report.)

199. A large amount of information has now been received from all over the Kingdom in response to the Memorandum and Questions issued by the Insurance Acts Committee (D. 8.9. See *B.M.J.* Supplement, January 12th, 1917). In the light of the information thus obtained, the Committee has prepared an Interim Report (D. 19) setting forth the views of the profession, and has issued it, with a series of questions in respect of the various proposals therein suggested (D. 18), to Chairmen and Secretaries of Divisions and Local Medical and Panel Committees and Presidents and Secretaries of Branches. Both documents appeared in the *B.M.J.* Supplements of June 23rd and 30th, 1917. After the replies are received to the questions, it is the intention of the Council to draft a final report, with a view to its becoming the declared policy of the Association.

METHOD OF ORGANISATION OF PROFESSION.

(Continuation of paras. 131-2, p. 97, of Annual Report.)

200. The Council has prepared and issued to Insurance practitioners the first of its Quarterly Circulars stating the work of the Association on their behalf.

PAYMENTS TO MEDICAL AID INSTITUTIONS FOR PROVISION OF MEDICAL ATTENDANCE AND TREATMENT OF INSURED MEMBERS.

201. The Council has considered the question of the favoured treatment received by medical aid institutions in some parts of

the country as regards the payments in respect of the medical attendance and treatment of their insured members. The Council cannot admit that medical aid institutions should be placed in a more favoured position, as compared with medical practitioners, in the matter of deductions from their lists of members owing to inflation, nor (though there may be a case for an Insurance Committee exercising its discretion as to the deduction owing to inflation of lists as between institutions in its area) can it admit that an Insurance Committee is given any discretion by the Regulations in the matter of inflation of lists as between institutions and medical practitioners. The Council has further expressed the opinion as regards the argument that institutions are entitled to favourable consideration in the matter of deductions for inflation because they have no share in the unallotted money shared by the medical practitioners, that it must be remembered that institutions are not under the liability, which Insurance practitioners are under, to attend unallotted insured persons, nor are the former likely to have assigned to them any unallotted insured persons to whom they might refuse membership, as in practically every area there exists a scheme under which medical practitioners have agreed to take such unassigned insured persons.

CENTRAL INSURANCE DEFENCE FUND.

(Continuation of para. 134, p. 97, of Annual Report.)

202. The Council submits a statement of the receipts and payments in 1916 of the Administration and Compensation Accounts of the Central Insurance Defence Fund, together with a statement of the available funds as at December 31st of that year (see Appendix X).

Non-Panel Committee

MEMBERSHIP OF COMMITTEE.

(Continuation of para. 135, p. 97, of Annual Report.)

203. The Council has authorised the Non-Panel Committee to co-opt not more than 5 further members.

MEDICAL ATTENDANCE AND TREATMENT OF INDUSTRIAL AND POORER CLASSES.

204. The Council has endorsed the following opinions of the Committee and submits them for the consideration of the Representative Body:—

Recommendation A.—That the medical treatment of the industrial and poorer classes should not be carried out by a whole-time salaried State Medical Service.

Recommendation B.—That the medical treatment of the industrial and poorer classes, which there is reason to believe is intended by the Government, should be carried out by a modified or improved Insurance Scheme.

Recommendation C.—That no system of State-controlled Medical Service will be acceptable to those medical practitioners who are not giving service on the present Panel System which does not provide (a) complete and efficient medical and surgical treatment to that section of the community which is unable to provide such treatment for itself, and (b) freedom to any other person involved in any system of State Medical Service to make his own individual arrangements for treatment if he so desire.

(J) Public Health and Poor Law.

UNIFORM FORM FOR NOTIFICATION OF INFECTIOUS DISEASE.

(Continuation of para. 136, p. 97, of Annual Report.)

205. Further correspondence has passed with the Local Government Board as to a uniform form for notification of infectious disease. The Council gathers that the proposed form will be issued shortly.

ASSOCIATION OF POOR LAW AUTHORITIES WITH MATERNITY AND CHILD WELFARE CENTRES.

206. There appears to be a desire on the part of some few local authorities to make use of Poor Law funds in connection with the work carried on at Maternity and Child Welfare Centres. This tendency should in the opinion of the Council be combated.

The Council recommends:

Recommendation.—That the grants for nutriment and such like provided for young children by Maternity and Child Welfare Centres should not be made from Poor Law funds.

CO-OPERATION BETWEEN ASSOCIATION, POOR LAW MEDICAL OFFICERS, AND MEDICAL OFFICERS OF HEALTH.

(Continuation of para. 137, p. 97, of Annual Report.)

207. Meetings of the newly appointed Poor Law Medical Officers and Medical Officers of Health Sub-Committees have been held, and have been found most helpful.

PERMANENT APPOINTMENTS OF MEDICAL OFFICERS OF HEALTH DURING THE WAR.

208. Representations are being made to the Local Government Board as to its apparent acquiescence in recent permanent appointments of whole-time medical officers, notwithstanding its circular letter of May, 1915, which urged local authorities not to make such permanent appointments during the War.

PUBLIC HEALTH AND POOR LAW APPOINTMENTS.

(Continuation of para. 138, p. 97, of Annual Report.)

209. Successful action has been taken in further cases of public health and Poor Law appointments.

(K) Hospitals.

FUTURE POSITION OF VOLUNTARY HOSPITALS: DISCHARGED DISABLED SOLDIERS AND SAILORS.

(Continuation of para. 140, p. 97, of Annual Report.)

210. In the report of the proceedings of the Deputation to the Minister of Pensions (Supplement May 19th, 1917, p. 115) will be seen the provision made and intended to be made by the Government for institutional treatment. In this connection the Pensions Minister, as a result of the views expressed by the Association's representatives at the Deputation, suggested that a Medical Advisory Committee should be set up, and invited the Association to appoint representatives thereon. The Council appointed Dr. H. B. Brackenbury, Mr. N. Bishop Harman and the Medical Secretary. The other members are Sir Frederick Taylor, Bart., Dr. Sidney Martin, Sir W. Watson Cheyne, Bart., and Sir J. Rickman Godlee, Bart.

The Advisory Committee has already held one meeting, at which Mr. Barnes asked its opinion on a draft instruction proposed to be issued to all Pensions Committees, stating the way in which discharged men should be enabled to secure such specialist treatment as they require. A discussion arose on the terms proposed to be paid to Voluntary Hospitals for the maintenance of such men as become in-patients. The representatives of the Association urged that the sum paid should include a proportion to be ear-marked for payment of the medical staff for the work done, in accordance with the policy of the Association, but as there was a difference of opinion on the matter the present proposal of the Ministry is to leave the matter to be settled by the individual hospitals and their staffs. Since that time a meeting of the members of the Advisory Committee has been held, and the Council is glad to report that unanimity has been reached in consequence of which representations have been made to the Minister in favour of the policy of the Association.

(L) Scotland.

SCOTTISH SUB-COMMITTEE OF INSURANCE ACTS COMMITTEE.

(Continuation of para. 145, p. 98, of Annual Report.)

211. The Scottish Committee is obtaining, in co-operation with the Insurance Acts Committee, the nomination by Scottish Panel Committees of practitioners for appointment upon the Scottish Sub-Committee of the Insurance Acts Committee. It has been decided that before the Meeting of the next Conference of Local Medical and Panel Committees convened by the Association, the Sub-Committee shall meet and consider the Agenda of the Conference.

QUESTION OF INCREASE OF MEDICAL FEES.

(Continuation of para. 150 (1), p. 99, of Annual Report.)

212. The Scottish Committee has considered the replies received from a number of the Divisions to a circular issued by the Committee, enquiring whether they have recently passed any resolutions as to the general raising of professional charges. As some Divisions have not yet replied, consideration of the question of the desirability of taking steps in the matter has been postponed until the next Meeting of the Committee.

CENTRAL MIDWIVES' BOARD (SCOTLAND).

(Continuation of para. 150 (3), p. 99, of Annual Report.)

213. Drs. Michael Dewar (Edinburgh) and J. Wishart Kerr (Glasgow), members of the Scottish Midwives Board appointed by the Scottish Committee, have submitted a very satisfactory report upon the work of the Board for the past year, and they have been thanked for their services.

(M) Ireland.

ACTIVITIES OF THE IRISH COMMITTEE.

214. The Council is glad to note the increased activity of the Association in Ireland. Since the publication of the Annual Report the Irish Committee of the Association has held another Meeting at which many points of interest to the Irish profession were discussed, and various steps taken to bring before Government Departments the claims of the profession

in connection with the Notification of Births, etc. and certain Poor Law matters.

It is a source of gratification to the Council to note the increasing use that is being made of the Irish Office of the Association and the Irish Medical Secretary in connection with practically every form of medico-political activity in the Country.

(O) Naval and Military.

PRESENT POSITION AND FUTURE PROSPECTS OF INDIAN MEDICAL SERVICE.

215. As reported to the Divisions in 1914 (Annual Report of Council, *B.M.J.* Supplement, May 2nd, 1914, p. 290, para. 172), the Council in 1913 forwarded to the Secretary of State for India a Memorandum upon the position and prospects of the Indian Medical Service (see *British Medical Journal*, March 7th, 1914), in response to a letter from the Secretary of State intimating that he would be glad of the assistance of the Association in ascertaining the cause of the deficiency of high-class candidates for that service. Subsequently, in response to an invitation received from the Royal Commission on Public Services in India, the Council in 1914 appointed Lieut.-Col. R. H. Elliott, I.M.S., to give evidence on behalf of the Association before the Commission.

The Council regrets to have to record its profound concern and disappointment with the whole trend of the Report and Recommendations of the Commission, published in January, 1917, so far as regards the Indian Medical Service, and is of opinion that the matter cannot be left where it stands. The Council submits a Memorandum on the subject (see Appendix XI.), and in the event of the Memorandum being approved by the Representative Body, it is intended to ask the Secretary of State for India to receive a deputation, to be appointed by the Naval and Military Committee of the Association, for the purpose of discussing with him the position of the Indian Medical Service.

The Council recommends:

Recommendation A.—That the Representative Body approve the Memorandum submitted by the Council, on that part of the Report of the Royal Commission on the Public Services in India which deals with the Indian Medical Service.

NOMINATIONS FOR ELECTION OF REPRESENTATIVES OF SERVICES AS MEMBERS OF COUNCIL.

Recommendation B.—That the following representatives of the Services on the Council be appointed for the period 1917-20:—(a) For the Royal Navy Medical Service, Fleet-Surg. F. D. Lumley, R.N. (Retd.); (b) For the Army Medical Service, Col. R. I. D. Hackett, A.M.S. (Retd.); (c) For the Indian Medical Service, Lt.-Col. R. H. Elliott, I.M.S. (Retd.).

DEPARTMENTAL COMMITTEE OF ENQUIRY INTO ANOMALIES OF PROMOTION, ETC., OF OFFICERS OF THE TERRITORIAL FORCE AND NEW ARMIES.

216. In view of the appointment by the Government of a Departmental Committee to enquire into the anomalies of promotion of Officers of the Territorial Force and New Armies, there were submitted to the Departmental Committee, on behalf of the Association, the Memorandums (see Appendix XII.), based upon a considerable amount of correspondence and interviews with Medical Officers of the Territorial Forces, published in the SUPPLEMENTS of March 17th and May 19th.

The Association pressed upon the Departmental Committee that it should be allowed to support the Memorandums by oral evidence, and selected three witnesses for the purpose. The Departmental Committee however intimated that it could only hear one witness on behalf of the Association. Accordingly Col. J. Raglan Thomas, accompanied by the Deputy Medical Secretary, gave evidence before the Departmental Committee on June 13th, 1917, when the suggestions of the Association were fully discussed. The report of the Committee must now be awaited before further action can be taken.

J. A. MACDONALD,
Chairman of Council.

July 3rd, 1917.

The Annual Report of the Council had seven appendices, numbered I to VII, the Supplementary Report has five, numbered VIII to XII.

Appendix VIII, containing the case of the profession for increased payment for treatment of discharged disabled soldiers and sailors, was published in the SUPPLEMENT of June 16th, 1917, p. 159.

Appendix IX, containing the proposals of the National Insurance Commissioners as to the remuneration of doctors in respect of invalided sailors and soldiers, is published below.

Appendix X, a statement of accounts of the Central Insurance Defence Fund, is published below.

Appendix XI is a memorandum on the Indian Medical Service, and is published below.

Appendix XII consists of memorandums by the Association on anomalies as to promotion of officers of the Territorial Forces and new armies; they were published in the SUPPLEMENTS of March 17th, 1917, p. 49, and May 19th, 1917, p. 116.

APPENDIX IX.

PROPOSALS OF NATIONAL HEALTH INSURANCE COMMISSIONERS AS TO REMUNERATION OF DOCTORS IN RESPECT OF INVALIDED SAILORS AND SOLDIERS.

(Document furnished by Insurance Commissioners).

(See page 6, para. 196, of Supplementary Report of Council.)

1. The proposal is that doctors should be remunerated in respect of discharged disabled sailors and soldiers on the attendance basis at the same rates as temporary residents, on the assumption that, if the total payments to be made are in excess of a sum calculated at the rate of 9s. per discharged disabled man the amount of the excess will be found by the Exchequer.

2. The foregoing proposal necessarily involves the appropriation from the General Medical Benefit Fund of the sum of 9s. for each invalided man towards the cost of treatment of all such persons. Certain considerations arise in this connection which may be conveniently dealt with under two heads, viz. :—

- (a) Future invalidings, and
- (b) Past invalidings.

3. With regard to (a), as each case arises steps will be taken to put the man forthwith under the new arrangements, and the 9s. can be appropriated there and then. No difficulty thus arises with this class.

4. With regard, however, to (b), it must be remembered that most of these men are already included in the doctors' lists. Obviously, every man in respect of whom nine shillings is appropriated should be removed from the doctor's list. But although the number of such men in the aggregate is known, and therefore the number of sums of nine shillings to be appropriated, no record is available of their names or distribution amongst doctors.

5. Were it possible for the doctors, with such assistance as Insurance Committees can afford, to pick out *all* past invalided sailors and soldiers included in their lists, the difficulty could thus be solved. But it is understood that this plan is not feasible; and it is necessary, therefore, to consider alternative proposals.

6. One practical method would be to deduct from the General Medical Fund the total number of sums of nine shillings to be appropriated (which, as indicated above, is ascertainable by the Commissioners) without amending the doctors' lists. The effect of this operation would be to increase the inflation in the doctors' lists. If each doctor had in his list the same proportion of invalided men, no inequity would result. This, however, is not the case. For example, the woman doctor would probably not have any invalided men in her list and would therefore be prejudiced.

7. It might be possible to obviate the inequity in its acutest form by the following plan. Having ascertained the total sum to be appropriated for the whole country, the central pool would not be diminished; but the amount to be appropriated in respect of men hitherto invalided would be apportioned among the several areas on the basis of the proportionate number of men found in fact to be invalided in future in each area, so as to arrive at an amount to be debited to the *local* pool of each area. It would then be possible for the Insurance Committee and Panel Committee in each area to arrange for the apportionment of this debit among the doctors in the area, excluding, if they thought it desirable, the woman doctor and any other doctor who could prove that he had no invalided men on his list. This would involve the introduction of an additional and somewhat complicated piece of machinery.

8. Alternatively, perhaps, it might be possible for past invalidings to be brought under the new arrangements gradually, so that part of the invalided men already on doctors' lists would be dealt with on the attendance basis and part on the capitation basis. It would be necessary in this event to secure that the Exchequer is safeguarded against the possibility of an unfair selection of cases being made by the doctors. Perhaps this might be secured by an arrangement on the following lines

9. Until any particular invalided soldier is brought under the new arrangement, the nine shillings will accrue to the General Medical Benefit Fund in respect of him, and the doctor will be remunerated in the ordinary way. It will be open to the doctor at any time to claim that he should be remunerated in respect of the soldier on the attendance basis. It will be obvious, however, that payment could not be made forthwith

on the attendance basis since, if this were done, the doctor would in practice be paid on the capitation basis whilst the patient was well, and on the attendance basis after he fell ill, which is clearly not an insurance proposition. It would be necessary, therefore, to impose a waiting period after the doctor's claim. This period need not be long, and the Treasury might consider that they have a sufficient safeguard if the case be included under the new arrangements as from the beginning of the quarter succeeding that in which the doctor's claim is made. The doctor will, of course, continue to be remunerated on the ordinary basis until that date. It will be appreciated that under this method each doctor would have an option (as regards each invalided man already on his list) as to whether he will continue to be remunerated on the capitation basis or will change over to the attendance basis as from the commencement of the ensuing quarter.

APPENDIX X.

STATEMENT OF RECEIPTS AND PAYMENTS OF CENTRAL INSURANCE DEFENCE FUND IN 1916, AND OF AVAILABLE FUNDS AS AT DECEMBER 31st, 1916.

(See page 7, para. 202, of Supplementary Report of Council.)

ADMINISTRATION ACCOUNT.

Receipts:	£	s.	d.
To Balance from 1915	41	8	0
Payments:			
By Drug Tariff Subcommittee's Expenses	15	4	0
.. Balance, being amount unexpended on Administration Account	26	4	0
	41	8	0

COMPENSATION ACCOUNT.

Receipts:	£	s.	d.
To Balance from 1915	10,408	17	1
.. Repayment of Loans	835	0	0
.. Interest	432	7	0
	11,676	4	1
Payments:			
By Grant	100	0	0
.. Balance, being money unexpended on Compensation Account	11,576	4	1
	11,676	4	1

STATEMENT OF AVAILABLE FUNDS.

Receipts:	£	s.	d.
To Unexpended Balances, 31st December, 1916—			
.. Administration Account	26	4	0
.. Compensation Account	11,576	4	1
	11,602	8	1
Payments:			
By Cash with Bankers—			
.. Current Account	252	8	1
.. Deposit Account	350	0	0
British Medical Association Loan Account (secured by Deposit of Investments)	11,000	0	0
	11,602	8	1

APPENDIX XI.

MEMORANDUM OF THAT PART OF REPORT OF ROYAL COMMISSION ON PUBLIC SERVICES IN INDIA WHICH DEALS WITH INDIAN MEDICAL SERVICE.

(See page 8, para. 215, of Supplementary Report of Council.)

The British Medical Association has carefully considered that part of the Report (published in January, 1917) of the Royal Commission on the Public Services in India which deals with the Indian Medical Service, and regrets to have to record its profound concern and disappointment with the whole trend of the Report and its Recommendations.

The various points to which the Association drew attention in its Memorandum on the Present Position and Future Prospects of the Indian Medical Service have received very scanty attention, and there is little or no evidence of any intention to redress the numerous grievances which the Association pointed out could not fail, if allowed to continue, to result in a marked deterioration in a service already becoming unpopular.

COMPARISON OF REPORT OF COMMISSION AND THE MORE IMPORTANT RECOMMENDATIONS OF THE ASSOCIATION.

Entrance Examinations.

1. That the present method of recruitment for the Indian Medical Service by competitive examinations held in England should be continued; that the examination should be kept as practical as possible rather than theoretical; and that the importance of this aspect of the question should be brought prominently before the attention of the examiners.

R.M.A.
Memo.

Royal Commission Agrees and Recommends: That the open competitive examination for the Indian Medical Service should be made more practical, and a *vivâ voce* test should be introduced. All candidates should have had a hospital training, have been through a practical course of midwifery; and have had experience of treating the diseases of women and children. If it is found necessary to give Indians this training in the United Kingdom sufficient facilities should be provided there for them.

Training in a British School of Medicine.

B.M.A. Memo. 2. That candidates from India should be encouraged to spend as much time as possible in a British School of Medicine. A period of three years would be none too long to permit a man to become acquainted with the methods of sanitation, the modes of living, hospital treatment and dietary, and the other features of medical practice which are so widely different in Europe and India.

Royal Commission Ignores, with the exception of the above half-hearted and vague recommendation.

Post-graduate Training.

B.M.A. Memo. 3. That the time now spent at Millbank would be better spent in the large hospitals and schools of medicine in the Indian Presidency towns, where a course of study of tropical diseases, bacteriology, and hygiene could be carried out under ideal conditions. Larger facilities should be afforded to medical officers for taking up resident appointments before going out to the East.

Royal Commission Ignores.

Too Frequent Transfers.

B.M.A. Memo. 4. That Officers are subjected to too frequent transfers.

Royal Commission Ignores.

Allowances on Transfer.

B.M.A. Memo. 5. Reasonable cost of transfers should be provided by Government instead of the present entirely inadequate allowances.

Royal Commission Agrees and recommends: That the principle that travelling expenses must not be treated as a source of profit has its necessary corollary in the principle that such expenses should not be a source of loss. Exactly what provision should be made to meet such charges is a question for the decision of Government. We would, however, urge that immediate measures be taken to remove what undoubtedly is a widespread and, in our opinion, a legitimate grievance.

Family Pensions Fund.

B.M.A. Memo. 6. (a) That pensions for sons should continue up to the age of 25.

(b) That daughters who have become widows should be again eligible for pensions.

Royal Commission Ignores.

Leave.

B.M.A. Memo. 7. That an officer should be allowed to take the leave due to him, and to take it when it falls due, instead of having, as too often happens at present, to forego it for long periods, or else to "go sick."

Royal Commission Agrees and recommends: That the reserves for leave, deputation, and training in the various civil medical services should be re-calculated. In the local services more uniformity should be observed in making the calculations, and, where possible, an annual rate of recruitment should be fixed.

B.M.A. Memo. 8. That a more liberal grant of casual leave should be made, and the disposal of all matters connected with this form of leave should lie entirely in the hands of the local Surgeon-General.

Royal Commission Ignores.

The Right of Private Practice.

B.M.A. Memo. 9. That all interference with the right of private practice and fees should be withdrawn.

Royal Commission Recommends: (a) Civil surgeons, and officers holding similar posts, whether belonging to the Indian Medical Service or not, and the assistant surgeons working under them, should enjoy the privilege of private practice at the pleasure of Government. Should it be found necessary to withdraw this privilege in individual cases a suitable monthly allowance should be granted.

(b) Medical Officers holding scientific posts should be debarred from private practice but should receive a monthly allowance instead. Similar officers holding clinical posts should be allowed consulting practice in their own subject. Chemical examiners and alienists and their assistants should be allowed private practice, under certain conditions, but only in their own subject, and in such cases the fees should be credited to Government and a suitable monthly allowance made to the officer concerned.

Provincial Medical Service.

10. That a Provincial Medical Service should be created on lines similar to those of the Provincial Civil Service.

Agrees.

Royal Commission

Period on Probation.

11. That the period spent on probation, and the time from completing the period of probation until arrival in India should in the case of all officers count towards an officer's service for promotion.

Ignores.

Royal Commission

The Position of the Surgeons-General.

12. That the Surgeon-General should be a Secretary to Government, and the personal assistant to a Surgeon-General an Under Secretary to Government in the Medical and Sanitary Departments, both being paid as such.

Opposes this and recommends: The Surgeon-General and the Inspectors-General of civil hospitals should have regular and direct access to the head of their province, or to the member of council in charge of the medical department, where there is a council form of Government.

Royal Commission

Status of District Medical Officer.

13. That the district medical and sanitary officer of a district should, in the interests of discipline and efficiency, have complete control over his medical subordinates, including vaccinators, as regards transfers from one station to another within the district.

Ignores.

Royal Commission

Confidential Reports.

14. That it should not be open to any lay authority to override or disregard the Surgeon-General's opinion on professional matters.

Ignores.

Royal Commission

Conclusion.

15. The Association does not attempt to dictate to the Government of India the terms that it should offer to its medical officers, but, knowing as it does the feeling of the medical profession, it desires to make it clear to the Under-Secretary of State for India that a failure to redress the grievances which the Association has pointed out, will most certainly result in a very marked augmentation of the deterioration already in progress in the class of recruits to the I.M.S.

16. The Association feels that the real storm-centre is the question of limiting private practice of Indian Medical Service officers. It desires that there should be no ambiguity in future as to the policy to be adopted by the Secretary of State for India on this subject, in order that it may be in a position to place the future prospects of officers of this Service clearly before the profession, and to give such advice on the subject to possible applicants as they are entitled to expect from it.

Association Notices.

ANNUAL REPRESENTATIVE MEETING, 1917

Date of Meeting.

The Annual Representative Meeting of the Association will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Thursday, July 26th, at 10 a.m. and following day(s) as may be required.

Agenda of A.R.M.: Further Notices of Motion by Divisions and Branches.

The provisional Agenda of the Annual Representative Meeting, including the Annual Report of the Council, was

published in the SUPPLEMENT of May 5th, and a supplementary Notice of Motion in the SUPPLEMENT of June 2nd. The Supplementary Report of the Council is published in this SUPPLEMENT. There will be included in the final Agenda of the Meeting, as to be issued to the members of the Representative Body on or about July 19th, not only the Notices of Motion published in the SUPPLEMENTS of May 5th, June 2nd, and (Supplementary Report of Council) July 7th, but also Notices of Motion received up to Thursday, July 12th, found by the Agenda Committee to be in order.

By order,

ALFRED COX,

Medical Secretary.

July 4th, 1917.

ANNUAL GENERAL MEETING.

NOTICE is hereby given by the Council that the Annual General Meeting of the British Medical Association will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Friday, July 27th, 1917, at 2 o'clock in the afternoon. *Business:* (1) Minutes of last meeting. (2) Appointment of auditors (Messrs. Price, Waterhouse, and Co. offer themselves for re-election). (3) Award of Middlemore Prize. (4) Report election of President.

By Order,

GUY ELLISTON,

Financial Secretary and Business Manager.

Dated this 7th day of July, 1917.

429, Strand, London, W.C.2.

BRANCH AND DIVISION MEETINGS TO BE HELD.

EAST ANGLIAN BRANCH.—Dr. B. H. Nicholson, Honorary Secretary (East Lodge, Colchester), gives notice that the annual meeting of the East Anglian Branch will be held at the Crown and Anchor Hotel, Ipswich, on Tuesday, July 10th, at 3 o'clock.

EAST YORKS AND NORTH LINCOLN BRANCH.—Mr. H. L. Evans, Honorary Secretary (101, Princes Avenue, Hull), gives notice that the annual meeting of the Branch will be held in the Board Room of the Hull Royal Infirmary, at 4 p.m., on Friday, July 13th. *Business:* Annual report, financial statement, election of officers. Address by Robert Grieve, M.D., F.R.C.S.

SOUTHERN BRANCH.—Mr. James Green, Honorary Secretary, gives notice that the annual meeting of the Branch will be held at the South-Western Hotel, Southampton, on Thursday, July 12th, at 3 p.m., Dr. A. E. Bodington in the chair. *Business:* Minutes. Correspondence. Election of officers for 1917-18. Annual report. Balance sheet. To consider resolution of Branch Council: "That it be recommended from this Council to the next general meeting that the future quorum of the Council consist of five members." General business. At the conclusion of the business Dr. Bodington will vacate the chair in favour of the incoming president, Dr. H. J. May of Southampton. On account of the war there will be no luncheon or other social function, except that tea will be served at the end of the meeting by the kindness of Dr. May. The usual collection for Epsom College will be made during tea time. There will be no golf competition this year. Members who intend to accept the President's invitation to tea will oblige by sending word to that effect not later than July 9th to Mr. C. P. le Quesne, 1, Lawn Road, Southampton.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—Dr. Arthur E. Larking (Secretary) gives notice that a meeting of the members of the Bucks Division, to which all medical men in the county are invited, will be held at the Crown Hotel, Aylesbury, on Thursday, July 19th, at 2.45 p.m., to re-elect the Local Medical War Committee, discuss the question of the formation of a Ministry of Health, consider matters relating to payments under the National Insurance Act, and other matters. Tea will be provided.

Meetings of Branches and Divisions.

FIFE BRANCH.

The annual meeting of the Fife Branch was held at Kirkcaldy on June 6th, when Dr. Macdonald was in the chair.

Annual Report.—The annual report and balance sheet were passed.

Election of Officers.—The following officers were elected:

President: Dr. John Macdonald (Cupar). *Vice-President-elect:* Dr. Wm. Craig (Cowdenbeath).

Secretary and Treasurer: Dr. Wm. Sneddon (Cupar).

Representative: Dr. Sneddon. *Deputy Representative:* Dr. John Macdonald.

Branch Council: Drs. Eggeling, Moir, Macnicol, Fleming, Heron, Orr, Smith.

Annual Representative Meeting.—The agenda for the Annual Representative Meeting was considered, and after a very general discussion the representative was given a free hand.

METROPOLITAN COUNTIES BRANCH: STRATFORD DIVISION. At the annual meeting of the Division the following appointments were made:

Chairman: Mr. A. J. Couzens.

Honorary Secretary and Representative: H. S. Beadles.

Representative on Branch Council: Dr. C. Sanders.

MIDLAND BRANCH: KESTIVEN DIVISION.

The annual meeting of the Division was held at Grantham on May 29th.

Election of Officers.—The officers were elected as follows:

Chairman: J. A. Macdonald. *Vice-Chairman:* W. J. Gilpin.

Honorary Secretary and Treasurer: C. H. D. Robbs.

Representative for Annual Representative Meeting and Branch Council: C. Frier (conjoint Representative for Kesteven and Holland).

Executive Committee: J. Galletly, H. T. Benson, J. D. Campbell, G. W. Shipman, H. N. Turner.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty: Fleet Surgeon A. S. Nance (ret.) granted rank of Deputy Surgeon-General (ret.). Temporary Surgeons: J. S. Kennedy to the *Vernon*; J. S. McGrath, M.B., to the *Endymion*; J. T. Wylie, M.B., to the *Diana*; J. D. Rutherford to the *Theseus*; W. E. Goss, M.B., to the *Pembroke*; E. F. Cox to the *Victory*; A. C. Shaw to the *Fivid*, additional, for E.N. Barracks; R. W. Miller to Portland Hospital.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationers: G. Jamieson to the *Seal*, A. Jephcott to the *Swale*. To be Surgeon Probationers: D. G. Garnett, W. Beaumont.

ARMY MEDICAL SERVICE.

The following are retained on the active list: Colonel C. R. Elliott, M.D., Colonel (temporary Surgeon-General) M. W. Russell, C.B. Lieutenant-Colonel and Brevet Colonel E. M. Pilcher, D.S.O., M.B., F.R.C.S., to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieutenant-Colonel A. H. Carter, M.D., F.R.C.P., and temporary Captains E. Caudwell and F. W. Robinson, M.D., F.R.C.S., relinquish their commissions on account of ill health.

Temporary Major H. J. Stiles (Captain R.A.M.C.(T.F.)), to be temporary Lieutenant-Colonel.

To be temporary Majors: Lieutenant-Colonel H. A. Moffat, D.S.O., F.R.C.S., S.A.M.C., F. S. Langmead, M.D., F.R.C.P., A. Goodall, M.D., F.R.C.P., M. B. Wright, M.D.

Captain A. W. Nuthall, M.B., F.R.C.S., R.A.M.C.(T.F.), and temporary Captains R. T. Heron, M.D., and F. R. Seymour, M.D., to be temporary Majors.

To be temporary Captains whilst employed with the Huddersfield War Hospital: A. E. Hardy, R. H. Rigby.

Temporary Captains relinquish their commissions: W. S. Newton, H. N. M. Puckle, H. R. Smith, H. C. Martin, P. M. O'Sullivan, H. McKenzie, G. S. Cronk, L. A. Carr, M.C., W. L. Pedlow, M.C., F. W. Overholt, D. A. Macfarlane, J. V. Williams, C. T. Hilton, M.B., L. E. Williams, M.D.

To be temporary Captains: F. W. Milne, M.D., S. W. Allworthy, M.D., D. W. Woodruff, H. Robinson, M.B., late Captain R.A.M.C.(T.F.), W. E. Bracey, late temporary Captain, to be honorary Lieutenant.

Temporary Lieutenant W. M. Thomas relinquishes his commission.

To be temporary Lieutenants: J. D. Lyle, M.B., G. C. Birt, R. Ward, R. C. Walker, M.D., W. Bannatyne, P. Moran, M.D., G. H. Culverwell, M.D., J. J. Tough, M.B., W. M. Menzies, M.B., G. Stewart, M.B., L. D. Cohen, A. J. Ballantyne, M.D., A. McEwan, M.B., J. A. Thom, M.B., G. F. Shepherd, F.R.C.S.I., E. M. Condy, M.B., D. T. Harris, M.B., L. O. Newton, M.B., T. C. Pocock, M.B., L. W. Kelgin, M.B., D. T. Evans, A. B. R. Sworn, J. E. Kesson, M.D., D. B. Davidson, M.B., P. Stewart, M.D., W. Matheson, M.B., J. R. Hewitson, G. Y. Caldwell, M.B., A. B. Vine, M.B., H. A. Cecil, H. F. Overend, J. N. G. Nolan, M.B., F. A. F. Cowan, M.B., J. M. Wallace, H. W. Latham, J. J. W. Evans, F.R.C.S., C. J. S. Dismore, P. H. Heskin, M.B., J. Sullivan, H. Matthews, M.D., G. Deery, M.B., W. F. Erskine, M.D., O. May, M.D., G. A. Hoffman, M.B., R. Alderson, M.D., W. P. Miles, J. Lambie, M.D., H. F. Ramsome, H. O'H. O'Neill, M.B., G. W. Preston-Hillary, D. W. Roy, M.B., F.R.C.S., W. Taylor, H. G. F. Spurrell, M.B., J. Busk, M.B., M. Shipsey, S. E. Atkinson, J. Avery, H. V. Mitchell, W. B. Wilson, M.B., R. Stansfield, P. W. Hampton, M.D., R. Crawford, M.B., K. McK. Duncan, M.B., F.R.C.S., J. Ritchie, M.B., W. Anderson, M.B., W. Lillico, M.D., W. B. Wickham, J. Hunter, M.B., J. F. Bridge, M.B., J. Wylie, S. D. Craig, M.B., L. Hutchinson, M.D., E. B. Prior, E. O'D. Graham, M.B., R. Duncan, M.B., H. O. West, M.D., E. W. Witney, M.B., S. H. White, C. S. Thomson, M.D., G. H. C. Lumsden, M.B., A. E. Knapp, Q. Madge, O. V. Payne, M.B., G. W. Curtis, W. W. Allison, M.B., E. Tate, M.D., J. D. Ferguson, A. J. May, M.B., A. B. Sykes, A. C. Renton, M.B., R. H. Thomson, J. M. Ahern, M.B., F. G. Ralphs, M.B., F.R.C.S.E., W. H. F. Eales, M.B., F. J. Willans, J. A. Wood, M.B., C. W. Forsyth, M.B., J. H. Iles, M.B., T. J. Lloyd, T. Clarke, H. R. Wright, F. W. Pollard, V. G. Best, M.D., T. Gillespie, M.B., W. E. Waymark, J. Williamson, M.B., S. Wood, G. W. Pope, J. K. Holland, J. P. Doyle, G. C. F. Roe, J. A. MacSweeney, A. R. Soady, R. E. G. Gray, M.D., J. M. Taylor, M.D., A. E. Leapingwell, H. T. P. Young, M.B., H. M. Roberts, J. P. Brennan, W. S. Sheppard, M.B., J. F. Peart, F.R.C.S.I., E. R. D. Macdonochie, M.B., F.R.C.S.E., S. Brown, M.B., A. W. Brodribb, M.B., W. Weir, M.B., J. B. Aickin, J. A. Mearns, M.B., W. Mair, M.D., J. Steward, M.B., G. A. Pratt, A. B. Hartford, G. N. Kirkwood, M.B., R. Peart, M.D., W. W. Carlow, M.B., F.R.C.S.E., P. Talbot, M.B., F.R.C.S., J. C. Wootton, A. W. Ewing, W. Rotherham, A. Evans, A. C. Russell, M.B., J. Wilson, C. M. Ockwell, R. H. Hunter, J. Dunbar, M.B., T. R. Davey, T. P. Robertson, M.B., M. J. McCarthy, M.B., L. Welpy, M.B., F. H. Fuller, N. E. Sampey, J. I. P. Knight, C. B. Ticehurst, F. W. Mackichan, M.B., R. Brown, M.D., D. MacGregor, J. Scott, M.B., F. H. Dodd, C. M. Ormsby, M.B., J. H. Jones, M.B., A. S. Mellor, M.B., C. L. Traylen, C. Murray, D. P. Lindsay, M.B., L. H. Worden, M.B., N. Gray, M.B., J. S. Wilson, M.D., C. L. Driscoll, H. E. Davison, M.D., A. H. Collins, E. E. Paget-Tomlinson, M.B., G. C. Anderson, M.D., G. Cooper, M.D.,

M. Briscoe, H. Graham, H. W. Horan, M.B., R. G. Smith, P. D. Hunter, S. A. Furlong, B. J. Cusack, E. A. Sanders, J. J. Delany, G. G. C. Adams, R. Munro, M.D., R. J. W. McKane, J. Ferguson, M.B., H. N. K. Kevin, D. D. Ritchie, M.D., R. J. Bentley, M.B., S. H. Sweet, H. Spurway, M.B., A. Irving, A. I. Shepherd, — Walwyn, M.D., G. E. Thornton, M.B., W. S. Graham, M.B., I. L. MacInnes, M.B., J. K. Manson, M.B., J. Dalgleish, M.D., J. L. Maynell, M. M. Niall, M.D., S. B. White, M.B., J. L. Reid, M.B., W. Tregea, W. B. Clarke, M.B., S. N. Galbraith, M.B., H. F. Fenton, M.B., J. P. Doyle.

OVERSEAS CONTINGENTS. CANADIAN ARMY MEDICAL CORPS.

Temporary Lieut.-Colonel A. Primrose to be temporary Colonel whilst employed as Consulting Surgeon.
Temporary Captain H. C. Nelson resigns his temporary commission.
Temporary Major R. S. Pentecost to be temporary Lieut.-Colonel whilst commanding a Canadian field ambulance.
Temporary Captain G. S. Stahly to be temporary Major (substituted for notification in the *London Gazette* of April 24th, incorrectly describing name as G. S. Strathely).
Temporary Captains J. W. Pressault and J. P. Harrison are dismissed the service by sentence of general court-martial, May 1st and June 11th respectively.
C. K. Wallace to be temporary Captain (substituted for notification in the *London Gazette* of May 12th, incorrectly specifying initials as C. R.).
G. B. Ferguson to be temporary Captain.

SPECIAL RESERVE OF OFFICERS. ROYAL ARMY MEDICAL CORPS.

To be Lieutenants: K. Masson, J. A. Martin, N. M. Lewis.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICES.

Lieut.-Colonel A. R. Tweedie, F.R.C.S., Field Ambulance, to be temporary Colonel whilst holding the appointment of Assistant Director of Medical Services.
Captain S. S. Greaves, M.C., to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

The following officers relinquish their temporary rank on alteration in posting: Captains (temporary Majors) S. G. Webb, M.D., C. G. K. Sharp, M.B., D. M. Spring, M.B., J. Arthur, M.D., C. Cameron, M.B., G. H. Spencer, C. G. Murray, Majors (temporary Lieut.-Colonels) J. Bruce, H. Jones, C. W. Edwards, F.R.C.S., J. R. Benson, F.R.C.S., D. C. L. Orton, H. A. Rudyard, A. W. Anderson, M.D., W. Bryce, M.D., J. Howard-Jones, M.B., J. Evans, M.D.
Surgeon-Major J. E. Bates, from East Surrey Regiment, to be Major, with precedence as from September 19th, 1914.
Captain (temporary Major) R. B. Carslaw is seconded for duty with a general hospital, and to retain his temporary rank whilst so employed.

Captain (acting Colonel) R. A. Broderick, M.C., M.B., relinquishes his acting rank on ceasing to command a field ambulance.

Captain J. Blackwood to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain (acting Lieut.-Colonel) J. W. Keay, M.D., reverts to the temporary rank of Major on alteration in posting, with precedence as from March 3rd, 1915.

Captain E. M. Jenkins, M.B., to be temporary Major whilst in command of a field ambulance.

Captain J. N. Robins is restored to the establishment on vacating the appointment of Deputy Assistant Director of Medical Services.

To be Lieutenants: I. E. Macdonald, W. D. Dick, C. M. Smith, Staff Sergeant J. Jackson, Staff Sergeant D. Williams (1st London Sanitary Company), Acting Sergeant-Major H. Jessop.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BARNLEY: BECKETT HOSPITAL AND DISPENSARY.—House-Surgeon. Salary, £250 per annum.

BIRKENHEAD: BOROUGH HOSPITAL.—House-Surgeon. Salary, £250 and war bonus.

BIRMINGHAM MATERNITY HOSPITAL.—House-Surgeon. Salary, £100 per annum.

BOURNEMOUTH: CRAG HEAD HOSPITAL, Manor Road.—Resident Medical Officer. Salary, £300.

BOURNEMOUTH: ROYAL NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST.—Resident Medical Officer and Clinical Tuberculosis Officer. Salary combined, £430 per annum, rising to £530.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Resident Medical Officer. Salary, £300 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURTON-ON-TRENT INFIRMARY.—Resident House-Surgeon. Salary, £250 per annum.

EURHAM COUNTY COUNCIL.—Assistant School Medical Officer (woman). Salary, £300 per annum, rising to £350, and war bonus.

GREENWICH UNION.—Assistant Medical Officer of the Infirmary and Workhouse. Salary, £200 per annum.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Lady Resident Medical Officer. Salary, £200.

ISLE OF THANET UNION.—Temporary District Medical Officer and Public Vaccinator. Salary, £50 per annum and extras amounting to about £50.

ITALIAN HOSPITAL, Queen Square, W.C.—House-Surgeon. Salary, £150 per annum.

KIRKSTALL: PARISH OF EDAY.—Medical Officer.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

LIVERPOOL: ROYAL INFIRMARY.—Clinical Assistants in the Venereal Diseases Department. Salary, £250 for male officer and £100 for female officer.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Two Resident Medical Officers (ladies). Salary, £200 per annum.

MANCHESTER: COUNTY ASYLUM, Prestwich.—Locumtenent. Salary, £7 7s. a week.

MANCHESTER AND SALFORD LOCK HOSPITAL.—Temporary part-time Medical Officer. Salary, £300 per annum.

NATIONAL HOSPITAL AND UNIVERSITY SCHOOL OF MASSAGE AND ELECTRICAL TREATMENT, Queen Square, W.C.—Head of the School. Salary, £200 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road, N.W.—Assistant Resident Medical Officer. Salary at the rate of £60 per annum, rising to £80 on appointment as Senior.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—House-Physician. Salary, £100 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House-Surgeon.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—House-Physicians. Salary, £50 per annum.

SHEFFIELD ROYAL INFIRMARY.—House-Physician. Salary, £120 per annum.

SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.—(1) House-Physician; (2) House-Surgeon (females). Salary, £100 per annum.

STAFFORDSHIRE, WOLVERHAMPTON AND DUDLEY JOINT COMMITTEE FOR TUBERCULOSIS.—Holiday Locumtenent. Salary, 8 guineas a week.

STOKE-ON-TRENT COUNTY BOROUGH.—Assistant Lady Medical Officer in connexion with Maternity and Child Welfare Work, etc. Salary, £350 per annum.

SUNDERLAND COUNTY BOROUGH.—Temporary Tuberculosis Medical Officer. Salary, £500 per annum.

THROAT HOSPITAL, Golden Square, W.—Two Resident House-Surgeons. Salary, £100 per annum.

WEST HAM UNION INFIRMARY, E.—Resident Assistant Medical Officer. Salary, £300 per annum.

WESTMORLAND SANATORIUM AND HOME, Grange-over-Sands.—Locumtenent Assistant Medical Officer. Salary, £7 7s. a week.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £150 per annum.

YORK CITY.—Temporary Tuberculosis Officer. Salary, £500 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

BURNETT, J. R., M.D., District Medical Officer of the Cocker mouth Union.

HEWLETT, J. E., M.B., Assistant Medical Superintendent of the Croydon Union Infirmary, etc.

HICKS, C. E., M.R.C.S., L.R.C.P., District Medical Officer of the Huntingdon Union.

KEMP, C. M.B., C.M.Aberd., District Medical Officer to the Swansea Union.

ROBE, S., L.R.C.P. and S. Edin., District Medical Officer of the West Derby Union.

ROBERTS, J., L.R.C.P. and S. Edin., District Medical Officer of the Carnarvon Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

DEATHS.

BROWNE.—On June 27th, at Kirby View, Caldby, Edgar Athelstane Browne, F.R.C.S. Edin., M.Ch. Liverpool, aged 75 years. Formerly of Rodney Street, Liverpool.

NEVIN.—On June 28th, of cerebral malaria, Lieutenant Alexander McDonald Nevin, of 622, Stratford Road, Birmingham.

DIARY FOR THE WEEK.

FRIDAY.

WEST LONDON MEDICO CHIRURGICAL SOCIETY, West London Hospital, 5 p.m.—Annual General Meeting.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
JULY.	
10 Tues.	East Anglian Branch, Annual Meeting, Ipswich, 3 p.m.
12 Thur.	Southern Branch, Annual Meeting, Southampton, 3 p.m.
13 Fri.	East Yorks and North Lincoln Branch, Annual Meeting, Hull Royal Infirmary, 4 p.m.
19 Thur.	Buckinghamshire Division, Aylesbury, 2.45 p.m.
19 Thur.	London: Insurance Acts Committee.
26 Thurs.	OPENING OF ANNUAL REPRESENTATIVE MEETING, Connaught Rooms; Great Queen Street, London, W.C., 10 a.m.
	Future of Insurance Practice.
	Treatment of Discharged Disabled Sailors and Soldiers.
	Ministry of Health.
	Military Demands on the Medical Profession.
	Treatment of Venereal Diseases.
	Etc., etc.
27 Fri.	ANNUAL GENERAL MEETING.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 14TH, 1917.

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British Medical Association.

PROCEEDINGS OF COUNCIL.

A MEETING of the Council was held in London on June 27th, 1917, and there were present:

Dr. J. A. Macdonald, LL.D., Chairman of Council, presiding; Sir T. Clifford Allbutt, Mr. E. B. Turner, Dr. G. E. Haslip, Dr. John Adams, Surgeon-General P. H. Benson, Dr. M. G. Biggs, Lieut.-Colonel R. A. Bolam, Dr. H. B. Brackenbury, Dr. Francis Clark, Major Russell Coombe, Dr. J. Singleton Darling, Dr. Edward J. Domville, Captain E. Rowland Fothergill, Dr. Adam Fulton, Dr. T. W. H. Garstang, Dr. James Green, Mr. N. Bishop Harman, Lieut.-Colonel W. T. Hayward, C.M.G., Dr. I. W. Johnson, Major Albert Lucas, Dr. H. C. Mactier, Colonel C. H. Milburn, Dr. E. N. Nason, Major George Parker, Dr. Edwin Rayner, Dr. C. E. Robertson, Dr. F. J. Smith, Dr. W. Johnson Smyth, Dr. John Stevens, Dr. T. Jenner Verrall, LL.D., Dr. Claude Wilson, and Dr. O. R. M. Wood.

Sir James Barr, Dr. H. J. Campbell, Major A. C. Farquharson, Dr. J. Giusani, Dr. John Gordon, Major T. D. Greenlees, Major J. Livingstone London, Fleet Surgeon F. D. Lumley, R.N., and Lieut.-Colonel J. Munro Moir sent letters of apology regretting unavoidable absence.

DEATHS.

The Council passed votes of condolence on the deaths of Dr. Henry Hetley, of Norwood, a former member of Council; Dr. Major Greenwood, a member of Council at the time of his death; Dr. J. Mitford Atkinson, a former representative of the Hong Kong and Malaya Group of Branches; Inspector-General Robert Bentham, R.N., at one time representative of the Royal Navy Medical Service; and Lieut.-Colonel Davie Harris, a former representative of the R.A.M.C.

HONOURS TO MEMBERS OF COUNCIL.

The CHAIRMAN, on behalf of the Council, congratulated Colonel James Galloway, A.M.S., and Lieut.-Colonel W. T. Hayward on the honours recently conferred upon them by H.M. the King.

MEDICAL EXAMINATIONS OF DISCHARGED SOLDIERS AND MEDICALLY REJECTED MEN.

The CHAIRMAN of Council drew attention to the appointment by the House of Commons of the Select Committee on medical examination under the Review of Exceptions Act, and to the severe criticisms in the lay press and by members of the House of Commons upon members of medical boards in connexion with the medical examination of recruits for the army, and suggested that the Council should consider the desirability of action being taken by the Association on behalf of members of the profession in connexion therewith. A Special Committee was appointed to watch the proceedings of the Select Committee, and to take any action it may deem advisable in the interests of the profession in connexion therewith. The Committee consists of the Chairman of Council, the Chairman of Representative Meetings, the Treasurer, Dr. T. Jenner Verrall, Dr. M. G. Biggs, and Major Russell Coombe, with power to co-opt.

A communication from Mr. Ben Tillett, General Secretary, Dock, Wharf, Riverside, and General Workers' Union

of Great Britain and Ireland, forwarding for the consideration of the Association a resolution passed at the triennial meeting of that union, protesting against the action of medical boards in passing unfit men into the army, was referred to this committee.

UNIVERSITY OF WALES.

The CHAIRMAN reported that he had renominated Dr. Ewen J. Maclean as Representative of the British Medical Association on the Medical Board of the University of Wales for a further period.

FINANCE COMMITTEE.

ACCOUNTS.

The accounts for the period ending June 2nd, 1917, amounting to £11,484 9s. 1d., were received and approved, and the Treasurer was empowered to pay those still outstanding.

MEDICO-POLITICAL COMMITTEE.

HANDBOOK OF THE ASSOCIATION.

The Council expressed the opinion that the more important decisions of the Association upon matters of policy, together with essential general information as to the Association, should be collated and issued for the information and use of Secretaries of Divisions and Branches and others. This expression of opinion was referred to the Organization Committee, which will report as to the practicability and probable cost of such action.

ARTICLES AND BY-LAWS CONCERNING HOLDING OF ANNUAL REPRESENTATIVE MEETING.

The Organization Committee was instructed to consider and report as to the advisability of the Association, through the Council, obtaining powers to alter the Articles of Association which compel the holding of the Annual Representative Meeting.

CANDIDATES.

Eighteen candidates were elected members of the British Medical Association.

The rest of the proceedings of the Council were incorporated in the Supplementary Report of Council published in the SUPPLEMENT of last week (p. 2 et seq.).

Meetings of Branches and Divisions.

EDINBURGH BRANCH.

The annual summer meeting of the Edinburgh Branch was held in the Hall of the Royal College of Physicians, Edinburgh, on June 20th.

Vote of Condolence.—The PRESIDENT made sympathetic reference to the death, in the service of their country, of Dr. W. Guthrie Porter, Edinburgh, and of Dr. W. H. Calvert, a former member of the South-Eastern Counties Division, and a vote of condolence with their relatives was passed.

Annual Report and Financial Statement.—The report of the Branch Council was submitted and approved. The HONORARY TREASURER submitted the annual financial statement, showing a credit balance, on December 31st,

1916, of £50 15s. 10d.; he was cordially thanked for his services.

Election of Officers.—The following office-bearers were elected for 1917-18:

President: Dr. William Blair. *President-elect:* Dr. R. McKenzie Johnston. *Vice-Presidents:* Drs. W. R. Martine, J. J. Graham Brown.

Honorary Treasurer: Dr. R. A. Lundie.

Honorary Secretaries: Dr. John Stevens, Captain John Eason.

Vote of Thanks to Retiring President.—In the unavoidable absence of Dr. Blair, the chair was then taken by Dr. MARTINE. Dr. James Ritchie, on vacating the chair, was cordially thanked for his services as President during the past year.

Representative on the Central Council.—It was intimated that Dr. John Stevens had been re-elected Representative on the Council of the Association for the Edinburgh and Fife Branches.

Queen Mary Nursing Home.—Dr. Alexander Scott (Broxburn) was elected to fill the annual vacancy on the Board of Management of the Queen Mary Nursing Home.

Scottish Committee.—The proceedings of the Scottish Committee were reported on, including the formation (now in progress) of an Insurance Acts Subcommittee for Scotland, and the arrangements for co-operation between the Scottish Committee and the Colliery and Public Works Surgeons' Committee.

Scottish Medical Service Emergency Committee.—A statement was made of the work of the Scottish Medical Service Emergency Committee, showing that throughout Scotland, the Edinburgh Branch included, the response to the call for medical officers for the R.A.M.C. continues, notwithstanding the seriously depleted state of the profession, to be all that can be desired, and that Scotland is still giving its full share towards the requirements of the army.

Annual Report of Central Council.—On the Annual Report of Council the following resolutions were carried unanimously:

I. Ministry of Health.

That, while welcoming the appointment of a Ministry of Health, this meeting is of opinion that the scheme for giving effect to this requires very careful consideration, and is strongly of opinion that the circumstances under which the profession is at present placed make it impossible effectively to consider any scheme before the end of the war, and it therefore cannot give its support at this time to the scheme proposed by the Council of the Association, and very strongly protests against a provisional scheme having been forwarded by the Council of the Association to the Government on the plea of urgency.

II. Provision of Medical Treatment for Discharged Disabled Soldiers and Sailors.

1. That any provision made for medical attendance on discharged disabled soldiers and sailors ought to be outside the National Insurance Acts.
2. That this provision ought to be made under conditions which will allow of these persons being attended by any registered medical practitioner they may respectively choose.

METROPOLITAN COUNTIES BRANCH.

THE sixty-fifth annual general meeting of the Branch was held at 429, Strand, W.C., on June 26th, when the President, Surgeon-Colonel ATWOOD THORNE, was in the chair.

Election of Officers.—The following officers were elected for 1917-18:

President: Dr. C. O. Hawthorne. *President-elect:* Dr. M. G. Biggs. *Past President:* Surgeon-Colonel Atwood Thorne, V.D., R.A.M.C.(T.). *Vice-Presidents:* Dr. Cecil W. Cunningham, Dr. G. Michael, Dr. H. H. Norton, Dr. H. Tanner.

Honorary Treasurer: Mr. H. Betham Robinson, M.S., F.R.C.S.

Honorary Secretaries: Mr. N. Bishop Harman, M.B., F.R.C.S., Dr. Wilfred Kingdon, R.A.M.C.

Representatives of the Branch on the Central Council of the Association:—Elected by the Metropolitan Counties Branch: Dr. M. G. Biggs, Dr. H. B. Brackenbury, Colonel James Galloway, C.B., A.M.S., Dr. F. J. Smith.

Annual Reports.—The annual report of Council for the year 1916-17, together with the financial statement for the year ending December 31st, 1916, was approved and adopted. The annual report of the Representatives on the

Council was submitted, and, in accordance with the rules of the Branch, received.

The late Dr. Major Greenwood.—The President reported the death of his predecessor, Dr. Major Greenwood, and a vote of condolence was passed.

Induction of President.—Dr. HAWTHORNE was then inducted to the chair, and delivered an address on the clinical organization of the profession.

METROPOLITAN COUNTIES BRANCH: CAMBERWELL DIVISION.
The annual general meeting of the Camberwell Division was held in the Board Room of the Guardians' Offices, Peckham, on June 21st, when Dr. H. G. CLITHEROW presided.

Annual Report.—The annual report and financial statement were received and adopted.

Election of Officers.—The following were elected for the ensuing year:

Chairman: Dr. H. G. Clitherow. *Vice-Chairman:* Dr. J. Heard.

Honorary Secretary and Treasurer: Dr. A. F. Heald.

Representative to Representative Meeting: Dr. F. C. Langford.

Representative of Branch Council: Dr. W. T. Partridge.

Executive Committee: Drs. G. B. Batten, A. D. Brenchley, H. G. Cowie, C. Cooper Cripps, C. H. Fring, W. G. Stone, R. Tilbury.

Fees for School Clinics.—A question having arisen as to the increasing disposition on the part of public bodies to reduce medical fees on every possible opportunity, the following resolution, proposed by Dr. C. COOPER CRIPPS and seconded by Dr. BATTEN, was carried:

That the Honorary Secretary be instructed to send a letter of protest to the British Medical Association against any reduction of fees for school clinics, the protest to be supported by documentary evidence.

Ministry of Health.—The Division meeting was followed by a meeting—of which the whole of the local profession had been notified—called to consider the circular (D 15) containing recommendations relative to the establishment of a Ministry of Health. It was decided that the recommendations be approved, and the following suggestions be submitted:

1. That under "Central Organization," Clauses 4 and 5, a condition should be that the medical members of the Board mentioned be elected by the medical profession of Great Britain.

2. That under "Local Organization" this extra clause be added: "That for each area there should be a local medical committee with administrative powers, such committee to be elected by the practitioners resident in the administrative area."

MIDLAND BRANCH: LEICESTER AND RUTLAND DIVISION.

THE following officers have been elected for 1917-18:

Chairman: Dr. Harris. *Vice-Chairman:* Captain W. M. Holmes. *Honorary Secretary and Representative to Representative Meeting:* Major R. Wallace Henry.

Representatives on Branch Council: Dr. Harris, Major Henry, Captain Waite, Dr. T. Bell.

Executive Committee: Dr. Binns, Captain Foster, Captain Stamford, Captain Young, Major Blakesley, Dr. Jenkins, Dr. Ballard.

NORTH WALES BRANCH: DENBIGH AND FLINT DIVISION.
The annual meeting of the Division was held at Chester on June 15th.

Election of Officers.—The following officers were elected for the ensuing year:

Chairman: Dr. E. D. Evans (Wrexham). *Vice-Chairman:* Dr. Henry Lloyd (St. Asaph).

Representative for Annual Representative Meeting: Dr. T. Roberts (Wrexham).

The representatives on the Branch Council, the Executive Committee, and the Secretary were re-elected.

Ministry of Health.—The meeting approved of the general principles laid down for the establishment of a Ministry of Health, and instructed the Representative accordingly.

Rhythmical Spasm of Pharyngeal Muscles.—Dr. DRINK-WATER (Wrexham) showed a case of rhythmical spasm of the pharyngeal muscles with typical tic.

Public Health Laboratory.—Dr. E. OWEN PRICE (Bangor) presented his scheme for the establishment at the University College of North Wales, Bangor, of a public health laboratory to serve North Wales—as published in the JOURNAL of April 28th, 1917, p. 562—and expressed his ambition for the establishment of a chair in bacteriology.

and the pursuit of research work on the level of that carried out at the older universities. The meeting considered that to serve the needs of the industrial area in the west of North Wales a laboratory was also needed at Wrexham, and that the more ambitious part of the scheme required a much larger capital than that at present proposed. It was decided to give hearty support to the scheme as outlined by Dr. Price.

SOUTH-EASTERN OF IRELAND BRANCH.

An ordinary meeting of the Branch was held in the Town Hall, Clonmel, on June 6th, when Dr. R. R. O'BRIEN was in the chair.

Supply of Pure Milk.—On the motion of Dr. LAFFAN, seconded by Dr. POWER, it was unanimously resolved:

That the resolutions relating to milk passed at the last meeting be sent to the Local Government Board with a request that they take immediate and practical action on the question. (See SUPPLEMENT, June 2nd, p. 124.)

The Annual Subscription to the Association.—The following notice of motion was deferred for the general consideration of the profession:

That the annual subscription be reduced to the original figure of one guinea, and that we urge same on the constituent bodies of the Association.

Reports of Meetings.—On the motion of Dr. LAFFAN, seconded by Dr. JELLET, it was unanimously resolved:

That the reports of Branch meetings in Ireland should be reported in greater detail and without unnecessary delay, and, further, that more prominence should be given to Irish medical affairs in the JOURNAL.

Association Notices.

ANNUAL REPRESENTATIVE MEETING, 1917.

Date of Meeting.

The Annual Representative Meeting of the Association will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Thursday, July 26th, at 10 a.m. and following day(s) as may be required.

Agenda of A.R.M.: Further Notices of Motion by Divisions and Branches.

The provisional Agenda of the Annual Representative Meeting, including the Annual Report of the Council, was published in the SUPPLEMENT of May 5th, and a supplementary Notice of Motion in the SUPPLEMENT of June 2nd. The Supplementary Report of the Council was published in the SUPPLEMENT of July 7th. There will be included in the final Agenda of the Meeting, as to be issued to the members of the Representative Body on or about July 9th, not only the Notices of Motion published in the SUPPLEMENTS of May 5th, June 2nd, and (Supplementary Report of Council) July 7th, but also Notices of Motion received up to Thursday, July 12th, found by the Agenda Committee to be in order.

By order,

ALFRED COX,

Medical Secretary.

July 11th, 1917.

ANNUAL GENERAL MEETING.

NOTICE is hereby given by the Council that the Annual General Meeting of the British Medical Association will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Friday, July 27th, 1917, at 2 o'clock in the afternoon. **Business:** (1) Minutes of last meeting. (2) Appointment of auditors (Messrs. Price, Waterhouse, and Co. offer themselves for re-election). (3) Award of Siddemore Prize. (4) Report election of President.

By Order,

GYV ELLISTON,

Financial Secretary and Business Manager.

Dated this 7th day of July, 1917.

429, Strand, London, W.C.2.

RANCH AND DIVISION MEETINGS TO BE HELD.

NORTH WALES BRANCH.—Dr. J. R. Prytherch, Honorary Secretary (Llangefni, Anglesey), gives notice that the annual meeting of the North Wales Branch will be held at the University College, Bangor, on Wednesday, July 18th, at 3.15 p.m. The Branch Council will meet at 2.45 p.m. The meeting is being held at Bangor in deference to the wishes of members who desire to attend the Graduation Ceremony in the morning. An associate member of the Branch, Sir Robert Jones, B., will receive an honorary degree of the university.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—Dr. Arthur E. Larking (Secretary) gives notice that a meeting of the members of the Bucks Division, to which all medical men in the county are invited, will be held at the Crown Hotel, Aylesbury, on Thursday, July 19th, at 2.45 p.m., to re-elect the Local Medical War Committee, discuss the question of the formation of a Ministry of Health, consider matters relating to payments under the National Insurance Act, and other matters. Tea will be provided.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty:—Deputy Surgeon-Generals: W. Bett, M.V.O., to R.N. Barracks, Portsmouth; H. W. G. Doyne to R.N. Barracks, Chatham; E. R. Dinsey, D.S.O., to R.N. Barracks, Devonport. Fleet Surgeon F. H. Nimmo to Haslar Hospital (temporary). Staff Surgeon H. C. Devas to the Pembroke. Temporary Surgeons: C. de C. W. Langdon to the Victoria, additional, for Haslar Hospital; A. F. Grimby, M.B., to the Indomitable; J. J. Keatley, M.B., D. W. Lloyd, M.D., A. G. Brett, W. P. Tew, M.B., H. Banks, E. C. Dunlop, M.B., and W. Duncan, M.B., to Haslar Hospital; W. K. Chalmers, M.B., to the Egmont; R. Coyte to the Spanker; J. B. Brash to the Hibernia; R. G. Lyster to H.M. Dockyard, Rosyth; F. M. Mosely, A. E. Parker, and H. L. Douglas to Plymouth Hospital; R. Swan to Chatham Hospital. To be temporary Surgeons: W. L. Denney, M.D., E. A. Crook, M.B.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon probationers: STG. B. D. Gray to the Pelorus, W. Beaumont to the Laurel. To be Surgeon probationers: H. A. Morton, H. T. Roper-Hall, F. C. Speechley, D. M. Lindsay, H. L. Mather, D. V. Latham, C. Holmes, A. D. Gill, W. R. Macnie, T. S. Severs.

ARMY MEDICAL SERVICE.

Colonel O. R. A. Julian, C.B., C.M.G., to be temporary Surgeon-General.

ROYAL ARMY MEDICAL CORPS.

Temporary Colonel W. Hunter, C.B. (Captain R.A.M.C.T.F.), reverts to the rank of temporary Lieutenant-Colonel on reposting.

Lieut.-Colonel (temporary Colonel) O. L. Robinson, C.M.G., relinquishes his temporary rank on reposting.

To be temporary Colonels whilst employed as Assistant Directors of Medical Services of a Division: Lieut.-Colonel A. G. Thompson, D.S.O., Brevet Colonel T. W. Gibbard.

Majors relinquish the acting rank of Lieut.-Colonel on reposting: A. M. Rose, D.S.O., D. P. Watson, R. C. Wilmot.

Temporary Major H. J. Roberts, M.D., F.R.C.S. (Lieut.-Colonel T.F. Res.), to be temporary Lieut.-Colonel.

Captain F. C. Davidson, M.C., to be acting Lieut.-Colonel whilst in command of a field ambulance.

Temporary Captain R. Wilson, to be temporary Major whilst in command of troops on a hospital ship.

Granted temporary honorary rank whilst employed with No. 22 General Hospital:—As Major: K. Emerson, As Captain: F. Brigham, F. J. Caldwell, P. Gustafson, D. E. Ford. As Lieutenant: C. N. Lewis, W. S. Ramsey, L. M. Van Stone, D. J. Knowlton, G. W. Cottis.

Temporary Captain H. A. G. Hadden relinquishes his commission on account of ill health, and is granted the honorary rank of Captain.

Temporary Captains relinquish their commissions: A. E. Moore, S. H. M. Neave.

Temporary Captain Frederick A. O'Donnell is dismissed the service by sentence of a general court-martial.

Temporary Lieutenant T. Crawford relinquishes his commission on account of ill health.

Temporary Lieutenants to be temporary Captains: H. F. Ferguson, M.B., D. Gaston, M.B., H. M. Gray, K. Elmes, J. J. Shannon, M.B., A. Morton, M.B., T. S. Paterson, M.B., J. L. Torley, M.B., D. McLaren, M.B., W. W. Morrison, M.B., M. M. Frey, M.B., N. H. Smith, M.B., N. M. Cummins, M.B., G. Fehrsen, G. T. Garraway, R. H. Fleming, M.B., W. N. Montgomery, M.B., J. S. Kinross, M.B., C. E. Wise, M.D., F. W. Clark, M.B., J. Jaffe, M.B., J. B. P. McLaren, M.B., L. M. Davis, O. C. M. Davis, M.B., J. Cross, J. Glaister, M.B., Z. A. Green, H. R. Tighe, F.R.C.S.L., T. W. Bailey, J. G. Forbes, M.D., R. O. Lee, M.B., D. H. A. Galbraith, S. F. Harris, C. R. Reekitt, J. W. Thomas, W. S. King, M.B., T. O. Robson, M.B., A. E. Burroughs, M.D., J. A. Giles, M.B., H. S. McSorley, M.D., G. B. Archer, M.B., B. W. Mosher, M.D., L. W. Jones, H. J. C. Gibson, M.B., J. A. Edmond, M.B., E. J. Mannix, M.B., E. Lanzon, M.D., J. D. W. Beavis, E. Kennington, R. B. Bryan, M.B., J. F. Penson, M.B., G. O. Hutchinson, M.D., A. W. McGregor, C. Harris, H. C. A. Haynes, W. G. Johnson, B. C. Haller, S. N. Babington, A. Finlay, M.D., H. A. Colwell, M.B., J. E. McMillan, M.B., L. Blake, M.B., H. J. Davidson, M.C., M.B., W. H. Harvey, M.D., L. ap I. Davies, H. L. Shelton, V. L. Connolly, M.B., W. Steadman, E. V. Beaumont, H. F. Wilson, M.B., A. E. Gravelle, A. J. Bennee, M.B., W. P. H. Lightbody, J. C. Macaulay, M.B., J. A. Paterson, M.B., H. D. Gasten, E. S. Molyneux, F. J. McCarthy, M.B., G. E. Chissell, J. T. Lloyd, M.B., S. Rodin, M.D., E. L. Steele, M.D., C. S. Tennant, M.B., I. Vardandaigue, M.D., F. R. Fraser, M.B., T. G. Elsworth, M.D., T. R. Davey, G. H. Culverwell, M.D., C. S. Thomson, M.D., G. B. Bartlett.

Temporary Lieutenants relinquish their commissions: R. D. L. Greene, M.B., A. Campbell, F.R.C.S.E., P. L. Blaber, J. A. Hope, M.B., R. H. C. O. Wisdom, A. A. Halliday, M.B., J. Devine, S. F. Floyd, M.B., J. Crean, M.B., A. G. L. Smith, J. F. Walsh, A. P. Gibbons, M.B., J. B. McMorland, M.B., G. B. Ferguson, M.D., W. A. Murray, M.D., E. E. Bryans.

Temporary Quartermaster and honorary Lieutenant A. E. Harvey relinquishes his commission on account of ill health.

To be temporary Quartermasters with the honorary rank of Lieutenants: J. McGrath, H. W. H. Canham, R. B. Brown.

F. Soule to be temporary honorary Quartermaster with the honorary rank of Lieutenant whilst employed at the British Red Cross Hospital, Netley.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Captain S. J. Henderson relinquishes his commission on account of ill health.

To be Lieutenants: L. J. Vincent, from the University of London Contingent O.T.C.; M. F. Murphy, from Royal College of Surgeons in Ireland Contingent O.T.C.; J. Wilson, M.B., from Queen's University Belfast Contingent O.T.C.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL CORPS.

Temporary Captain W. L. Maclean to be temporary Major. Sergeant-Major G. T. Brown to be temporary Quartermaster, with the honorary rank of Lieutenant.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

To be acting Lieut.-Colonels whilst commanding a field ambulance: Major E. H. Cox, Captain G. S. Williamson.
Major R. J. W. Oswald to be Lieut.-Colonel on the permanent personnel.

Captains (temporary Majors) relinquish their temporary rank on ceasing to command a field ambulance: F. W. K. Tough, F.R.C.S., L. C. V. Hardwicke, P. W. Thompson, J. O'Sullivan.

Seconded for duty with a general hospital:—Lieut.-Colonels: T. Gowans, M.B., J. F. Dobson, M.B., F.R.C.S., J. B. Bush, C.M.G. Majors: H. B. Roderick, M.D., A. Cook, M.B., F.R.C.S., F. W. Burton-Fanning, M.D., R. A. Veale, M.D., D. J. Graham, M.D., F.R.C.P., F. D. Boyd, C.M.G., M.D., J. G. Andrews. Captains: W. B. Marshall, M.B., W. Tyson, M.D., H. A. Cookson, M.B., F.R.C.S., M. G. Foster, M.D., C. N. Chadborn, W. E. Alderson, M.D., T. S. P. Parkinson, M.B., J. D. Lickley, M.D., W. Seymour, M.B., A. Gough, M.B., F.R.C.S., W. Longley, F. J. Stansfield, M. J. Stewart, M.B., F. B. Mouat, M.B., F.R.C.S., J. H. Cobb, M.B., A. Young, M.B., H. C. Snell, W. R. Higgins, M.B., C. W. Sharpley, R. H. Fagge, R. Michell, J. McC. Johnston, M.B., J. Gilchrist, M.D., A. A. Skirving, C.M.G., J. Eason, J. Henderson, M.D., S. G. Webb, M.D., H. B. Whitehouse, A. R. Bearn, M.D., F.R.C.S., J. G. L. Mackay, M.D., A. L. Flemming, W. B. Secretan, A. J. Campbell, N. Hodgson, M.B., J. A. Innes, M.B., A. E. Campbell, M.B., F. G. Stuart, M.B., W. Alexander, M.B., A. A. McKenzie, M.B., D. Cameron, M. Chalmers, E. McMillan, Dunlop, A. C. Hepburn, D. Campbell, J. W. Anderson, Quartermaster and Honorary Major W. Lee, Quartermasters and Honorary Lieutenants: R. H. Porter, D. Stout, A. L. Taylor, E. D. McKay.

Captain (acting Lieut.-Colonel) W. P. Ferguson relinquishes his acting rank on ceasing to command a field ambulance.

Captain A. W. Nuthall is seconded whilst holding a temporary commission in the R.A.M.C.

Captains from the General List to be Captains: R. W. E. Stickings, A. T. Cameron.

Lieutenants from the General List to be Lieutenants: W. E. Smith, R. L. Collett, E. R. Marle, J. P. M. Dowdall.

Lieutenants (temporary Captains) to be Captains with precedence next below Captain (temporary Major): G. H. Spencer, E. B. Kitching, J. W. Craven, M.B.

Lieutenant H. Evers to be Captain.

To be Lieutenants: R. T. Pearl, C. W. Ellison, Acting Corporal E. L. Gaunt.

Attached to Units other than Medical Units.—Major H. W. Williams, M.D., to be acting Lieut.-Colonel whilst commanding a casualty clearing station. Captain W. T. Rowe, M.D., to be Major and to remain seconded for duty with a general hospital.

Vacancies and Appointments.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BIRKENHEAD: BOROUGH HOSPITAL.—House-Surgeon. Salary, £250 and war bonus.

BIRMINGHAM GENERAL DISPENSARY.—Temporary Tuberculosis Officer. Salary, £500 per annum.

BOURNEMOUTH: CRAG HEAD HOSPITAL, Manor Road.—Resident Medical Officer. Salary, £300.

BOURNEMOUTH: ROYAL NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST.—Resident Medical Officer and Clinical Tuberculosis Officer for the Borough. Salary combined, £430, rising to £530 per annum.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Resident House-Surgeon. Salary, £250 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

DEVONPORT: ROYAL ALBERT HOSPITAL.—House-Surgeon. Salary, £200 per annum.

DURHAM COUNTY COUNCIL.—Assistant School Medical Officer (woman). Salary, £300 per annum, rising to £350, and war bonus.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Lady Resident Medical Officer. Salary, £200.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Resident Medical Officer. Remuneration, £200 and additional £141 for routine laboratory work and lectures to nursing staff.

ITALIAN HOSPITAL, Queen Square, W.C.—House-Surgeon. Salary, £150 per annum.

KIRKWALL: PARISH OF EDAY.—Medical Officer.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

LONDON INSURANCE COMMITTEE.—Medical Adviser.

NETLEY: WELSH HOSPITAL.—Medical Officer. Salary, £400 per annum.

MARGATE: ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Surgeon. Salary, (resident) £150, (non-resident) £250, increasing £50 after six months.

NATIONAL HOSPITAL AND UNIVERSITY COLLEGE HOSPITAL, SCHOOL OF MASSAGE AND ELECTRICAL TREATMENT, Queen Square, W.C.—Head of the School. Salary, £200 per annum.

NORTHAMPTONSHIRE WAR HOSPITAL, Duston.—Resident Medical Officer. Salary, £1 daily.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House-Surgeon.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—House-Physician. Salary, £100 per annum.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—House-Physicians. Salary, £50 per annum.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Third House-Surgeon. Salary, £50 per annum.

ST. ANDREW'S HOSPITAL, Dollis Hill, N.W.—Resident Medical Officer. Salary, £325 15s.

SHEFFIELD ROYAL INFIRMARY.—House-Physician. Salary, £120 per annum.

SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.—(1) House-Physician (female); salary, £100 per annum. (2) Anaesthetist; 10s. 6d. per attendance.

STOKE-ON-TRENT COUNTY BOROUGH.—Assistant Lady Medical Officer in connexion with Maternity and Child Welfare Work. Salary, £350 per annum.

WAKEFIELD: WEST RIDING OF YORKSHIRE.—Assistant Resident Medical Officer for the Middleton-in-Wharfedale Sanatorium. Salary, £325 per annum.

WINCHESTER: HAMPSHIRE COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary, £300 per annum.

MEDICAL REFEREE.—The Home Secretary announces a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Macclesfield and Congleton and Sandbach County Courts in the County Court Circuit No. 9. Applications to the Private Secretary, Home Office, by August 7th.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

ALCINDER, J. M.B., Ch.B. Edin., District Medical Officer of the Faddington Parish.

BRITAIN, P. M., L.M.S.S.A., District Medical Officer of the Hatfield Union.

HAINSWORTH, J. W., M.B., Ch.B. Vict., District Medical Officer of the North Bierley Union.

KHAMBATTA, J. C., M.B., Ch.B. Edin., Certifying Factory Surgeon for the East Wemyss District, co. Fife.

MAURICE, W. B., M.R.C.S., L.R.C.P., District Medical Officer of the Marlborough Union.

WHITWORTH, W. C., M.R.C.S., L.R.C.P. Lond., Certifying Factory Surgeon for the St. Agnes District, co. Cornwall.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTHS.

MOORE.—On July 11th, at 56, St. Paul's Road, Clifton, the wife of Clifford A. Moore, M.S., F.R.C.S., Captain R.A.M.C.(T.), of a son.

WANKLYN.—On July 7th, at a Nursing Home, Chaucer Road, Worthing, to Captain W. McC. Wanklyn, R.A.M.C., and Mrs. Wanklyn, a daughter.

MARRIAGE.

THOMPSON—HENRY.—On July 5th, by special licence, at Sefton Park Church, Captain W. A. Thompson, R.A.M.C., eldest son of J. Thompson, Esq., B.A., Rock Cottage, Cookstown, to May E. Henry, M.B., younger daughter of S. R. Henry, Dun Suivnish, Port Stewart.

DEATHS.

ATKINSON.—Suddenly, at Claremont, Felixstowe, on the 7th inst., Lieutenant Ambrose Atkinson, R.A.M.C., late of Harringay, London, N., beloved husband of Kate Atkinson, aged 57.

BARNES.—On the 8th inst., suddenly, at "Gloucester House," Hammersmith Road, Edith Lucy, the beloved wife of Dr. George Barnes (now serving in R.A.M.C. in Egypt), aged 38.

BRANSON.—On July 10th, at Rotherwood, Avenue Road, Bournemouth, John Branson, M.R.C.P. Edin., aged 80 years. Formerly of Rotherham, Yorks.

DIARY FOR THE WEEK.

ROYAL SOCIETY OF MEDICINE.—Section of Dermatology: Thursday, 4.30 p.m., Cases.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
JULY.	
18 Wed.	North Wales Branch, Annual Meeting, Bangor, 3.15 p.m. Branch Council, 2.45 p.m.
19 Thur.	London: Insurance Acts Committee, 2.30 p.m. Buckinghamshire Division, Aylesbury, 2.45 p.m.
25 Thurs.	OPENING OF ANNUAL REPRESENTATIVE MEETING, Connaught Rooms, Great Queen Street, London, W.C. 10 a.m. Future of Insurance Practice. Treatment of Discharged Disabled Sailors and Soldiers. Ministry of Health. Military Demands on the Medical Profession. Treatment of Venereal Diseases. Etc., etc.
27 Fri.	ANNUAL GENERAL MEETING.

SUPPLEMENT

TO THE

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 21st, 1917.

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Meetings of Branches and Divisions.

DORSET AND WEST HANTS BRANCH.

THE summer meeting of the Branch was held at the Royal Naval Hospital, Portland (by kind permission of Fleet Surgeon J. Shand, R.N.), on July 11th, when the President, Dr. T. HOWARD, was in the chair. Prior to the meeting the members were entertained to luncheon by the President at his house.

Autumn Meeting.—It was decided to hold the autumn meeting at Bournemouth in October.

Scientific Proceedings.—Temporary Surgeon C. H. S. TAYLOR, R.N., read a paper entitled, "Some experiences with the Royal Naval Division in Antwerp, Gallipoli, and France," and made special reference to the treatment of sanitary questions at the front. Afterwards a demonstration was given at the hospital on the diagnosis and treatment of venereal diseases, and the technique of the intravenous administration of galyl was illustrated by the injection of a patient. Some x-ray photographs and clinical cases in the wards were shown and the members then adjourned to Dr. Shand's house where they were entertained to tea.

LEINSTER BRANCH.

THE annual meeting of the Leinster Branch was held in Dublin on June 19th, when Dr. R. L. HEARD was in the chair.

Election of Officers.—The annual report and financial statement were read and adopted, and the following officers were elected for 1917-18:

President: Surgeon A. Blayney. *President-elect:* Dr. H. Jellett. *Vice-Presidents:* Dr. W. V. Furlong, Colonel Johnston, R.A.M.C.

Honorary Secretary and Treasurer: Dr. W. Doolin.

Representative on Council of Association: Dr. W. Doolin.

Representatives of Branch on Irish Committee: Drs. James Craig, J. M. S. Kenny.

Ministry of Health.—A subcommittee, consisting of Drs. D. Jackson, Katharine Maguire, R. J. Rowlette, and Ella Webb, was appointed to report regarding the proposed legislation in connexion with the physical welfare of mothers and children, and the establishment of a Ministry of Health.

Remuneration for Doctors attending V.A.D. Hospitals.—The following motion proposed by Dr. Good, seconded by Dr. JACKSON, was passed unanimously:

That this meeting of the Leinster Branch strongly disapproves of the manner in which the War Office has concealed the fact that medical officers to V.A.D. hospitals are entitled to State remuneration for attendance at such hospitals.

SUSSEX BRANCH.

THE annual meeting of the Branch was held in the Town Hall, Hastings, on July 4th, when Dr. G. LOCKE was in the chair.

The members were entertained at lunch by Dr. Locke, who was supported by the Mayor of the borough.

Election of Officers.—The following officers were elected:

President: Dr. George Locke, J.P. *Vice-Presidents:* Dr. W. Muir Smith, J.P., Dr. H. C. L. Morris.

Honorary Secretary and Treasurer: Dr. A. M. Dady.

The financial statement was adopted and Chichester selected for the next annual meeting.

Presidential Address.—Dr. LOCKE delivered an address in which he referred to the proposed establishment of a Ministry of Health, and said it seemed impossible to prophesy as to the future of medical work because the country was on the edge of great changes—social, political, and financial—but the profession should consider what it could do to guide decisions. It must be careful with regard to the social changes likely to take place, otherwise there was the risk of medical practitioners becoming the servants instead of the advisers of the public. If doctors became State officials they would probably be drawn into the vortex of public affairs and unwillingly into strife. Strong organization was a necessity, and he considered that the British Medical Association was their best defence. He suggested that like trade, labour, and wealth, the British Medical Association should have a representative in Parliament. He supported the proposal for a Ministry of Health, and contended that the president should have Cabinet rank and be a medical man. He concluded his address by proposing a motion in favour of the establishment of a Ministry of Health on the lines recommended by the Central Council, which after some discussion was adopted.

Association Notices.

ANNUAL REPRESENTATIVE MEETING, 1917.

THE Annual Representative Meeting of the Association will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Thursday, July 26th, at 10 a.m. and following day(s) as may be required.

By order,

ALFRED COX,

Medical Secretary.

July 11th, 1917.

ANNUAL GENERAL MEETING.

NOTICE is hereby given by the Council that the Annual General Meeting of the British Medical Association will be held at the Connaught Rooms, Great Queen Street, London, W.C., on Friday, July 27th, 1917, at 2 o'clock in the afternoon. *Business:* (1) Minutes of last meeting. (2) Appointment of auditors (Messrs. Price, Waterhouse, and Co. offer themselves for re-election). (3) Award of Middlemore Prize. (4) Report election of President.

By Order,

GUY ELLISTON,

Financial Secretary and Business Manager.

Dated this 7th day of July, 1917.

429, Strand, London, W.C.2.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty:—Fleet Surgeons: P. T. Sutcliffe, M.B., to the *President*, additional, for service at the Medical Department; W. P. Dyer to the *Cornwall*. Staff Surgeon N. B. U. Jacob is placed on the retired list. Surgeon M. J. Cole to torpedo boat 101. Surgeon W. E. Lloyd is placed on the retired list. Temporary Surgeons: J. L. Lamont, M.B., and A. O. Ross, M.B., to Haslar Hospital; M. Fawkes, M.B., to the *Finn*; L. W. Gennell, M.B., and E. S. Bowes to the *Cornwall*; B. H. Pain, M.B., to the *Fingard*; H. S. Sington to Clintham Hospital; C. H. Gould to the *Finn*, additional, for disposal; J. Aydon, W. Meade, E. E. Llewellyn, F. E. G. Watson and W. S. Parsons, M.D., to the *Victory*, additional, for Haslar Hospital; A. F. Wyatt, H. R. Bickerton, D. W. R. Richardson, E. F. S.

Gordon, N. F. Smith, and G. A. Clarke, M.B., to the *Fivid*, additional, for Plymouth Hospital. To be temporary Surgeons: J. Hale, A. J. Copeland, J. P. S. Walker, M.B., G. H. Ward, H. W. Eddison, C. Colmer, M.B., L. E. A. B. Farr.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon probationers N. N. Kirkup to the *Mastiff*; W. B. Dickson to the *Pembroke*, for R.N. Barracks, Chatham. To be Surgeon probationers: R. V. Dowse, T. F. J. Hopwood, C. Shaw, P. Wilson, J. T. Burrell, J. B. Gregor, C. C. Bradsworth.

ARMY MEDICAL SERVICE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of a Division: H. B. Pawcus, C.M.G., E. P. Sewell, D.S.O.

Lieutenant-Colonel J. C. B. Statham, C.M.G., to be temporary Colonel whilst employed as Assistant Director of Medical Services, Lines of Communication.

The following Majors retain the acting rank of Lieut.-Colonels whilst in command of casually clearing stations: C. H. Turner, D.S.O., J. Powell, B. F. Wingate, D.S.O.

Temporary Major E. F. Eliot, F.R.C.S.E., to be acting Lieut. Colonel whilst on special employment.

To be acting Lieut.-Colonels whilst in command of a field ambulance: Major R. P. Lewis, Captain C. Helm, M.C.

F. C. Dwyer, M.D., F.R.C.S.I., to be temporary Lieut.-Colonel.

Temporary Major R. G. Riches having resigned his appointment at the Horton (County of London) War Hospital relinquishes his commission.

H. Robinson, F.R.C.S., to be temporary Major whilst employed at the Horton (County of London) War Hospital.

Temporary Captain C. R. Nicholson to be temporary Major.

Temporary Captain W. Core to take rank and precedence as Captain in the R.A.M.C. and in the army as if his appointment to that rank bore date April 18th.

J. Breton-Barry, late temporary Captain, is granted the honorary rank of Captain.

Major S. A. Smith, D.S.O., C.A.M.C., to be temporary Major.

(Substituted for notification in the *London Gazette* of April 4th.) Granted temporary rank while employed at the Whipp's Cross War Hospital: As Major, A. Stewart. As Captain, D. Broderick.

Temporary Captains relinquish their commissions: R. T. Cooke, M. J. Gallagher, F. H. Looney, H. T. Wilkins, R. D. Brinton, J. H. Hart, H. P. D'A. Benson, W. M. S. Robinson, W. Tregenza, E. C. Pratt, A. H. Tovey, A. Adams, J. W. McCagie, J. Muirhead, P. J. Murphy, G. N. Urie, J. H. White, L. E. V. Every-Clayton, C. Reidy, M. H. Paterson, M.C., G. R. C. Wilson, N. G. Meade, A. D. Clanchy, W. F. Blewitt, A. Whitby, S. H. Booth, A. E. Henton, F. J. Wheeler, H. W. Binks, M. Macnicol, J. Clark, A. B. Northcote, W. S. Lazarus-Barlow, I. Alluan, A. Rennie, S. Y. Walsh, L. E. Ashley-Emile, W. Bannerman, A. A. Moon, A. F. Menzies, W. A. L. H. Henderson, N. MacDonald, H. S. Moore, W. F. MacDonald, K. E. Millan, D. A. Fletcher, J. G. Sleeman, A. G. Howson, A. R. Thomson, C. D. Keane, K. G. McKenzie.

Temporary Lieutenants to be temporary Captains: A. C. Lambert, W. A. Shafto, H. L. Morrow, J. J. Walsbe, K. Black, E. E. Hughes, W. Reynolds, R. L. M. Wallis, E. G. Stanley, P. R. O'R. Phillips, M. A. Mackinnon, R. Stipe, J. G. Jones, P. S. Marshall, W. J. Moir, W. H. T. Jones, V. R. Hirsch, J. N. Lyons, D. N. Knox, T. J. Taunton, J. Goss, M.B.

Temporary Lieutenants relinquish their commissions: G. Stivala-Aspinall, J. M. W. Morison, H. H. Lawrence, R. R. Helsby, P. Nase, J. Dundon.

The notification in the *London Gazette* of May 5th regarding temporary Lieutenant H. L. Morrow is cancelled.

Temporary Lieutenant A. F. W. Millar relinquishes his commission on account of ill health.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICES.

Lieut.-Colonel H. W. Thomson vacates the appointment of Assistant Director of Medical Services, and is restored to the establishment.

Major (acting Lieut.-Colonel) H. Richardson, M.D., to be Assistant Director of Medical Services, and to retain the acting rank of Lieut.-Colonel while so employed.

ROYAL ARMY MEDICAL CORPS.

The announcement regarding Major (temporary Lieut.-Colonel) J. Evans, which appeared in the *London Gazette* of June 30th, is cancelled.

Captain (temporary Lieut.-Colonel) D. E. Evans reverts to the temporary rank of Major on alteration in posting.

Captain (acting Lieut.-Colonel) J. W. Leitch, M.B., to be Major and acting Lieut.-Colonel.

Captain (acting Lieut.-Colonel) J. Blackwood relinquishes the acting rank on ceasing to command a field ambulance.

Captain C. A. Spooner to be Major and to remain seconded.

Captain E. H. E. Stack is seconded for duty with a general hospital.

To be Lieutenants: Sergeant F. G. Caesar, Staff Sergeant J. C. Risk.

Quartermaster and Honorary Captain A. J. Naylor to be Quartermaster, with the honorary rank of Major.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL SERVICE.

Deputy Assistant Director of Medical Services—The rank of Major G. H. R. Gibson, C.A.M.C., is as now described and not as printed in the *London Gazette* of June 11th.

Assistant Directors of Medical Services—Temporary Colonel J. W. Bridges, C.A.M.C. (substituted for notification in the *London Gazette* of June 21st, incorrectly inserting "vice Colonel G. S. Rennie.") Lieut.-Colonel C. A. Peters, C.A.M.C., and to be temporary Colonel whilst so employed, vice Colonel H. A. Chisholm, D.S.O., C.A.M.C.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BIRKENHEAD: BOROUGH HOSPITAL.—House-Surgeon. Salary, £250 and war bonus.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer. Salary, £300 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—Resident House-Surgeon. Salary, £150 per annum.

DEVONPORT: ROYAL ALBERT HOSPITAL.—House-Surgeon. Salary, £203 per annum.

DURHAM COUNTY HOSPITAL.—House-Surgeon. Salary, £180 per annum.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Lady Resident Medical Officer. Salary, £200.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—(1) Resident Medical Officer. Remuneration, £200 and additional £141 for routine laboratory work and lectures to nursing staff. (2) Assistant Resident Medical Officer. Salary, £100 per annum.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

NEWCASTLE-ON-TYNE EYE INFIRMARY.—House-Surgeon (non-resident). Salary, £140.

NORTHAMPTONSHIRE WAR HOSPITAL, Duston.—Resident Medical Officer. Salary, £1 daily.

PAISLEY INFECTIOUS DISEASES HOSPITAL.—Lady Practitioner as Resident.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road, N.W.—District Resident Medical Officer. Salary, £60 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House-Surgeon.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Junior Resident House-Surgeon. Salary, £150 per annum.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Third House-Surgeon. Salary, £50 per annum.

ST. ANDREW'S HOSPITAL, Dollis Hill, N.W.—Resident Medical Officer. Salary, £323 15s.

SHEFFIELD: ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

VENTNOR: ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Locumtenent to act as Assistant Medical Officer. Salary, £5 per week.

WAKEFIELD: WEST RIDING OF YORKSHIRE.—Assistant Resident Medical Officer for the Middleton-in-Wharfedale Sanatorium. Salary, £325 per annum.

WINCHESTER: HAMPSHIRE COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary, £300 per annum.

WORCESTERSHIRE ASYLUM, Bromsgrove.—Locumtenent Medical Officer.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointments: Castleford (Yorks); Hendon (Middlesex).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

ALDOUS, George F., F.R.C.S. Edin., Consulting Surgeon to the Kingsbridge Cottage Hospital.

CHADWICK, G. R., M.D. Durh., Medical Officer of the King's Lynn Union Workhouse.

HAYTON, C. H., F.R.C.S., Honorary Assistant Surgeon to the Ear, Nose, and Throat Department, Prince of Wales's General Hospital, Tottenham.

HEATON, C. J., M.D. Brux., M.R.C.S., L.R.C.P. (temporary Captain R.A.M.C.), Surgeon Radiographer to No. 6 General Hospital, British Expeditionary Force, France.

LEITCH, Joseph Wm., M.D., M.B., F.R.C.S., Honorary Surgeon to the Royal Victoria Infirmary, Newcastle-upon-Tyne.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

SHAW DUNN.—On July 3rd, at 40, Dalblair Road, Ayr, the wife of Captain John Shaw Dunn, R.A.M.C., of a son.

MARRIAGE.

MISBAH—DAVIS.—On July 7th, by special licence at Marylebone, London, A. N. Misbah, M.D., D.P.H., Lieutenant Egyptian A.V.C. of "Milbank," Percy Street, Rotherham, Yorks, second son of the late A. I. Misbah, Bedouin Chief, of Cairo, Egypt, to Lily G. Davis, youngest daughter of the late John Davis, Esq., of Rhosmedra, Denbighshire.

DEATH.

STEWART.—On July 12th, at his residence, Hollywood, Pendleton, Manchester, Alexander Stewart, M.D., aged 62 years. No flowers by request.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
JULY.	
26 Thurs.	OPENING OF ANNUAL REPRESENTATIVE MEETING, Connaught Rooms, Great Queen Street, London, W.C., 10 a.m. Future of Insurance Practice. Treatment of Discharged Disabled Sailors and Soldiers. Ministry of Health. Military Demands on the Medical Profession. Treatment of Venereal Diseases. Etc., etc.
27 Fri.	ANNUAL GENERAL MEETING.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 28TH, 1917.

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British Medical Association.

CURRENT NOTES.

White Bread for Invalids.

In consequence of various statements in the lay press to the effect that the Food Controller had decided to allow the purchase of "white" bread to those who find bread of the official standard indigestible or harmful to health, and who can furnish a medical certificate in corroboration of their view, a letter was addressed on behalf of the British Medical Association to the Food Controller on July 17th, asking for an exact statement by the Food Controller and information as to the way in which it was intended that the procedure should be carried out. In reply, the Association has been informed that invalid applications for superior flour should, in the first instance, be made by the invalid direct to the Ministry of Food, Grosvenor House, London, W.1, which will forward forms direct. The first form addressed to the applicant asks for a doctor's certificate and the name of a miller willing to manufacture a superior flour at the cost of the applicant. The medical certificate is in the following form:

Form II.

I hereby certify that I am in professional attendance on who is suffering from and that in my opinion it is essential that he (or she) should be supplied with superior flour to the regulation grade during the next weeks.

Signature

It is not the policy of this department to issue licences freely, otherwise it would be open to serious abuse; therefore please only sign above certificate in case of urgent necessity.

The Reorganization of Recruiting.

At a meeting of the Joint Committee of representatives of the Committee of Reference of the Royal Colleges of Physicians and Surgeons in England and of the Central Medical War Committee on July 17th it was resolved to summon a joint meeting of the full committees on July 25th to consider, among other matters, the propriety of submitting to the Government a scheme for the constitution of recruiting medical boards throughout the country. Meanwhile, on July 23rd, Lord Derby gave evidence before the Select Committee, as reported under Parliamentary Notes (p. 126), and stated that he desired that the whole of the recruiting should be taken out of the hands of the War Office and of the military authorities and entrusted to a civilian department. He made it a condition that "a civilian body should find the men, and until the men had gone through various processes to ascertain whether they could be spared from their civilian employment and whether they were fit for the various categories of service the army required, they should not come under the authority of the military." In view of this declaration, the joint meeting of the two committees on July 25th adopted unanimously the following resolution:

That this joint meeting of the Committee of Reference and the Central Medical War Committee communicate at once to the Prime Minister, the Secretary of State for War, the President of the Local Government Board, and the Chairman of the Select Committee (Mr. Shortt), its view:

1. That in any reorganization of the recruiting machinery of the country it is absolutely necessary that, as regards

the medical examination of men, the selection of the doctors to serve on the medical boards throughout the country should not be left wholly in any local hands, but should be supervised by a central body in order to obtain adequate uniformity of standard, and

2. That the selection should be made under the auspices of these two bodies (the Committee of Reference and the Central Medical War Committee) jointly, who are preparing a scheme for this purpose, which they will have the honour of submitting to the Government for its consideration.

PENSIONS AND GRANTS FOR DISABLED OFFICERS AND RELATIVES OF DECEASED OFFICERS.

THE promised draft of a Royal Warrant for the retired pay of officers disabled and for the pensions of the families and relatives of officers deceased, and for the pensions of nurses disabled in the present war, has been presented to Parliament.

Its general terms are explained in the body of the JOURNAL (p. 122), but we reproduce here the two schedules showing the rates of retired pay to disabled officers, and of pensions, gratuities, and allowances to officers' widows and children, together with some explanatory notes.

FIRST SCHEDULE.

Retired Pay to Disabled Officers.

		Retired Pay on Account of Disablement.						
		Officers not holding Permanent Commissions in Regular Forces.						Officers holding Permanent Commissions in Regular Forces.
Degree of Disablement.	Percentage Degree of Disablement.	Major-General.	Brigadier-General.	Colonel.	Lieutenant-Colonel.	Major.	Captain, Lieutenant, or Second Lieutenant.	All Ranks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	100	£ 350	£ s. 325 0	£ s. 275 0	£ 250	£ s. 225 0	£ s. 175 0	£ 100
2	80	280	280 0	220 0	200	180 0	140 0	80
3	70	245	227 10	192 10	175	157 10	122 10	70
4	60	210	195 0	165 0	150	135 0	105 0	60
5	50	175	162 10	137 10	125	112 10	87 10	50
6	40	140	130 0	110 0	100	90 0	70 0	40
7	30	105	97 10	82 10	75	67 10	52 10	30
8	20	70	65 0	55 0	50	45 0	35 0	20

Notes.

An officer who has lost the sight of both eyes as the result of wounds received in action shall be granted not less than £300 a year in wounds pension and retired pay taken together.

In the case of pecuniary need a disabled officer in receipt of retired pay may be granted an education allowance not exceeding £50 a year in respect of each child above the age of 9.

An officer who shows that the retired pay which he has been granted, together with any wound gratuity or pension of which

he is in receipt, together with the average earnings (if any) of which he remains capable, are less than his pre-war earnings, may be granted temporarily or permanently in lieu of such retired pay, retired pay which, together with the wound gratuity or pension and the average earnings (if any) of which he is judged capable, shall not exceed his pre-war earnings up to a maximum of £300 a year, plus half any pre-war earnings between £300 and £600 a year.

"Pre-war earnings" means the average earnings of an officer during the twelve months preceding the commencement of the war, or such lesser period as he was employed, and shall be computed generally in such manner as is best calculated to give the rate at which he was being remunerated, and so far as may be applicable, in the same manner as for the purposes of the Workmen's Compensation Act, 1906. In the case of a man in trade, business, or profession, the average profits of the last three years preceding the commencement of the war shall be taken, or of such lesser period as he engaged therein.

If an officer's disablement is not permanent the grant of retired pay and allowances will be temporary and will not be made permanent unless the permanency of the disablement is established.

If the degree of disablement is assessed at less than 20 per cent. or if the Minister of Pensions considers it more in the interests of the officer, a gratuity or temporary allowance may be granted in place of retired pay; the amount of the grant will depend on the nature of the disablement and other circumstances, and will not exceed £500.

An officer who retires, relinquishes his commission, or is placed in the Territorial Force or Reserve on account of medical unfitness neither attributable to nor aggravated by military service, and not due to serious negligence or misconduct of the officer, may be granted a gratuity or temporary allowance, the amount to be determined by the Minister of Pensions. In exceptional circumstances it may amount to a sum not exceeding £300, and generally will depend on the extent to which the officer is incapacitated and on the other circumstances of the case.

Grants or pensions may be made to the parents (including a grandparent who has been in the place of a parent to an officer and wholly or mainly supported by him) or to sisters or brothers wholly or partially dependent on him subject to the discretion of the Minister of Pensions.

SECOND SCHEDULE.

Pensions, Gratuities, and Allowances to Officers' Widows and Children.

Rank.	Widow's Pension.		Widow's Gratuity.	Children's Allowances.	
	Art. 11 (1).	Art. 11 (2).	Art. 11 (3).	Art. 12 (1).	Art. 12 (1).
(1)	(2)	(3)	(4)	(5)	(6)
Field Marshal ...	800	600	3,500	30	25
General ...	600	450	3,000	30	25
Lieut.-General ...	500	375	2,000	30	25
Major-General ...	400	300	1,100	30	25
Brigadier-General ...	300	225	900	30	25
*Colonel ...	200	150	600	24	20
†Lieut.-Colonel ...	180	135	450	24	20
Major ...	140	105	300	24	20
Captain ...	100	75	250	24	20
Lieutenant ...	100	75	140	24	20
Second Lieutenant	100	75	100	24	20

* Colonel means a Colonel who has been employed as a substantive Colonel if a combatant officer, or in the rank of Colonel if a medical, veterinary, or departmental officer.

† Including a Colonel not employed as above.

Notes.

Article 11 (1) applies "if the officer (a) is killed in action or suffers violent death due directly and wholly to war service . . . or dies within seven years from wounds or injuries so received; or (b) dies from illness which is certified as directly traceable to fatigue, privation, or exposure, incident to active operations in the field, within seven years after having been first removed from duty on account of such illness; or (c) dies in consequence of injuries received in the performance of military duty otherwise than under (a) within seven years after having been so injured."

Article 11 (2) applies "if the officer (a) dies of disease attributable to or aggravated by military service other than under Subsection (1) (b) within seven years after having been first removed from duty on account of such disease, or (b) dies of injuries attributable to military service other than under (1) (a), or (1) (c), and not through his own serious negligence or misconduct, within seven years after having been first removed from duty on account of such injuries."

Article 11 (3) provides for a gratuity in addition to a pension if the officer dies in the circumstances referred to in subsection (1) (a).

Article 12 (1). The widow of an officer awarded a pension under Article 11 (1) may be granted a further allowance as in column 5, and a widow awarded a pension under Article 11 (2) a further allowance as in column 6, for each child maintained by her. These allowances may be granted or continued up to the age of 18 in the case of sons and 21 in the case of daughters, unless the child is otherwise provided for or married, and may be granted or continued after the age of 18 in the case of a son who is an apprentice receiving not more than nominal wages, or is being educated at a secondary school, technical institute, or university.

A gratuity of one-third of the amount in column 4 may be granted in addition to children's allowance for each child if the officer dies in the circumstances referred to in Article 11 (1) (a).

The Minister of Pensions may grant to a widow who is in pecuniary need an education allowance not exceeding £35 a year for each child above the age of 9.

A pension to a widow will cease on her remarriage, but may be restored should she again become a widow.

The motherless child of an officer who has died in the circumstances set forth in Article 11 may be awarded a pension of £40 a year, but in the event of two or more children being maintained by one person the amount will be reduced to £35 for each of the children after the first.

Meetings of Branches and Divisions.

CAPE OF GOOD HOPE—EASTERN PROVINCE BRANCH.

A MEETING of the Branch was held at Grahamstown on June 8th, when Dr. J. A. LEA was in the chair.

Lady Health Visitor.—The meeting approved the employment of a lady health visitor on the terms suggested by a subcommittee of ladies connected with the Labour Bureau.

The late Dr. Herman F. Becker.—A vote of condolence was adopted to Mrs. Becker on the death of her husband, who for many years was a member and office-bearer of the Association, and whose loyal work for the town, science and art generally, was a lasting memorial to his memory.

Grahamstown Water Supply.—After a discussion on this subject, introduced by Dr. Lea, it was resolved to urge the Municipal Council to render impervious as soon as possible not less than 10 acres of the Slaai Kraal catchment as a measure for the necessary and immediate relief of the citizens.

Medical Insurance.—The Secretary reported the result of the canvass for medical insurance, and it was decided to inquire from the South Africa Committee whether dental surgeons insured under the scheme were eligible for benefits.

MUNSTER BRANCH.

The annual general meeting of the Branch was held at Cork on July 7th, when Dr. D. J. O'CONNOR, President, was in the chair.

Insurance.—The interim report of the Insurance Acts Committee was read and considered, but no action taken thereon.

Election of Officers.—The following officers were unanimously elected:

President: Dr. J. Dundon. *Vice-President:* Dr. M. A. Shinkwin. *Retiring President:* Dr. D. J. O'Connor. *Honorary Secretary and Treasurer:* Dr. Philip G. Lee. *Representative to Representative Meeting, 1917:* Dr. Philip G. Lee. *Deputy Representative:* Dr. D. J. O'Mahony. *Representative on the Irish Committee:* Professor H. Corby. *Council for 1917-18:* Drs. H. R. Townsend, Lucy Smith, O. McCarthy, D. J. O'Mahony, P. T. O'Sullivan, J. T. O'Connor, E. Murphy, Professor W. Ashley Cummins, R. R. Leader (Millstreet), R. Foott (Monkstown), J. Devane (Limerick), Humphrey O'Sullivan (Crookstown).

INSURANCE.

INSURANCE COMMITTEES.

COUNTY OF LONDON.

The Assignment of Insured Persons.—At the meeting of the London Insurance Committee on June 28th the scheme for the assignment of insured persons to practitioners, which has been in operation since 1914, was modified to meet the case of an insured person who had been refused acceptance by a doctor. It was agreed that a practitioner on refusing to accept an insured person who applied for acceptance or for treatment should inform the applicant that it was open to him to apply to another practitioner for acceptance, and should hand him a special form in order that he might apply to the Panel Committee. The practitioner who made the refusal should

also give such treatment as might be required pending assignment.

Panel Practice and War Emergency.—In view of the burden thrown upon panel practitioners remaining in civil practice owing to the number of their colleagues absent on war service, the Committee agreed to issue a notice asking insured persons not to make unnecessary demands on the time and services of doctors, and to present prescriptions to chemists without delay. Each practitioner is to be asked to exhibit this notice in his surgery, and a statement to the same effect is being published in the press.

LOCAL MEDICAL AND PANEL COMMITTEES.

COUNTY WICKLOW.

At a recent meeting of County Wicklow Local Medical Committee the following resolutions were unanimously passed:

1. That the Committee believes that the numbers of insured persons returned by the National Health Insurance Commission as resident in certain areas in County Wicklow are very much underestimated, and that our secretary be instructed to ascertain from the Commission how the numbers of insured persons as given by them have been calculated.
2. The Committee is anxious to know if certificates issued to insured persons resident in, but not insured in, a particular dispensary area, are paid for; and, if so, on what basis?
3. That the Committee, representing the medical practitioners of the county, demands an increase of remuneration for medical certification out of the £25,000 per annum which has been unexpended by the National Health Insurance Commission for medical referees.

CHESHIRE.

At a meeting of the County Palatine of Chester Local Medical and Panel Committee on March 25th the following resolution was carried unanimously:

That in any scheme for the development of the medical service of the public the free right of the patient to select the doctor who is actually to attend him in illness should be preserved, and the right of the doctor to accept or refuse a patient should be recognized.

At an adjourned meeting of the Local Medical and Panel Committee on April 1st it was decided to inform the county medical officer of health that the employment of midwives for medical work does not constitute a satisfactory scheme, but that in cases where practitioners choose to undertake the examination of specimens of urine a suitable fee for examination and report on each specimen would be 5s. It was decided that the fees for the remuneration of practitioners called in by a midwife should be:

For all difficult cases (this to cover attendance for fourteen days)	£	s.	d.
And that the fee for subsequent attendance should be	0	3	6

And that otherwise the British Medical Association scale, including the fee for anaesthetic of £1 ls., be approved.

BIRMINGHAM.

At a meeting of the Panel Committee on June 5th it was decided to again approach the Commissioners with regard to the appointment of a medical man on the Insurance Committee. It was decided to ask the Insurance Acts Committee of the British Medical Association to bring the following resolution before the Commissioners:

That the medical card, being the only evidence of title to medical benefit, should bear the date of issue, and that the period allowed to elapse between issue and presentation to doctor for signature should be limited.

It was decided that the present Committee should continue in office till July 15th, 1918. The Secretary was instructed to inform the Birmingham Citizens' Committee that panel doctors would be recommended on the termination of each case to fill in the necessary particulars as to treatment of discharged soldiers and sailors for future reference.

COUNTY OF LONDON.

At the meeting of the London Panel Committee on June 26th a recommendation was brought forward that a conference of delegates from all the Panel and Local Medical Committees in the country should be summoned by the

London Committee to discuss the general question of closer co-operation and co-ordination. This was amended to include only those committees which had replied in sympathetic terms to the recent referendum of the London Committee. It was stated that favourable answers had been received from the great majority of committees, including the most important. Some members thought it unwise to start with a partial conference, but the amendment was carried and a special section of the Committee was instructed to make arrangements.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following notifications are announced by the Admiralty:—Fleet Surgeon J. E. Coad is placed on the retired list with the rank of Deputy Surgeon-General. Temporary Surgeons: L. B. Stringer to the *Europa*; A. H. Wear, M.B., to the *Daedalus* for Cranwell; A. C. McAlister, M.B., to the *Temeraire*; H. K. Shaw, M.B., to the *President*, additional, for Roehampton Hospital; H. W. Eddison, P. G. S. Davis, J. M. S. Nichol, M.B., and J. F. Howell to the *Pembroke*, additional, for Chatham Hospital; A. Strachan, M.B., to Chatham Hospital; K. McFadyen to Haslar Hospital; W. T. Beswick and L. B. Bartley to the *Fivid*, additional, for Plymouth Hospital; A. Pearce, S. S. Barton, D. W. MacKay, M.B., and W. T. Cooper to the *Victory*, additional, for Haslar Hospital; A. K. Roche, M.B., to the *Lord Nelson*; R. H. H. Newton to the *Truro* Auxiliary Naval Hospital, vice Roche; J. S. Farries to the *Pembroke*. To be temporary Surgeons: B. Thomas, J. F. Ryan, H. N. Dale-Richards, H. Rowan, W. E. Powell, W. D. Brunton, M.B.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon R. Wilbond promoted to Staff Surgeon; Surgeon Probationer P. Wilson to the *Victory*, for Haslar Hospital. To be Surgeon Probationers: W. Woodman, H. A. Potter, J. D. Whiteford, J. Macdonald.

ARMY MEDICAL SERVICE.

Colonel A. A. Sutton, C.B., D.S.O., to be temporary Surgeon-General.

ROYAL ARMY MEDICAL CORPS.

Majors R. H. L. Corder and A. A. Meaden relinquish the acting rank of Lieut.-Colonel on reposting. Major H. C. Sidgwick, M.B., retains the acting rank of Lieut.-Colonel whilst commanding a general hospital.

Temporary Major H. J. Shirley, M.D., F.R.C.S., to be temporary Lieut.-Colonel.

To be acting Lieut.-Colonels: Major G. E. Cathcart and Captain C. Clarke, M.B., F.R.C.S., whilst in command of a field ambulance; Major E. B. Booth, D.S.O., M.D., and Captain J. L. Wood whilst in command of a stationary hospital; Major A. B. Hinde (Reserve of Officers) whilst commanding a general hospital; Major H. R. Bateman, D.S.O., whilst commanding Officers' Convalescent Home, Michelham.

Major E. V. Aylen, D.S.O., to be temporary Lieut.-Colonel whilst commanding a R.A.M.C. Training Centre.

To be temporary Majors: Captain (temporary Major) A. S. Williams, D.S.O. (from December 8th, 1915, and not, as in the *London Gazette* of April 18th, 1916), W. C. Devereux, M.B., Lieut.-Colonel W. T. F. Davies, D.S.O., S.A.M.C.

Temporary Captains to be temporary Majors: W. de M. Hill, H. Dickie, M.D.

W. C. McN. Dickey (late temporary Captain) to be Honorary Captain.

Temporary Captains relinquish their commissions: G. W. Whitman, M.D., C. O. Walsh, M.D., G. M. Shaw, M.B., H. M. Godfrey, M.D., A. D. Sharp, M.D., G. B. Burwell, M.C., M.B., J. H. Box, M.B., J. F. Ryan, M.B., W. J. B. Brown, M.B., H. G. Murray, M.B., G. A. Greaves, M.D., R. E. Johnston, M.B., D. A. Fletcher, M.B., H. Grey, M.D., A. G. C. Irvine (on account of ill health).

To be temporary Captains: J. Allan, J. Henderson, M.B., C. J. Heaton, A. E. Boycott, M.D., F.R.S., A. E. Moore, M.D.

Temporary Lieutenants to be temporary Captains: H. M. Gillespie, M.B., A. E. Francis, H. R. Hurter, M.D., J. MacInnes, M.B., S. R. Hunter, M.D., A. E. Wynne, M.D., F.R.C.S.I., J. L. Smith, M.B., R. J. Morgan, A. Gaston, D. C. Crole, M.B., G. de H. Dawson, J. Whiteside, M.B., J. W. Watthews, M.B., A. J. Hawes, M.B., B. Robertson, M.B., A. Smith, W. Sowerby, M.D., R. M. Morison, M.B., J. R. M. MacKenzie, M.B., J. McD. Matheson, M.B., A. H. B. Pearce, A. Wright, M.B., E. W. Toulmin, W. B. Hendry, S. H. Scott, J. McPolin, M.B., D. Walker, M.B., J. Byrne, V. E. Sorapure, M.B., F.R.C.S.E., R. M. McMinn, M.B., H. W. Hues, H. H. Tipping, H. M. Sturrock, C. S. Glegg, M.B., R. L. S. Nuthall, D. Campbell, T. B. A. Haggard, A. Morrison, A. W. Adams, W. L. Thomas, M. Graves, F. E. Dowling, J. F. Finlay, M.B., A. F. Fraser, M.B., L. Bensted, F. C. Morgan, J. F. C. O'Donohoe, M.B., H. E. T. Dawes, M.B., S. G. Graham, A. J. Ireland, M.D., W. S. Foote, R. J. Snider, M.B., G. W. Armstrong, W. B. Rutherford, M.B., G. Scullard, M.B., P. W. M. Curry, M.B., M. J. Loughrey, J. H. Fryer, M.B., P. A. Dykes, J. Graham, M.D., H. Whitwell, D. McCormack, C. J. B. Pasley, D. P. Blair, M.B., A. R. M. Brean, M.D., J. Clark, M.B., D. Collingham, F. D. Sauer, M.B., F.R.C.S., W. St. A. Hubbard, J. P. Mathie, J. A. B. Hammond, M.B., D. D. Pincock, M.B., F.R.C.S., T. S. Law, M.B., J. B. Donaldson, G. D. Watkins, J. D. Doherty, M.D., J. M. Lazenby, M.B., R. R. Law, M.D., C. W. Brown, M.B., A. E. B. Sim, M.B., R. C. Alexander, M.B., F.R.C.S.E., A. G. McKenna, C. B. Goulden, M.D., F.R.C.S., W. S. I. Robertson, M.B., S. A. Bull, M.D., F. W. Falconer, M.B., R. Roberts, R. E. Sedgwick, R. McL. Wishart, J. Monroe, M.B., A. E. Rayner, M.D., H. F. Bodvel-Roberts, S. J. W. Donald, M.B., J. S. Rowlands, M.D., D. Ranken, F.R.C.S., W. Fraser, M.B., W. K. Connell, M.B., W. D. Allan, M.B.

To be temporary Lieutenants: L. S. Davison, M.D., A. Fleming, M.B., F.R.C.S., A. G. McIntyre, M.D., W. B. Primrose, M.B., B. S. Johnson, W. T. McCutcheon, M.B., E. MacMahon, J. B. Cook, M.B., J. Grogono, E. W. Grogono, E. P. Harding, P. W. L. Camps, M.B., F.R.C.S., B. Kelly, T. A. Davidson, C. A. B. Horsford, M.D., F.R.C.S., E. W. Hiltne, M.B., T. Marron, M.B., W. E. Burrows, M.D., S. E. Holder, C. A. Lawrence, J. B. Baister, M.D., F.R.C.S.E., J. Ellenbogen, E. Morison, M.B., P. J. Hay, M.D., J. A. W. Ponton, M.D., J. C. Ryan, B. Suggitt, M.B., F. H. Diggle, M.B., F.R.C.S., A. M.

Macleod, M.D., A. Tait, M.B., M. S. Wood, M.D., A. R. Taylor, G. H. Hackney, O. Smith, M.B., J. Cross, M.B., R. C. Corbett, M.B., T. F. Murphy, C. H. G. Lyall, E. Morgan, C. Bernard, T. A. Davies, M.D., F. P. Nunneley, M.D., M. Dockrell, T. Kennedy, M.B., M. B. Phillips, M.B., C. B. Gerrard, M.B., C. B. M. Aldridge, R. N. Woodsend, M.B., J. McGibbon, M.B., R. T. A. Patchett, L. Wayne-Morgan, A. H. Gray, M.D., F. Crooks, M.B., A. MacMillan, H. Baird, M.D., V. J. Rigg, M. Aikman, M.B., P. L. Pollard, M.B., H. W. J. Hawthorn, W. Cook, M.B., R. S. Strachan, M.B., D. O. Fairweather, M.B., T. Fraser, M.B., C. Brash, M.B., R. Taylor, M.B., J. D. Oliver, M.B., F.R.C.S., J. A. Powell, M.D., J. N. M. Sutherland, M.B., A. Matheson, M.B., F. L. Thomas, M.B., J. W. A. Wilson, M.D., D. L. G. Radford, F. A. Morrison, M.B., D. P. Smith, M.B., P. A. Hendler, S. W. Swindells, M.B., A. Westernman, M.D., G. Eager, A. C. Farlinger, M.D., G. W. Bissett, M.D., H. F. Smith, M.D., E. G. D. Benson, G. Milne, M.D., J. W. Senter, M.B., C. M. Stevenson, M.D., U. Marks, T. B. Vaile, A. H. Duckett, M.B., J. J. Todd, D. W. Tacey, C. R. A. Thacker, M.B., W. Tudhope, M.B., H. R. Cran, R. N. Dunlop, M.D., J. G. Woolham, M.B., N. H. M. Burke, J. D. Hartley, F.R.C.S., J. D. Jones, P. Steele, M.D., G. Denbigh, M.D., A. F. Waterhouse, M. D. MacKenzie, M.B., L. D. Callender, M.B., J. Dawson, H. C. Taylor, J. B. H. Holroyd, H. E. Middlebrooke, W. H. Parkinson, M.B., H. W. B. Ruxton, M.B., H. Maffin, M.B., T. Brodie, M.B., J. G. Langley, M.D., F. de R. Martyn, W. B. Peacock, R. R. H. Wonnacott, A. O. Bisson, J. F. Lindsay, M.B., F. McG. Loughnaue, F.R.C.S., C. Gray, A. Rogers, G. D. Dawson, M.D., H. A. Mason, J. Gilchrist, W. E. Procurier, M.B., H. H. Stiff, M.B., J. Orr, M.B., J. W. McDougall, M.B., G. Nowat, M.B., D. R. C. Shepherd, M.B., C. L. Stewart, E. C. Roberts, M.B., H. F. Marshall, F.R.C.S.E., H. B. L. Allott, F. F. C. Willington, M.D., J. Good, R. C. Pitt, C. Visger, A. J. Adkins, W. H. Gibson, M.B., J. T. R. MacGill, M.B., D. Longwill, M.B., M. J. Macaulay, M.B., G. Ligertwood, M.B., F. H. Mosse, D. P. McDonald, M.B., L. D. Wright, R. Fraser, M.B., E. J. Manning, C. J. Taylor, F.R.C.S.E., W. Duguid, M.B., St. G. M. L. Homan, M.B., C. W. C. Harvey, G. E. A. Mitchell, M.D., T. R. Coudrey, P. J. O'Brien, M.B., J. Fortune, M.D., J. F. MacLeod, M.B., A. F. Horn, M.B., I. B. Richardson, W. Deane, C. H. Gunson, M.B., W. B. A. Moore, S. G. Johnson, R. W. Dale, M.B., J. Maxwell, M.D., A. G. Brand, M.B., A. S. Findlay, M.B., J. A. Hagerty, M.B., H. P. Wright, M.B., F. D. Scott, M.B., W. H. Gowan, M.B., A. G. Stewart, M.D., J. W. Robertson, M.B., F.R.C.S.E., A. G. J. Thompson, M.B., G. Garland, M. P. Thomas, A. R. Jennings, H. Thorp, M.B.

Temporary Lieutenants relinquish their commissions: R. B. Robson, M.B., R. F. Williams, M.C., M.B., J. Barrett, H. W. Gush, M.B., R. J. Wilson, M.B., A. McD. Nevin, M.B., J. A. Williams, M.D., L. E. Price, A. Dangerfield, M.B., F.R.C.S., J. R. Heath, H. P. Motteram, M.D., J. H. Watson, M.B., F.R.C.S., B. J. Courtney, M.D., H. E. White, M.B., S. Vardon-Roe, M.B., I. W. Dickson, M.B., F. Kinnear, M.B., K. S. Macky, M.B., E. F. Hoare, M.D., G. A. Campbell, H. D. Gasteen, A. K. Henry, M.B., F.R.C.S.I., V. A. Crinks, S. B. Turner, A. E. Hunter, M.D., D. P. Lacey, M.B., R. E. Marwick, M.B., A. P. F. Gammack, M.B., G. P. G. Beckett, M.D., C. L. Hawkins, M.B., W. D. Hopkins, G. W. Renton, M.D., A. J. Stanley, M.B.

Temporary honorary Lieutenants to be temporary honorary Captains whilst employed at the British Red Cross Hospital, Netley: E. W. Twining, L. W. Sharp.

Granted temporary honorary rank: As Captain, J. R. Taylor. As Lieutenant, H. D. Havard.

The name of temporary Lieutenant Harrie Bruce Wickham is as now described, and not as in the *London Gazette* of July 2nd.

To be temporary Quartermasters with the honorary rank of Lieutenant: J. Davies, C. A. Embury, A. McNeil, J. Dunn, J. Pearson, A. J. Daintree, W. Wright, F. W. Cudmore.

The notification in the *London Gazette* of July 5th regarding temporary Lieutenant H. D. Gasteen is cancelled.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Major S. G. McAllum, M.B., to be acting Lieut.-Colonel whilst in command of a field ambulance.

Captain H. C. Sinderson, M.B., relinquishes the rank of temporary Major on reposting.

Captain M. J. Graham to be acting Lieut.-Colonel whilst in command of a field ambulance.

Lieutenants to be Captains: B. E. Jerwood, G. L. Maule, J. P. Macnamara, M.B., T. Parr, M.B., W. Bryars, M.B.

Lieut. J. A. Toluie to take rank and precedence as Lieutenant in the R.A.M.C.(S.R.) and in the army as if his appointment to that rank bore date May 10th.

Lieut. (on probation) A. E. W. Sandelson relinquishes his commission.

To be Lieutenants: J. C. C. Howe from University of London Continent O.T.C., J. Scott, J. Adams, M.B., A. B. MacDougall, P. A. Stewart, M.B.

OVERSEAS CONTINGENT.

CANADIAN ARMY MEDICAL CORPS.

Temporary Major C. H. Dickson to be temporary Lieut.-Colonel, and to command a Canadian casualty clearing station.

Major E. L. Stone to command a Canadian field ambulance, and to be temporary Lieut.-Colonel while so employed.

Temporary Major J. G. Hunt is seconded for service with Anglo-Russian Red Cross Hospital without pay and allowances.

Temporary Captain W. Creighton to be temporary Major.

Temporary Captain W. B. MacDermott is seconded for duty with the Anglo-Russian Red Cross Hospital without pay and allowances.

J. Patterson to be temporary Captain.

Sergeant-Major F. M. Millard to be temporary Quartermaster with the honorary rank of Lieutenant.

BRITISH WEST INDIES REGIMENT.

Surgeon Captain W. D. Neish relinquishes his commission on account of ill health.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Captain A. G. Levy, M.B., relinquishes his commission on account of ill health.

Captain A. D. Reid, M.B., to take rank and precedence in the R.A.M.C. and in the army as if his appointment bore date May 19th, 1917.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BIRKENHEAD: BOROUGH HOSPITAL.—House-Surgeon. Salary, £250 and war bonus.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—Resident House-Surgeon. Salary, £150 per annum.

CHELMSFORD: ESSEX COUNTY COUNCIL.—Tuberculosis Officer. Salary, £500 per annum.

CHERTSEY COMBINED DISTRICTS.—Temporary Lady Medical Officer. Salary at the rate of £400 per annum.

DEVONPORT: ROYAL ALBERT HOSPITAL.—House-Surgeon. Salary, £200 per annum.

DURHAM COUNTY HOSPITAL.—House-Surgeon. Salary, £180 per annum.

EAST SUFFOLK AND IPSWICH HOSPITAL.—Lady Resident.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—(1) House Physician; (2) Two House-Surgeons. Salary at the rate of £100 per annum each.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

MANCHESTER: COUNTY ASYLUM, Prestwich.—Locumtenent. Salary, £7 7s. per week.

NOTTINGHAM GENERAL HOSPITAL.—House-Physician (female). Salary, £250 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House-Surgeon.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Junior Resident House-Surgeon. Salary, £150 per annum.

SHEFFIELD: ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

STAFFORD: STAFFORDSHIRE EDUCATION COMMITTEE.—Women Assistant School Medical Inspectors. Salary, £400 per annum.

VENTNOR: ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Locumtenent to act as Assistant Medical Officer. Salary, £5 per week.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £150 per annum.

WORCESTERSHIRE ASYLUM, Bromsgrove.—Locumtenent Medical Officer.

CERTIFYING FACTORY SURGEON.—The Chief Inspector of Factories announces the following vacant appointment: Omagh (Tyrone).

MEDICAL REFEREES.—Medical Referee under the Workmen's Compensation Act, 1906, for the County Court Circuit No. 51 and to be attached more particularly to the Portsmouth, Petersfield, Newport and Ryde, and Bishop's Waltham County Courts, and for County Court Circuit No. 9, and to be attached more particularly to the Whitechurch, Crewe and Nantwich, and Market Drayton County Courts. Applications to the Private Secretary, Home Office, by August 15th.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

AUSTIN, N. H., M.R.C.S., L.R.C.P., District Medical Officer of the Godstone Union.

BREW, R. V., M.B., B.S., Certifying Factory Surgeon for the Chew Magna District, co. Somerset.

HASLUCK, E. P., L.R.C.P. and S. Edin., L.R.F.P.S. Glas., District Medical Officer of the Tiverton Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

SHAND.—At 307, Gillott Road, Edgbaston, Birmingham, on Thursday, July 12th, 1917, the wife of Captain G. E. Shand, R.A.M.C., of a son (Erland Ernest).

MARRIAGES.

HILL-KENNY.—At Aldershot, St. Joseph's Roman Catholic Church, John Francis Hill, Captain R.A.M.C., attached the Inniskilling Dragoons, B.E.F., France, to Kathleen Josephine, daughter of Mrs. M. Kenny, Abbey Street, Roscommon, Ireland.

HORTON—MACDONALD.—On July 20th, at Torquay, Captain R. L. Horton, F.R.C.S., R.A.M.C., son of Dr. T. Horton, of Torquay, to Elizabeth Mackay Macdonald, of Lybster, Wick.

MARSHALL—HAIG FERGUSON.—At St. George's Church, Charlotte Square, Edinburgh (quietly on account of the war), on Thursday, July 19th, 1917, by the Very Rev. Andrew Wallace Williamson, D.D., minister of St. Giles's and Dean of the Thistle and of the Chapel Royal, assisted by the Rev. Alexander Fiddes, B.D., minister of St. Bernard's, Lieutenant Herbert F. Marshall, F.R.C.S.E., R.A.M.C., of Park Green, Macclesfield, to Isobel Christian, second daughter of Dr. and Mrs. Haig Ferguson, 7, Coates Crescent, Edinburgh.

WISE—KING.—On July 21st, at St. James's, Spanish Place, W., Henry Wise (Felix Henri Weiss), of 81, Harley Street, W., to Elise, daughter of the late James King, Lisburn, co. Antrim.

BRITISH MEDICAL JOURNAL.

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EIGHTY-FIFTH ANNUAL MEETING

OF THE

British Medical Association.

LONDON, 1917.

ANNUAL REPRESENTATIVE MEETING.

MR. E. B. TURNER, F.R.C.S. (Chairman of Representative Meetings), in the Chair.

The proceedings of the Annual Representative Meeting began on Thursday, July 26th, 1917, at the Connaught Rooms, London, at 10 a.m. The number of Representatives present was 137, and in addition 17 members of Council attended. The return of Representatives of Constituencies for 1917-18 was received, and the notices of appointment of substitutes were also received and entered on the minutes. The Standing Orders of the last Representative Meeting, subject to certain formal amendments, were approved, and the report of the Agenda Committee dealing with the order of business, was adopted.

On the motion of Dr. J. A. MACDONALD (Chairman of Council), the Annual and Supplementary Reports of Council were received.

Sir Thomas Clifford Allbutt, K.C.B., LL.D., was re-elected President of the Association for 1917-18 by acclamation. Dr. MACDONALD said that the preliminary part of the Report of Council recorded the deaths of those members of the Association who had lost their lives in the war. Nothing that he could say could add to the glory of these men; he could only express his poignant regret that the necessities of the country had called on so many of them to surrender their lives. Another list recorded the deaths of members other than those on active service; the list, unfortunately, was very long, and included many distinguished names.

This portion of the report was approved by the Representatives rising in their places.

THE MESOPOTAMIA COMMISSION.

Mr. N. BISHOP HARMAN (Marylebone) moved:

That this meeting desires to express to Lieut.-Colonel R. M. Carter its hearty congratulations on his public spirited and courageous action in persisting in bringing to the notice of the authorities the defects in the medical provision for the Mesopotamia Expedition; and places on record its pride in the knowledge that the credit of this action belongs to a member of the medical profession.

He said that the picture afforded by the report of the Parliamentary Commission on the operations in Mesopotamia, especially of the horrors of the medical break-

down, was very black; it was relieved by gleams of brightness, one of them being the reference to the gallantry of the troops, and another was that the work of the executive medical officers was praised in unmistakable terms. Lieut.-Colonel Carter, I.M.S., taking full count of what might be the consequences of his action, but venturing the whole of his future in order to bring to the notice of the authorities the defects of the medical provision, deserved to be commended and congratulated, because he retained under adverse conditions that independence of mind and soberness of judgement which was the first necessity in the making of a real doctor.

Dr. R. C. BUIST (Dundee) thought that the motion detracted from its compliment to Lieut.-Colonel Carter for performing his duty under difficult circumstances by its final clause, and Mr. HARMAN agreed to withdraw all the words after "Mesopotamia Expedition."

Dr. E. O. PRICE (North Wales Branch) had a motion to a similar effect, which he said he would be content to withdraw in favour of Marylebone, except for the last three lines of his own motion, which read: "And invites the Council to bestow upon Lieut.-Colonel Carter some mark of the Association's appreciation of the great services which he has thereby rendered to the army and to the State."

Dr. W. M. CROFTON (Leinster) said that Lieut.-Colonel Carter deserved all the encomiums that had been passed upon him, but he had been singularly fortunate. Other men had seen elsewhere the results of inadequacy and ineptitude, and had protested, but had been unable to make their protests effective. The temporary medical officers were seething with discontent. Efficiency received no recognition.

The motion as amended was carried, together with the rider proposed by Dr. PRICE, *nemine contradicente*.

THE FINANCIAL STATEMENT.

The Treasurer, Dr. G. E. HASLIP, moved the financial part of the Report of the Council (SUPPLEMENT, May 5th, p. 74). He thanked the meeting for the honour they did him last year in electing him to an office whose responsibilities were certainly aggravated by the times. Notwithstanding the war, however, the deficit of £55,000 outstanding at the end of 1913 had been reduced to £11,600 at the end of 1916. The Treasurer went over in detail the various items set forth in the report. With regard to the JOURNAL, he said that in round figures the total cost of production in 1913 was £40,000, and in 1916 £26,500. The total number of JOURNALS printed in 1913 was a million and a half copies, and in 1916 a million and a quarter copies; the decrease was due partly to a diminution in membership, and partly to reduction in the numbers of free and exchange copies. A great factor in influencing the finances of the Association had been the foresight

displayed by his predecessor, by the Chairman of the Journal Committee, by the Editor, and by the Financial Secretary in grasping the fact that the size of the JOURNAL must be diminished. The finances of the Association would be very different to-day had not that early economy been exercised. In 1913 the pages of the JOURNAL averaged 164 weekly; in 1916, 86. Its weight in 1913 was 14 oz., and the paper cost 1½d. a copy; in 1916 it weighed 6 oz., and the cost of the paper was 2d. a copy. He specially mentioned the cost of paper because this was advancing, from 2d. a lb. in 1913 to 5d. in 1915, and 7½d. to-day, and he was afraid the price would yet be higher. A further reduction in the size of the JOURNAL had been carefully considered, but up to the present this had not taken place; by keeping it at 84 pages in all, £45 a week was saved in postage. Looking at the position as a whole, he thought that the meeting would recognize that it had been possible substantially to consolidate the finances of the Association during the last three years, and it was the first time since the rebuilding of the Association's premises that there was nothing owing to the bank.

Dr. EDWIN RAYNER congratulated his successor on the very great ability he had shown during his year of office.

Expenditure of War Committees.

Dr. J. J. TISDALL (Liverpool) moved:

That a paragraph be added stating the total amount expended by the Central and Local War Committees, and what attempt has been made to recover this from the Government.

His Division was unanimous in believing that the Central and Local War Committees were the best possible machinery that could have been devised, and the manner in which they had worked was beyond all praise. Had it not been that a small minority of the local War Committees had misinterpreted the trust placed in them by the Council of the Association, this matter would never have been raised. As it was, a number of men had suddenly made the discovery, as they believed, that the Association had been using its funds illegally for this purpose, and with the enthusiasm of all discoverers had pressed the matter forward.

The TREASURER said that the cost of the Central Medical War Committee from its commencement in February, 1915, to September 30th, 1916, was £2,500, and from the latter date to July 25th, 1917, it was £3,980, making a total of £6,480. It was shown in the balance sheet (SUPPLEMENT, May 7th, p. 77) as £2,704 for the whole of 1916. The cost amounted to about 2s. 7d. a member of the Association for 1916. That included the expenses of all local War Committees that had made returns.

Dr. TISDALL, in view of the Treasurer's explanation, withdrew his amendment, and also another which stood in the name of his constituency requiring that the proportional amount of each member's subscription involved in the War Committee's expenses be inserted in the financial statement.

Payment of Subscriptions.

Dr. NOY SCOTT (Plymouth) pointed out that the arrears of subscriptions amounted to something like £3,000, and in an Association composed of men who could certainly afford to pay their subscription within the proper time this should not be allowed. He therefore moved:

That the Council be instructed to consider an alteration of by-laws to provide that no one be recognized as a member of the Association whose subscription is not paid on or before September of each year.

Dr. H. MARSHALL (Gloucestershire) formally seconded.

Dr. MACDONALD said that it would not be advisable for the Council to enter any such restriction on the by-laws. The loss from subscriptions in arrear was only something like 2 per cent. The Council was prepared to consider the matter again, but it had already been considered several times. The TREASURER said that the arrears written off were £1,578, not £3,000, as stated by Dr. Scott. The other, it was hoped, was good money.

The amendment was lost, and the financial report was then finally approved.

THE ASSOCIATION AND THE WAR.

Dr. T. JENNER VERRALL, Chairman of the Central Medical War Committee, moved the approval of the

Report of the Council with reference to that Committee. He said that he was under no delusion as to the serious nature of the matters to be considered, and no one would object to criticism. As the war proceeded the supply of medical men for the army must be more and more difficult, and there must come a point when there would be no further supply. The action of the War Office in April in calling up every medical man under 41 took the Committee by surprise. This action, without notification to and consultation with the Committee, was not in accordance with what was understood to be the proper order of things. The result for the time being was disastrous, for it brought about a condition of things under which the Committee could not work. Lord Derby, with his usual courage and promptness, accepted the Committee's protest in the spirit in which it was made. His letter was a prompt reversal of the decision, so far as that could be reversed, which had already caused considerable mischief. It was a matter for congratulation that this protest, followed by Lord Derby's recall of his action, had not, he was glad to say, resulted in any bitterness between the Army Medical Department and the Committee; its relations with Sir Alfred Keogh were as cordial now as before. With regard to the question of mobilizing the medical profession, he could not go specifically into the recommendations which were now under the consideration of the Director-General of National Service, but the resolutions given in the SUPPLEMENT (May 7th, p. 82) were in general taken as a basis for the consideration of the conference. The utilization of men found unfit for general service was another matter which the Committee had to face, owing to the fact that it was constantly being forced upon it during the hearing of appeals. Obviously a man might be quite fit to work in civil life, but unfit to take his part in a campaign, but it was some satisfaction to find that on the representations of the Committee the basis of classification was altered so that commissions could be given to men whose physical standard made them available only for home service, which included the base hospitals in France, where the conditions of service were no more arduous than those prevailing in this country. On the question of protecting the practices of the men on active service, he noted that the President of the General Medical Council had taken upon himself in one of his addresses to say that, without going into chapter and verse, the Council so far as it had the power would be prepared to exercise it in the direction of discountenancing as disgraceful any local disloyalty to absent men. Finally, Dr. Verrall referred to the report prepared by joint representatives of the War Committee and the Committee of Reference on the subject of the treatment of the dischargeable disabled soldier, and said that he had reason to hope that the plan put forward, although not at once accepted in its entirety, might yet help the Government in evolving a workable and efficient scheme.

Disbursement of Association's Funds.

The CHAIRMAN, referring to an amendment by Liverpool with regard to the disbursement of the Association's funds on the expenses of the Central and Local Medical War Committees, said that this matter came up at the last Representative Meeting, and on taking legal opinion it was decided that the question of spending money on these committees was one which came well under the memorandum of the Association. The Solicitor was prepared again to give the same opinion as he gave on the last occasion.

Dr. TISDALL, who was in charge of the Liverpool amendment, said that this was not an attack on the War Committees. Any controversy must revolve around the point as to whether paragraph 3 of the Memorandum of Association could be stretched to bring in this expenditure. Liverpool felt that if this went without a protest some future Council might call upon them to spend money on other and less laudable objects. They were fearful that this might become a precedent.

Dr. MACDONALD said that the Solicitor was prepared to stand by the advice he gave last year. The Association was empowered to spend money for the honour and interests of the profession; was it not for the honour and interests of the profession that the Committee had acted as it had in the case of the War Office call last April?

The amendment was lost by a large majority.

Personnel of Central Medical War Committee.

Dr. TISDALL (Liverpool) then moved:

That the list of names (of the Central Medical War Committee) should specify which are members of the British Medical Association and which are not, and in the case of the latter what they represent.

Dr. VERRALL described the help which the four members of the Committee who were not members of the Association had been in the work of the Committee. One of them, Dr. A. E. Shipley, was not even a medical man, but he was Master of Christ's College, Cambridge, and rubbed shoulders with so many medical men, present and prospective, that he might almost be regarded as semi-qualified. (Laughter.) He had rendered most valuable assistance.

Dr. D. A. SHEAHAN (Portsmouth) asked whether it was legal for a committee to spend the funds of the Association when some of its members were not members of the Association, and was informed that it was. The amendment was withdrawn.

Railway Fares.

A further amendment by Liverpool urged that the appropriate paragraph in the report (para. 23, p. 81) should show whether the Association paid the difference between first and third-class fares of members of the committee and witnesses. The TREASURER said that the Association made up the difference so far as members of the committee and witnesses summoned to assist the committee, and the amendment was withdrawn in view of the Treasurer's explanation, as was a further one by Liverpool disapproving of paragraph 24.

MOBILIZATION OF THE MEDICAL PROFESSION.

Dr. TISDALL further moved on behalf of Liverpool:

That the Representative Body strongly disapproves of any attempt being made to control the liberties of members of the medical profession differently from those of other members of the community.

Liverpool wanted to know why medical men should be singled out as the only body of men in the country to be coerced.

Dr. VERRALL said that the principle that it was unwise and unfair to limit the liberties of a portion of the community and not the liberties of the community generally might in a general way be accepted; but the reason why it might be necessary for the Government to adopt some plan whereby the medical men remaining in the country should contribute to the greatest possible extent in attendance on the civil community by shifting such men from parts of the country where they might be superfluous to parts where they were sorely needed, was simply the hard and terrible necessities of the country, in the face of which many principles which ought to be supported in peace time had to go by the board. It was the same principle as that of restraining the sale of sugar while not touching certain other commodities.

The amendment was lost, as was a further amendment by Dr. TISDALL, with which he said he did not associate himself, to the effect that it should not be described as a matter of regret but as a matter of congratulation that, as stated in the report, the proposed joint interview with the Director of National Service never took place; and on yet another Liverpool amendment,

That it is not the duty of the Association to use its machinery to increase the powers of the General Medical Council or to endeavour to get practitioners struck off the Register for disobeying rules formed by committees which are not committees of the British Medical Association,

Dr. BUIST (Dundee) moved that the meeting proceed to the next business, which was carried.

Captain FOTHERGILL (Brighton) moved:

That this Representative Meeting approves the resolution of the Central Medical War Committee passed in December, 1916, re mobilization of the medical profession, provided such mobilization be carried out on a scheme approved by the profession under the direction of its accredited representatives.

The general practitioner who had not joined the army saw that he might be transferred by a body or an individual who knew nothing whatever of the interests of public health. The words at the end of the rider simplified the position; the practitioner was willing to go here or there

provided that his own professional colleagues determined that it was necessary.

Dr. VERRALL said that he thought the resolutions of the committee given in the report met Captain Fothergill's case, for the suggestions and proposals would be carried out under the direction of accredited representatives of the profession.

Dr. F. L. POCHIN (Oldham) asked who were the accredited representatives of the profession on this matter.

Captain FOTHERGILL said that the War Committee was in the minds of those who framed the rider. He added, in reply to Major D. F. TODD (Sunderland), that he was quite willing to insert the words, "War Committee."

Dr. VERRALL pointed out that the Central Medical War Committee only dealt with England and Wales, the Committee of Reference only with the metropolis. He suggested that the words, "on a scheme approved by the profession," be left out altogether.

Dr. C. E. ROBERTSON (Glasgow) said that a meeting of practitioners in the Glasgow district was absolutely unanimous in declaring that they would not permit themselves to be mobilized until the workers of every other body were mobilized at the same time.

Dr. J. STEVENS (Edinburgh and Leith) said that in his Division a similar resolution was passed, and one such resolution at least was passed in London. There was no doubt that there was a considerable opinion throughout the profession that it would not be a wise or a good thing that it should be mobilized in advance of other sections of the community. His conviction was that the profession could do a larger and better service, not only for the war but for the civil population, if it were not mobilized and made to serve under some cut-and-dried scheme.

Dr. BUIST (Dundee) hoped that it would not be assumed that Scotland was unanimous in support of the opinions just expressed.

Captain FOTHERGILL's amendment was carried after the substitution of the words "under the direction of accredited representatives of the profession" for all the words after "carried out."

Dr. J. V. C. DENNING (Lambeth) said that he had no criticisms to make of the general work of the War Committee, and he was sure the interests of practitioners were in the best hands. But he had one or two things in the nature of suggestion to offer. The first was the question of rank. It was perfectly well known that the callowest curate in England, when he entered military service, became a captain; a medical man was a lieutenant. There were a good many men between 35 and 40 with a vast amount of experience who felt this very strongly. Then there was a feeling among a very large number of elderly men (elderly, he meant, in the military sense) that very often they were sent to the front, whereas young men were sent to camps in England. His last point was that the present difficulties in conducting practices at home would be relieved if a number of superfluous men now in France were brought back to home practice. Abroad there seemed to be little beyond the two alternatives, once suggested as true of the future life—an eternity of misery or an eternity of ennui. The misery was in the trenches, and the ennui almost anywhere else.

Dr. J. HUNTER (The Lothians), referring to the paragraph in the report with regard to the cancelling of the veto on the resignation of officers in the R.A.M.C., said he knew personally of one instance where an officer who had served his two years in May came home from France, having sent in his resignation, and was immediately sent back to France by the War Office, and not allowed to resign.

Dr. VERRALL, in reply to Dr. DENNING, referred to paragraph 27 of the report, from which it would be seen that representations had been made to the Director-General from time to time in favour of the substitution, where possible, of older men for the younger men employed at home and eligible for service abroad. The question of rank and many similar questions were not neglected, but were taken up on occasion with the Director-General, and had been received courteously, even if the Committee had not always got all that was desired. With regard to doctors being sent back to France after having served their two years, one thing must not be forgotten: a man who returned, whether he had served one, two, or three years, if under 41, was liable to military service, and therefore, unless he received exemption on appeal, he was liable to go

back. Certainly an opportunity should be afforded to lodge an appeal, in which case it would be heard by the Central Medical War Committee, the Committee of Reference, or the Scottish War Emergency Committee, which held a statutory position for this purpose.

SUPPLEMENTARY REPORT OF COUNCIL: CENTRAL MEDICAL WAR COMMITTEE.

Payment of Medical Officers of V.A.D. Hospitals.

The first part of the report having been approved, Dr. VERRALL moved the approval of the Supplementary Report (SUPPLEMENT, July 7th, page 2) relating to the work of the Committee. He said that originally it was well known that *à la suite* territorial officers would in time of war probably be available for the treatment of civilians in the areas in which they resided as well as for the treatment of patients in territorial hospitals. But as time went on it was suggested to many of these gentlemen that they should accept the demand for their services overseas. A very considerable number did so, many, of course, being under the military age limit, but some over. From that it could result that the War Office, acting upon the permission given by that acceptance of imperial obligation, might dislocate the services of the various areas, both from a civil and a military aspect; from the civil aspect, because the officers concerned included general practitioners as well as specialists. They therefore put it to the Director-General that in any case these doctors, even if they had accepted the overseas condition, should not be sent abroad without giving the Central Medical War Committee an opportunity of putting the case before him. The Director-General had promised to tell the Committee when he proposed to remove them. Having briefly touched on the question of demobilization along the lines mentioned in the report itself, Dr. Verrall came to what he conceived to be the most contentious item—namely, the payment of medical officers of V.A.D. hospitals. Dr. Howard Marshall, feeling that some of his colleagues were put upon by doing so much work for nothing, urged that they should be remunerated. Dr. Carter, of Cheltenham, also wrote a letter to the D.D.M.S. Southern Command suggesting that such gentlemen should be remunerated. At that time, apparently, Dr. Carter and others—he assumed Dr. Marshall—had become aware of the existence of the order of June 16th, 1915. Seemingly the reply of the D.D.M.S. was sufficient to satisfy Dr. Carter, not as to the non-existence of that order, but to the effect of leading him to do nothing more in the matter between January, 1916, and November of the same year. Although in general members attending V.A.D. hospitals were unaware of the possibility of getting it, payment of 10s. per diem was begun in Aldershot as long ago as August, 1915. Dr. Marshall drew the attention of the Central Committee to the matter in January, 1917. Dr. Verrall detailed the discussion which took place between the Committee and the War Office which led the Committee to express themselves concerning the misunderstanding and irritation which had arisen. He did not think it incumbent upon him to attempt to settle where the blame should be apportioned. It was obvious that it should have been the duty of some authority to see that when the order of June, 1915, came into existence, those attending the V.A.D. hospitals did not remain in ignorance of the possibility of getting payment if they desired it. In that connexion they had a great deal for which to thank Dr. Marshall; he not only ascertained the fact, but he fixed his mind on it, and on behalf of those attending these hospitals pursued it with praiseworthy pertinacity. It was due to him that it came to the knowledge of the Central Committee. It was the desire of the speaker to give Dr. Marshall full credit, because he was now going to turn to another side of the question of which he could not speak so favourably. The *Medical Press and Circular* had been very active in pushing this particular complaint on behalf of the V.A.D. men, but it had also made some remarks about the Central Committee and the Association which it was impossible to pass over. Dr. Marshall had thought it right to circulate a reprint. After depicting what had been done by Dr. Carter and Dr. Marshall the reprint stated that Dr. Marshall's appeals for help to the Central Medical War Committee and the British Medical Association were made, iterated, and reiterated, and nothing was done. That statement was simply not true. It might

be supposed that the Committee was appealed to at an early stage and had refused and had been again appealed to and refused. The fact was that the Committee was not approached at all until January of the present year. It was fair to claim that so far as the Committee was concerned, when approached it had done a great deal, and it was due to nobody else but the Committee in its dealings with the Director-General that the matter was officially set beyond all question, and his opinion obtained and published in the *Journal* of July 7th. The *Medical Press and Circular* also referred to the British Medical Association as being in the hands of a "troop of political posturing and time-serving pantaloons," and added that the Central Medical War Committee was obliged to dance to their piping. "The Central Committee is the untimely and impotent whelp of the Association, a fact which the one does not allow the other to forget." (Loud laughter.) It was a shame, said Dr. Verrall, that this miserable, libellous balderdash should have been printed, circulated, and flung about the country.

Dr. J. H. EWART (Eastbourne): Has that paper been circulated by a private member of the Association?

Dr. VERRALL: I understand it has been circulated with an accompanying letter—I do not know how widely.

Concluding his survey of the report, Dr. VERRALL said that increasing difficulties were found in supplying medical men for the army. The profession must depend upon what the authorities said, but could not go on indefinitely, and the Committee had urged upon the military authorities the importance of making the best use of those medical men they had. In that connexion he referred to the excellent work done by the Local Arrangements Committee under the direction of Dr. T. W. Shore.

Major RUSSELL COOMBE (Exeter) intimated that as a Branch secretary he had received the pamphlet referred to by Dr. Verrall, with a circular from Dr. Howard Marshall asking him to bring it before his Branch. A subscription form of the *Medical Press and Circular* was enclosed.

Dr. L. W. DRYLAND (Northants) moved the following rider:

That, in the opinion of this meeting, all medical officers of V.A.D. and other military hospitals should be paid for their services, such payment to date from their appointment to the hospital.

It was passed, he said, by a very large meeting of the members in the Division, but it was not in any way a criticism of the Medical War Committee. What gave rise to a good deal of indignation was that some men knew about the payment and were receiving money while others had not the information. He approached the county director, who said that the order sent to him was marked "Private and Confidential," and that was why he had not disseminated the news. All the men in the Division did not want to be paid; a large number worked for nothing, and desired to do so—he among them—but it was grossly unfair that some should have the information while others had not.

Dr. HOWARD MARSHALL (Gloucestershire) said that he was not responsible for all that appeared in the *Medical Press and Circular*. He was responsible for sending the reprint round, certainly, in order to give a synopsis of events and the documents. Such things had to be done on the spur of the moment. He took full responsibility for having sent it round (a voice, "Shame"), but he did not agree by any means with the remarks made about the Central Medical War Committee and the British Medical Association. As the Representative of Gloucestershire, he desired to move that the Government be urged to institute an inquiry into the administration of the Army Medical Service in its relationship to civil practitioners.

The CHAIRMAN ruled that Dr. Marshall should speak entirely with regard to the V.A.D. hospitals; he would have an opportunity of proposing his amendment later.

Dr. MARSHALL said that the civil practitioners had always been anxious and ready to do their part for the sick and wounded. But as the war was prolonged from months to years it became evident that a great number of these medical men could not continue their gratuitous services to the hospitals. Why should they do so? When every man and woman throughout the country who was doing war work of any importance received very adequate remuneration, it was merely elementary justice that the

profession should receive payment for services, and even the War Office recognized the principle in the famous letter of authority. He entered into the history of the subject, and referred to the decision of the Representative Body last year, that work on the part of the medical officers to V.A.D. hospitals was fully voluntary, and that to deprive them of this gratuitous labour was opposed to the sentiments of the practitioners employed in those hospitals. He was afraid, however, that the Representative Body did not then make any efforts to find out what were the sentiments and wishes of the medical officers employed. The fact that hundreds of officers at the present time were receiving payment for their services since they had become aware that they were entitled to such payment went to prove that the Representative Body had failed to voice the views of the profession. He detailed the interviews and correspondence which had taken place on the matter, and said that when the Cheltenham doctors sent a deputation to Salisbury to interview the D.D.M.S. on November 16th, 1916, that officer for the first time informed them that they could receive remuneration for their services, and offered a rate of 2d. per occupied bed per day for the hospitals in class B, and 3d. for hospitals in class A. No mention was made, however, of the War Office letter of authority of June 16th, 1915. On March 31st, 1917, the Director-General wrote in the following extraordinary terms: "I am informed that the basis of 3d. and 2d. to which you allude in your letter as having been decided as that on which medical men should be paid for their professional services has no foundation whatever except in the imaginations of idle gossips. No such basis has ever been thought of, and there is no foundation for the statement you have made in your letter." The statements which were thus stigmatized as without foundation were fully borne out by documents in his (the speaker's) possession. Dr. Marshall then said he proposed to read a "private and confidential" letter of June 16th, 1915.

Major TODD inquired whether it was in order for a member to read such a letter without consent; and

Captain FOTHERGILL moved that the letter be not read. This was agreed to.

Dr. MARSHALL, continuing, asked who was to blame for this contemptible treatment of V.A.D. hospitals. Let them go straight to the fountain-head and there they would find a man, the D.G.A.M.S., who was an absolute autocrat and dictator—the only man in the War Office who controlled his department alone.

Dr. C. O. HAWTHORNE (Marylebone) asked whether it was in order to refer to these matters, since the meeting was discussing a simple issue as to whether certain men should be remunerated or not.

The CHAIRMAN said Dr. Marshall was absolutely and entirely out of order. But he had allowed him to go on, wishing to get an unpleasant episode wiped off.

Dr. MARSHALL intimated that as he had not been allowed to read the letter he would say no more.

On the general question raised by the Northants rider,

Dr. TENNYSON SMITH (Bromley) considered that if the V.A.D. staffs had not received the notice referred to, it was solely due to the want of organization in their own county. There had not been a better instance of lack of organization than was shown by the previous speaker's statements. The meeting had been told that a letter came out in June, 1915, and was sent to the county directors, because these were the heads of all the V.A.D. hospitals in their own counties. The county director was solely responsible for the V.A.D. in his command. If there had been the cohesion and sympathy between the county director and staffs in Gloucester that there had been in other counties, this trouble would not have occurred. The Gloucester men should have approached the War Office through their county director.

Dr. C. P. LANKESTER (Guildford) pointed out that the rider included the words "such payment to date from their appointment to the hospital." Many of these appointments preceded June, 1915, which would mean that payment was to be made for a period before such payment was sanctioned. He believed that payment at the rate of so much a day per occupied bed was impossible—"Not at all"—at all events it would lead to confusion.

Lieut.-Colonel D. G. THOMPSON (East Norfolk, Great Yarmouth) said that the confusion arose because the V.A.D. hospitals—or the auxiliary hospitals, which was

the proper name for them—were a Red Cross organization. The War Office paid them a capitation grant per occupied and unoccupied beds; that charge was not for subsistence only; it covered all charges, and it was a question whether the claim of the medical men should not lie against the Red Cross organization. The resolutions might be addressed to the War Office, but they should also be referred to the Red Cross. In acting as civilian medical practitioners at the V.A.D. hospitals the claim was against the Red Cross and not against the War Office at all. In his own area, which was richly supplied with auxiliary hospitals, all the employees of the hospitals—the maids, the porters, the gardeners, etc.—were employees of the Red Cross organization. The War Office undertook a benevolent supervision, but he maintained that it was not at all liable.

Dr. EVAN JONES (City of London) asked why the D.D.M.S.'s did not inform the medical men of the order which went out from the War Office in June, 1915, sanctioning these payments. It was quite clear that Dr. Howard Marshall did not write the offensive paragraph which had been impugned, and he thought a great debt was due to him for bringing the matter forward. The feeling in the City Division was that these medical officers should be paid one shilling a day per occupied bed. Instead of that they had the spectacle of the War Office making "twopenny doctors."

Dr. A. ANGUS MARTIN (South Shields and Tyneside) proposed to add to the rider a clause applying the same principle to attendance on naval patients in civil hospitals. This was seconded by Dr. C. FRIER (Holland and Kesteven), and accepted by Dr. DRYLAND.

Dr. CRAWFORD TREASURE (Cardiff) said that as the mover of the resolution on this subject last year, he was now sorry he did not press it further. The question of the concealment did not touch the point at issue in the rider, which was that these services should be paid for. He wished strenuously to support it.

Dr. SHEPHERD BOYD (Harrogate) commended the action taken by Dr. Marshall in bringing this matter forward.

Dr. H. F. OLDHAM (Lancaster) said that the wording of the rider was a little unfortunate. V.A.D. meant voluntary aid detachment, and they could not logically ask for payment for work called voluntary aid. All these hospitals were registered as auxiliary hospitals, either class A or class B, and if the term "auxiliary military hospitals" instead of V.A.D. hospitals were used it would prevent the introduction of an element of confusion. He moved this as an amendment, and it was agreed to.

Dr. MACDONALD said that he did not think that Dr. Boyd had carried the sympathy of the meeting with him in his commendation of Dr. Marshall so far as the issue of the circular was concerned.

Dr. S. T. LORD (Rochdale) said that there was an honourable compact to deal with these hospitals as voluntary hospitals. A great many men in the country had a conscientious feeling against being forced to accept payment for something which they intended at the beginning should be perfectly voluntary. He knew that there were hard cases, but these should not force the hands of the profession generally. The matter ought to be left to the discretion of individual members.

Dr. C. O. HAWTHORNE (Marylebone) said that the rider was of a very simple character. The delicacy of the position arose from the circumstances. The Representative Meeting had on more than one occasion agreed to and affirmed the general principle that professional work rendered to the nation should be paid for out of national funds. Were they passing a vote of censure on any gentleman who had accepted a position at one of these V.A.D. hospitals? ("No.") The members of the profession, whether wisely or unwisely, had considered that the circumstances justified the acceptance of such positions without payment; it was an individual action. Why when these gentlemen, acting on their individual responsibility, had taken such action should the meeting butt in with a proposal to alter and modify their position? He wished to move an amendment:

That the Annual Representative Meeting, while adhering to the general principle that professional services rendered to the nation should be paid for out of national funds, recognizes that the present position of the medical officers of V.A.D. hospitals has in each instance been arranged by the medical officer concerned, and leaves the continuation or modification of the position to individual action.

This was seconded by Dr. C. E. ROBERTSON (Glasgow), but was lost on a show of hands.

The Northants rider, with the addition proposed by Dr. Martin, was then agreed to, as was a further rider, moved by Dr. EVAN JONES (City of London) condemning the action of the War Office in connexion with the payment of V.A.D. medical officers of V.A.D. hospitals.

Dr. TENNYSON SMITH (Bromley) moved that the remuneration of medical officers of V.A.D. hospitals be at the rate of 4d. a day per bed occupied.

Dr. CHARLES BUTTAR said that the Executive Subcommittee, of which he was chairman, had to deal with three points: (1) It would urge that proper instructions should go from the War Office to all commands as to how these payments should be dealt with; (2) the determination of some settled scale of pay, only to be taken up by such a body as the Central Medical War Committee with the War Office; (3) the question of retrospective application. The Bromley rider was withdrawn.

Expenditure of Central and Local Medical War Committees.

Dr. D'EWART (Manchester) moved:

That this meeting protests against the money of the members of the Association being spent on national and not Association purposes, and by committees over which the Association has no control, and which are composed in part of persons who are not members of the Association.

He said that this was State work, and therefore, on the principle already enunciated, should receive State pay—not State pay for members of the committee, but the State payment of the committee expenses. Every other committee appointed by the Government had had its expenses paid. The figures of expenditure shown in the report were calculated to arouse grave misgiving. The expenses the first year were £664; he was willing to give the Government that. For the second year they were multiplied by four—£2,704—and this year already over £3,000 had been spent. He drew attention to the geometric progression, and asked whether the Association could afford it. Manchester was inclined to think that it could not.

Dr. MACDONALD said that there had been a great deal of misrepresentation of the resolution passed by the Representative Meeting when in Sheffield; that resolution was that patients who were State aided should not be treated voluntarily without payment. The mover could not claim that as an argument to prevent the Central Medical War Committee from spending a certain amount of money. The work it was doing was a national work which ought to be done, and he trusted that, having put their hands to the plough, they would not look back.

Mr. BISHOP HARMAN (Marylebone) denied the statement that this was the only committee doing Government work which did not have its expenses paid. He had a document issued by the Local Government Board in July, 1917, with regard to a Dental Service Committee, and the third item stated that the British Dental Association should place at the disposal of the Committee such clerical assistance as might be necessary, and that no part of the expense of the work of the committee should fall upon any Government department. That did away with the generality of the statement that their own was the only committee which was paying its way. Was it conceivable that a committee which was controlled by the Government could have made such a bold statement as the Central Medical War Committee had made to the Secretary of State for War in April last and have brought him so promptly to reason?

The amendment was lost, as was a further amendment by Manchester that no grants from Association funds be made to Local Medical War Committees for 1917.

Dr. AGNES ESTCOURT-OSWALD (North-East Essex) said that it was in no spirit of criticism she brought forward the following rider on behalf of her constituency:

That the expenditure of the Central and Local Medical War Committees be published, and that a definite opportunity be provided for non-members, who have so largely benefited by this expenditure, to take their share of the burden.

North-East Essex felt sure that the Central and Local War Committees had done their work very well. Practically every doctor in the country had benefited, and not only the doctors, but the general community. Those who had been in any other country during the war realized the fearful condition in which the civilian population in those

countries was placed at one time with regard to medical assistance. That this country had never suffered in that way was due to the fact that the Government was able to treat with an association such as the British Medical Association. Yet there were some doctors in this country who did not belong to the Association, although they derived enormous benefits from it. This rider was intended to urge upon all present to do everything in their power to bring every doctor in each locality into the fold, so that they might be able to present a fully united front in the terrible days ahead. The future struggle was likely to be greater than anything they had gone through in the past.

The rider was agreed to.

Railway Fares Concession.

Dr. A. O. HOLBECH (Worcester) moved that the Central Medical War Committee be instructed to obtain similar treatment with regard to railway fares for members of Local Medical War Committees to that obtained in the case of the Central Committee.

Dr. VERRALL said that this would be kept in mind; but he could not pledge that the Committee would be successful.

The rider was agreed to.

ORGANIZATION OF ARMY MEDICAL SERVICE.

The meeting had before it riders by the North Wales Branch, the City of London, and Gloucestershire, urging an inquiry into the administration of the Army Medical Service.

Dr. VERRALL said that on the previous day a conjoint meeting of the Central Medical War Committee and the Committee of Reference had decided to take a certain line, and the CHAIRMAN suggested that the matter should be left in their hands.

Dr. BUIST (Dundee) moved that the matter be referred to the Council, who would in turn refer it to the Committee.

Dr. CHARLES BUTTAR said that he wanted the Representative Body to be a shade more definite in referring these propositions to the Council. Everybody must be convinced that there was something wrong in the relation between the Army Medical Service and the civilian profession. He had himself suggested all along that that difficulty was entirely due to lack of proper co-operation between the military and civil bodies. He would like to see the meeting pass such a motion as this:

That the Representative Body is not satisfied that the relationship between the Army Medical Department and the civilian profession is on a proper footing, and therefore the Representative Body authorizes the Council to take such action as it considers desirable with a view to improving such relationship.

Dr. W. M. CROFTON (Dublin) seconded.

Dr. E. O. PRICE (North Carnarvon) asked how the meeting could express itself as not satisfied without having first made inquiry. He supported the proposal to leave the matter entirely to the Council.

Mr. BISHOP HARMAN (Marylebone) said that the Committee was practically at the end of its tether in supplying any considerable number of doctors in response to army demands. It was the duty of the Central Medical War Committee to report that to the War Office.

Dr. EVAN JONES (City) said there were abundant grounds for inquiry. Some of the men who had come back from abroad said that the average work they had to do occupied ten minutes a day. Better work would have to be made of the men already in the army.

Dr. W. J. YOUNG (Cambridge and Huntingdon) thought it quite time that some such inquiry should be made. This was the third occasion on which the subject had been before them.

Lieut.-Colonel DECIMUS CURME expressed the belief that an inquiry would tend to soothe the discontent so very prevalent. The services of men in private practice were not utilized to the extent they might be. In his own area he had heard numerous complaints that men had offered their services to take charge in camps in their immediate vicinity and had been refused.

Dr. Buttar's amendment to Dr. Buist's proposition, when put to the meeting, was lost. Dr. Buist's proposition that the whole of the riders expressing the opinion that the Government be urged to institute an inquiry should be

referred to the Council, on the understanding that the Council should refer it to the proper committee, was then carried. The Chairman took a further vote of the meeting on the simple point as to whether there should be an inquiry. The vote of the meeting, almost unanimously, was in favour of an inquiry, and the CHAIRMAN said that this clear vote would be valuable to the Central Medical War Committee.

MEDICAL PATRIOTIC FUND (LOAN FUND) SCHEME.

MR. BISHOP HARMAN moved (on his own responsibility and not as Representative of Marylebone):

That this meeting of the Representative Body approves the principle of the Medical Patriotic Fund (Loan Fund) Scheme, and instructs the Council to launch the scheme on the cessation of hostilities, unless in the meantime amalgamation or co-operation of existing funds shall render the establishment of an independent fund unnecessary or undesirable.

He described the scheme propounded by the subcommittee of which he was chairman. The object of the fund was the protection or assistance of those who went to the war and came home to find themselves in temporary difficulties. Loans not exceeding £500 to any one man should be made from the fund. The psychological moment for the launching of such a fund was at the cessation of hostilities.

Major D. F. TODD (Sunderland) seconded, but thought that if a co-ordination of the various funds could be brought about their position would be strengthened.

Captain FOTHERGILL moved to omit the words "on the cessation of hostilities," and Dr. A. P. TRINDER (East Cornwall) thought that the words "in the meantime" must also be omitted.

Dr. MACDONALD said that these amendments had altered the position entirely. Mr. Bishop Harman's rider, as it originally stood, gave the Council time to think. He did not believe there was much chance of the benevolent bodies amalgamating for the purpose of carrying out the scheme.

Captain Fothergill's amendment was lost, but an amendment by Dr. A. E. CORE (Westminster) was carried, that after the words "cessation of hostilities," the words "or earlier if the need arise," be interpolated.

Dr. MACDONALD moved a further amendment, which was carried, that the words "consider and if approved to" be inserted after the words "Council to."

COMMISSIONS FOR MEDICAL MEN OVER MILITARY AGE.

Dr. EVAN JONES (City) moved:

That this Representative Body is of opinion that it is unfair to refuse to British civilian medical men over military age, doing whole-time service, commissions that are now being offered to American non-registered doctors.

He said that American doctors doing work in military hospitals were being offered commissions, although not on the *British Register*, on exactly the same terms that were refused their own men ever since they had been doing that work.

After a brief discussion, the motion was withdrawn.

FUTURE SHORTAGE OF MEDICAL MEN.

Dr. NOY SCOTT (Plymouth) moved:

That in the opinion of the Representative Meeting no bona fide medical student should be conscripted for military service until he has completed six years of medical education; but on obtaining a legal qualification as a medical practitioner should automatically join the military or naval service.

Dr. VERRALL said that the question of the time at which a medical student should be taken from his work had been a very difficult one. At the beginning no doubt action was taken for two reasons: in the first place on account of the shortage of officers, and of the fact that these young men were of physique and capacity which would ensure the making of good officers; and in the second place, it was done in ignorance of how long the war would last. It was a balance as between the supply of doctors for the future by the retention of students on the way to qualification and, on the other hand, the absolute necessity for a certain number of medical officers for the army. If the proposition before the meeting were passed, it must be passed as a general expression of opinion.

A motion to proceed to the next business was carried.

THE RECRUITING MEDICAL BOARDS.

Dr. VERRALL said that the Council realized that there was a feeling throughout the country that some of the medical boards had not done their work in the best possible fashion, and the Council thought it wise to appoint a small committee to watch the matter. In view of the change of policy announced two days previously by Lord Derby, things had come to a head. The matter came forward at the joint meeting on the previous day between the War Committee and Committee of Reference, when it was decided to propose that the selection of the doctors to serve on the medical boards should not be left wholly in local hands, but should be supervised by some central body, and that the selection should be made under the auspices of the Committee of Reference and the Central Medical War Committee, who were preparing a scheme. If the recruiting medical boards were to be placed in civilian hands, those civilian hands should not be solely those of the Local Government Board. In the future some medical advice locally, supervised by some central advice, should be the basis of the formation of these boards.

Dr. MACDONALD, as Chairman of the Committee appointed by the Council to deal with this matter, endorsed what Dr. Verrall had said.

A Representative maintained that the civilian medical practitioner's knowledge of the needs of the army and of the duties which the recruits would be called upon to perform was very slight. He urged the meeting to express the view that there should be some connecting link between the War Office and the proposed civilian organization.

Dr. VERRALL said that it was impossible to escape a certain danger either way. The pendulum would swing from one side to the other according as the civil practitioner's or the military officer's point of view predominated. In any case, the opinion of the local profession should be taken as to the best men to act on these boards, and there should also be some central authority to co-ordinate the various opinions. He took it that on all boards provision would be made for the army medical point of view being properly put, so that when a man was classified by civilian doctors it should be possible for those classifying him to do so with full knowledge, perhaps through a military medical assessor, of what the classification entailed.

Major TODD moved that the action taken by the Committee be approved, and this was seconded by Dr. JOHNSON SMYTH.

Dr. HAWTHORNE, in supporting the proposal, said that he did so upon the understanding that it did not mean agreeing to a proposition that the special central body was to be charged with the selection of members of medical boards in particular districts.

The CHAIRMAN said that there was no question of the Central Medical War Committee attempting to say who was to be selected for the recruiting boards in any locality.

Major Todd's proposition was carried.

Sir T. E. FLITCROFT (Bolton) suggested that the Local Medical War Committees would be of service in the appointment of medical boards.

The CHAIRMAN said he knew that this was the procedure at Bolton, which had one of the best medical boards in the country. In moving the reappointment of the Central Medical War Committee for 1917-18 with the same personnel as for 1916-17 the Chairman paid a warm tribute to the members of the Committee, who had given much time to the work.

The motion was carried with acclamation.

THE LATE DR. HACKMAN OF PORTSMOUTH.

Dr. JAMES GREEN made an appeal, which was supported by Dr. D. A. SHEAHAN, on behalf of the family of the late Dr. Hackman of Portsmouth, who after spending himself to the full in professional labours and in work for the Association, had died leaving a widow and large family unprovided for. The sum of £500 or £600 had been raised locally in the Portsmouth Division.

[A letter from Dr. James Green with a list of subscriptions will be found in the body of the *JOURNAL*, p. 166.]

PREVENTION AND TREATMENT OF VENEREAL DISEASE.

Remuneration for Clinical Posts.

Dr. GARSTANG, Chairman of the Medico-Political Committee, moved the adoption of Recommendation A of Council (SUPPLEMENT, May 5th, pp. 86-8, para. 64), and this was agreed to.

Dr. TISDALL (Liverpool) moved the omission of subparagraph (iii), but this was lost; as was another amendment from the same source, to the effect that the handing on of the treatment of venereal diseases to general hospitals favoured the practice of medicine by companies and corporations.

The CHAIRMAN said that the handing on of the treatment to general hospitals had been followed all over the country for the last eighteen months.

Dr. CRAWFORD TREASURE moved that in Recommendation A, subparagraph (viii) (c), the words "and should work under the supervision of the honorary staff" be deleted.

Mr. BISHOP HARMAN (Marylebone) said that if they did not work under the supervision of the honorary staff they would be under the supervision of the lay board.

The amendment was lost.

Dr. TISDALL (Liverpool) moved that the "proportion" mentioned in subparagraph (ix) of paragraph 64 should be settled by some central authority.

Mr. BISHOP HARMAN said that the objection rose from a misapprehension. The staff who ran these places would be paid, but certain work would have to be done by the regular honorary staff of the hospital who would be called in, and it was impossible to assess centrally the monetary value of their work. That must be agreed upon locally according to the work done.

Dr. MACDONALD said that the variation in different districts was great, and unless men with local knowledge were available for settling the proportion there would be confusion.

The amendment was lost.

Dr. GARSTANG then moved Recommendations B and C (p. 88, para. 65), and these were agreed to. On Recommendation D, which set up a scale of remuneration for part-time senior medical officers of clinics and differentiated between London and the Provinces, some discussion took place.

Major TODD (Sunderland) asked the reason for the difference between London and the provinces.

Dr. GARSTANG said that conditions were so different that a uniform scale of fees was out of the question.

Mr. BISHOP HARMAN justified the distinction between London and provinces on the ground that the hospitals in London were generally at a greater distance from the practitioner's residence and that pressure of work was heavier in the London clinics.

The CHAIRMAN said that they were now discussing a matter which, if carried by a two-thirds majority, would be the policy of the Association, and there was some danger of getting into a morass when fixing the fees.

Major TODD and Dr. OLDHAM (Lancaster) maintained that it would be a great mistake to make a difference between the provinces and London.

Dr. MACDONALD thought that an error was possibly being made in fixing any fee at all. On his motion it was agreed to delete the distinction between London and the provinces, and to recommend the scale to Divisions as a guide in their negotiations with local authorities. This was seconded by Dr. E. J. DOMVILLE (Exeter).

Dr. PRICE (North Carnarvon) said that every one felt there was a great advantage in having a fixed fee; it gave a kind of backbone to the invertebrate people in the provinces.

Lieut.-Colonel R. A. BOLAM said that he had had a great deal of personal experience with regard to the difficulties arising in these scales of fees. There were difficulties with regard to any scale. He was in sympathy with the Chairman of Council leaving it to local option, but it would surely be a great advantage to have a scale to fall back upon of which it could be said that the Association considered it fair.

An amendment—

That no advertisement of an appointment at a less rate than 2ls. per hour be accepted for the BRITISH MEDICAL JOURNAL,

—moved by Dr. BUIST, was withdrawn, Major LUCAS stating that this must be opposed under certain circumstances.

The CHAIRMAN said that he thought the matter of advertisements might well be entrusted to the Journal Committee.

Dr. JOHN STEVENS moved that no advertisement be accepted for such offices without the approval of the local Branch of the Association, but withdrew his amendment on the CHAIRMAN pointing out the impracticability of such a suggestion.

After further discussion the Recommendation was accepted in the following form:

That the following scale of remuneration for part-time senior medical officers of clinics . . . be approved and recommended to Divisions as a guide in their negotiations with local authorities:

	Per session.
For one or two sessions per week, not exceeding two and a half hours each	£3 3 0
For three or more sessions per week, not exceeding two and a half hours each	£2 12 6

Recommendations E and F of the same report, dealing with the remuneration of clinical assistants, were also carried, with an addition to the latter fixing £250 as the salary for a resident assistant.

[On the following day there was some fresh discussion on Recommendation E, when it was moved that the standing orders be suspended to allow it to be reconsidered.]

MINISTRY OF HEALTH.

Central Organization.

Dr. T. W. H. GARSTANG proposed:

That Recommendation G 1 of Council (SUPPLEMENT, May 5th, p. 89) be adopted:

That a Ministry of Health should be created to take over from existing Government departments such duties as are concerned with the health of the community and to deal with those duties only.

Dr. Garstang explained that the matter originated in a Subcommittee of the Medico-Political Committee, but it was taken out of their hands and placed in the hands of a special Subcommittee of the Chairmen's Committee which did the principal work in arriving at that scheme, which was afterwards confirmed by the full Chairmen's Committee and went through to the Council.

Dr. J. A. MACDONALD said the resolution was merely an opinion if passed. The idea of a Ministry of Health was no new one. It had been before the profession for a good many years, and had been endorsed by different meetings of the Association. The matter was restarted in January, 1917, when, in consequence of various newspaper reports and other information received, the Medico-Political Committee thought it necessary to get into communication with the Local Government Board on a matter concerning maternity and child welfare. They were informed officially by a letter that there was nothing in the air at the time, and the matter dropped for a while. Later they found that the thing was going on, in spite of the information officially conveyed. They found it necessary to press for an interview with the President of the Local Government Board to find out the position of affairs, and give him their views whilst such were likely to be of any possible good. On March 16th a deputation went to Lord Rhondda. It was then that he brought forward the question of the Ministry of Health. Up to that moment it had not been in their thoughts or intentions; they were dealing with a comparatively small department of it. Lord Rhondda told them two important things—first, that he would be very glad to have their opinions and observations, and second, that if they had any such to offer they must be offered within a very short period, because his bill was practically drafted. He gave the deputation the idea that it had almost reached the point of being accepted by the Cabinet, with every probability of its becoming an Act of Parliament in a very short time. It was under the stimulus of that obvious necessity that the matter was taken up by the Special Committee. They met four times. He was not going to say whether the scheme was a good one or a bad one, but he would point out that if the Association, through those committees, had not done its best to have something to lay before Lord Rhondda, the profession would have been at the mercy of a bill introduced by him on the advice of the medical staff of the Local Government Board.

Dr. J. McCREA (Reading) moved as an amendment:

That this meeting, although in favour of the formation of a Ministry of Health, is of opinion that the Council of the

Association has exceeded its powers and has entirely neglected the opinions of the members in formulating a scheme and placing it before the Government without previous consultation, and that the consideration of the details put forward in the said scheme is therefore premature and futile.

Dr. McCrea, in proposing the amendment, said the matter was one which was going to create a revolution in the whole practice of the country. The Medico-Political Committee of the Association seemed to have been "had." Where was the urgency? Had a bill been drafted or introduced? The whole matter probably had been shelved never to be heard of for two or more years. In the meantime the Prime Minister had in his possession a scheme of which the medical profession had not approved.

Dr. GARSTANG explained that when the scheme was sent to the President of the Local Government Board he was told that it was the scheme of a committee of the Council but not of the Representative Body, and that it would not be the scheme of the Association until it had been considered by the Representative Meeting in July.

Dr. J. A. MACDONALD said that what Lord Rhondda did say was that he had a scheme going forward and was anxious to have their opinion. But Lord Rhondda did not have a chance to get on with the scheme, for there was a power behind him—the approved societies—who did not see their way to have the scheme carried out because it was likely to take away the power they had under the Insurance Act. Accordingly Lord Rhondda was promoted to be Food Controller. But a scheme was going on, much more dangerous than the one suggested. The Local Government Board was going to be the body to run the Ministry of Health, and he did not think, unless they were careful and worked together, they were going to get a scheme better than the one which the Council suggested.

Dr. HUGH SNELL (M.O.H. Coventry) said that a Ministry of Public Health was coming. He was sure the Representative Body would endorse the moderate resolution before it from the Council. He thought it would be wise before expressing the opinion of the meeting to find out what the Local Government Board proposed, and not put the Association on wheels to be pushed into nationalization or municipalization of medical service.

Dr. H. B. BRACKENBURY (London) said there had been some confusion between two bills. The situation with which they were faced in March was not that there was a bill ready to be introduced into Parliament establishing a Ministry of Health, but that there was a bill of one clause ready to be introduced, which would have been introduced already if it had not been for Lord Rhondda's removal from the Local Government Board—a bill giving the Board power to do whatever it liked by order in connexion with the health of mothers and young children. They were further informed that the bill of the Local Government Board was to urge every county council and town council to establish centres for the extension of this work. Further, there was a suggestion from very high quarters, though not from the Board, that that work in connexion with maternity and child welfare was going to be extended into the domiciliary treatment of mothers and children. Where would the Representative Body have been if the Council had done nothing? The only remedy they could suggest was the unification of the departments dealing with public health, so that there should not be the putting of a part-time or whole-time officer over the families of their private or insured patients. If there was one thing which the scheme was not and was not intended to be, it was a scheme of State medical service. It was the best remedy that the Council could put up to prevent a part-time or whole-time salaried clinical service being set up against the considered opinion of the profession.

In reply to various questions as to the "high quarters" from which information had been received as to the extension of maternity and child welfare work, the CHAIRMAN said that all information received was laid before the Committee.

The amendment by Dr. McCREA (Reading) was put and lost.

The following amendment and rider, by Oldham and Reading respectively, were withdrawn:

That in the first and second lines of the Reading amendment contained in Item 67 of the Agenda (p. 9), the words "although in favour of the formation of a Ministry of Health" be deleted.

Rider by Reading, in the event of foregoing amendment being carried:

That this meeting pass a vote of censure on the Council for putting a scheme for the creation of a Ministry of Health before the Prime Minister, before consulting the profession, and is of opinion that it goes far beyond the creation of a Ministry of Health, and is practically a scheme for State medical service.

Dr. J. McCREA asked leave to make a personal statement. He was chairman of the meeting at which the Reading resolutions were passed, and was elected as their representative, and had loyally carried out his duties, but he did not agree with either resolution.

Dr. W. BLAIR (South-Eastern Counties, Edinburgh Branch) moved the following amendment:

That the Representative Body protests against the action taken by the Council, without previously obtaining the authority of the Divisions, in respect of the Ministry of Health suggested by the Government.

Dr. Blair said the matter was placed before the Divisions with no explanation whatever as to the reason for the urgency of the proposal by the Council. He was instructed that if the explanation which the Council gave seemed to him sufficient he was to support the Council, but he was not yet satisfied.

Dr. F. L. POCHIN (Oldham) said he hoped the amendment would not be passed, because, after the explanation they had heard, it was obvious that the Council was rushed into action against its will. They went to Lord Rhondda thinking of anything but a Ministry of Health, and suddenly Lord Rhondda sprang upon them the information that the bill was almost before the House establishing a Ministry of Health, and asking for suggestions.

Dr. D. A. SHEAHAN (Portsmouth) said he came up very much incensed against the action of the Council in usurping what he thought was the function of the Representative Body, but after the explanation from Dr. Garstang he thought the Council would have failed in its duty if it had not done something, and he thought it did very well in the circumstances.

Dr. W. H. IRVIN SELLERS (Preston) said they were in favour of the establishment of a Ministry of Health. It was utterly impossible at present to define all the details or the exact attitude they might take towards it, but such a Ministry was essential to the future of the country.

Dr. H. F. OLDHAM (Lancaster) supported the Council in its action, without committing himself to the details of the scheme. He regarded the scheme as the means of escape of the Association from two great dangers. The Local Government Board was making every effort to take possession of the entire department of National Health in the kingdom. Against this were the Insurance Act Commissioners, who wanted equally to control all arrangements for the health of the country, and the Commissioners, they knew, were controlled by the approved societies. The most successful solution was the Ministry of Health, which would control both. That the Council had the foresight to see that was greatly to their credit.

Dr. D. A. SHEAHAN (Portsmouth) said he, too, was instructed by his Division to support the promotion of the Ministry of Health. Anything that would get rid of two autocratic bodies would have his sympathy and approval.

Major R. WALLACE HENRY (Leicester and Rutland) said he was sorry the Divisions had not before them the information given by Dr. Garstang. They would not then have felt that the matter had been rushed. It seemed to him that the necessity of pressing on with the matter had passed away with Lord Rhondda's removal to another sphere. With so many men abroad, he did not think the Representative Meeting should express strong opinions one way or the other, or make the Ministry of Health the policy of the Association.

Dr. J. A. MACDONALD (West Somerset) wanted to disabuse the mind of Major Wallace Henry that the danger was over. It was not; it had taken on a more objectionable form—that of a stronger development of the Local Government Board, which was still more highly dangerous than a form of Ministry of Health of which they would not approve. He was sorry that there was not a fuller explanation in the report of the Council of what was the difficulty which induced them to act in a hurry. He could only say on behalf of the Council that it was an oversight.

The South-Eastern Counties amendment was lost, and the CHAIRMAN then put the resolution:

That a Ministry of Health should be created to take over from the existing Government departments such duties as are concerned with the health of the community and to deal with those duties only.

The resolution was carried with one dissentient.

Friday, July 27th.

The proceedings were resumed on Friday, July 27th, at 9.30 a.m. Mr. E. B. TURNER (Chairman of Representative Meetings) was in the chair. The minutes of the previous day's meeting were corrected and confirmed.

THE REMUNERATION OF PART-TIME CLINICAL ASSISTANTS UNDER SCHEMES FOR DEALING WITH VENEREAL DISEASE.

Lieut.-Colonel R. A. BOLAM moved the suspension of the standing orders to consider a resolution passed on the previous day, that the remuneration of part-time clinical assistants of clinics set up under schemes for the diagnosis and treatment of venereal diseases should not be less than one guinea per session not exceeding two and a half hours.

Major ALBERT LUCAS seconded. The effect of the motion passed on the previous day was that if a clinical assistant—perhaps a man who had only just qualified—went down to the hospital for five or ten minutes, he would have to be paid a guinea. In most cases he thought a guinea quite a minimum fee, but there were instances in which a stringent rule of a guinea a session would be undesirable. He wished the sum recommended simply as a guide.

Dr. H. B. BRACKENBURY considered that the resolution passed on the previous day was one of the bedrock things upon which the Representative Body must continue to make a stand. In connexion with clinics of other kinds it had never hesitated to do so. The time covered by the fee was not to exceed two and a half hours. If a local authority or hospital was so foolish as to arrange a session only lasting ten minutes, the scheme was faulty, either because the work was not properly arranged or because there was not enough work to do. There might be some cases in which the fixed fee was unfortunate, but having settled the principle, he hoped the Representative Meeting would again endorse it.

The CHAIRMAN said that the motion was strictly that the standing orders should be suspended, but he had allowed both sides to speak on the general question in order to save further debate. He then put the motion to the meeting, and declared it lost.

(To be concluded.)

ANNUAL GENERAL MEETING.

THE eighty-fifth Annual General Meeting of the British Medical Association was held in the Connaught Rooms, Great Queen Street, London, on Friday, July 27th, at 2 p.m. Sir CLIFFORD ALLBUTT, President of the Association, was in the chair.

THE PRESIDENT said that he wished to thank the members very cordially for again electing him as President. He had received some very valuable information from the offices of the Association from time to time, but on one point he had received no information whatever—namely, as to the possibility of the war being over within any calculable future period. That being the case, he could not say anything about the arrangements for the next summer. He could only hope that it might be possible for the Association to meet in Cambridge, and Cambridge would be only too thankful, impoverished though the university was, to receive it.

APPOINTMENT OF AUDITORS.

Dr. G. H. LODGE moved, and Dr. J. P. CARTWRIGHT seconded, and it was agreed to, that Messrs. Price, Waterhouse, and Co. be reappointed auditors of the British Medical Association at a remuneration of one hundred and fifty guineas.

AWARD OF MIDDLEMORE PRIZE.

The PRESIDENT announced that the Middlemore prize for 1917 had been awarded to Captain William Clark

Souter, M.D., R.A.M.C.(T.F.), of Aberdeen, for his essay on "Disorders of the eye and of its functions induced by war injuries not directly affecting the eye." He said that unfortunately Captain Souter was not able to be present, and in his absence Dr. Adams, the Chairman of the Scottish Committee, would accept the award on his behalf. The President handed the prize to Dr. Adams.

THE PRESIDENCY: THE NEXT ANNUAL MEETING.

Mr. E. B. TURNER, Chairman of Representative Meetings, said that he had to report that the Representative Meeting, on the recommendation of the Council, had re-elected Sir Clifford Allbutt as President for the ensuing year. He did not need to say anything with regard to the advisability of such a proceeding, nor of the pleasure and pride with which the meeting had assented to the nomination. Sir Clifford Allbutt was entering on the second year of his presidency, and he had not yet paid the price of it—he had not yet given his presidential address. Every member of the Association, every scholar and gentleman within it, would like to have the opportunity of listening to that address, and it was possible, even if the optimists were still flattened in the dust, that next year that meeting might be held in Cambridge instead of London, and then they might have the presidential address as well as an address or two in medicine and surgery, though not the sections—in fact, they might have the ghost, the shadow, the dry rattling bones of an annual meeting, which, however, would be lightened by the address given them under those circumstances by the President. No member of the Association wished to "sponge" on the hospitality of Cambridge University, which had so grandly risen to its duty in the war. But they would like, paying their own expenses, to go there, if Cambridge would be their nominal hosts. He had formally to report the election of Sir Clifford Allbutt as President for 1917-18.

The announcement was greeted with loud applause, members rising in their places.

THE PRESIDENT said that he was very grateful for the more than welcome way in which they had received the report of his re-election. He had thought it just possible that some fraction of the cordiality with which they had re-elected him on that occasion might be due to the fact that they would not have to sit for three-quarters of an hour under a presidential address; they might be rather thankful that that was postponed, he would not say to an indefinite future, because he thought the Chairman of the Representative Meetings had made a good suggestion which might well be acted upon, and which had not occurred to him. If the circumstances of the war were still adverse, or at any rate if the war had not concluded, they would be only too glad to consider that suggestion. The Representative of the Cambridge and Huntingdon Branch was present, and, subject to his frowning eye, which he did not see, he (Sir Clifford) thought the suggestion rather attractive if they were able to do no better, though he hoped they would be able to do better.

Dr. W. J. YOUNG, the Representative for Cambridge and Huntingdon, said that he would certainly do his part to bring the matter before the Division, and he hoped the suggestion would mature, subject to the strict condition that such a meeting did not take the place of the proper visit which they hoped to obtain by and by.

The business of the annual meeting then concluded.

Meetings of Branches and Divisions.

NORTH WALES BRANCH.

The annual meeting of the North Wales Branch was held at University College, Bangor, on July 18th.

Election of Officers.—The following officers were elected:

President: Dr. Drinkwater. *Vice-President:* Dr. H. Jones Roberts.

Joint Honorary Secretaries: Dr. H. Jones Roberts, Dr. J. R. Prytherch.

Medical Arrangements in Mesopotamia.—The meeting congratulated Lieut.-Colonel Carter, I.M.S., on his courage in reporting so candidly and fearlessly upon the grave position of army medical affairs in Mesopotamia.

Insurance Advisory Committee.—It was resolved to support the nomination of Dr. Hugh Jones (Dolgelly). It was felt that rural Wales and sparsely populated rural areas demanded representation. The interests of practitioners in industrial areas and South Wales cities were, it was considered, already safeguarded, seeing that the conditions of practice were the same as in English areas.

Public Health Laboratory.—The meeting pledged itself to support the establishment of a public health laboratory in connexion with the University.

Proposed Ministry of Health.—The report with reference to the Insurance Act and future legislation, including the proposed Ministry of Health, was considered. Dr. Hugh Jones (Dolgelly) gave a review of the position and referred to the need of improving the Insurance Act in certain details, particularly in rural areas; he considered that the Act was an improvement on the old club system.

Treatment of Fractures.—Dr. A. NORMAN LEEMING (Colwyn Bay) read a paper on further cases of fracture treated by Lane's plates and screws, which he illustrated by x-ray photographs; this was followed by a discussion in which many members took part.

SHROPSHIRE AND MID-WALES BRANCH.

The spring meeting of the Branch was held on July 3rd, when Dr. GEORGE MACKIE was appointed President. The Branch Council was re-elected with the exception of Drs. J. P. Cartwright and W. J. Orr (retired by rotation), and Lieutenant R. J. Urwick (resigned), who were succeeded by Drs. J. W. Riley, T. M. Cuthbert, and R. D. Stawell. Dr. J. Cartwright was re-elected Representative for Representative Meeting.

Insurance Acts.—Dr. CUTHBERT read a report from the joint Panel Committees. On the whole the present system was approved, but it was suggested that mileage should be considered in country areas.

Local Medical War Committee.—Dr. SANKEY gave an account of the work of the Local Medical War Committee.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

WESTMORLAND.

At a recent meeting of the Westmorland Panel Committee the following resolutions were adopted:

1. That an insured person (not being a temporary resident) whose medical card is not transferred after one week's residence in a new area, to a doctor in that area, if applying for treatment, be not entitled to medical benefit by a doctor in that area for a period of a fortnight. It is suggested that this be added (in red ink) to the instructions printed on medical cards.
2. That an insured person (other than a temporary resident) not having his or her medical card signed by a doctor within one week after becoming otherwise eligible for medical benefit, if applying for treatment, be ineligible for medical benefit for a fortnight.

RENFREWSHIRE.

At a meeting of the Panel Committee on July 2nd it was reported that the Insurance Committee had adopted the scheme of the Panel Committee for medical referees. The Executive Committee was instructed to divide the area into districts and to submit a panel of referees. It was decided to nominate Dr. Hill for appointment on the Insurance Acts Subcommittee for Scotland.

INSURANCE NOTES.

SANATORIUM BENEFIT.

THE Insurance Committee for the county of Ayr, in a report on the administration of sanatorium benefit in its area during 1916, states that 262 applications for benefit were received, 135 being from insured persons and 127 from dependants. Of the total number, 174 were sent to sanatoriums, 60 to hospitals, and 12 were treated at home, while 10 died before treatment could be commenced, and 5 were refused for various reasons. The numbers sent to sanatoriums have increased each year since the Act began, and the same applies to those sent to hospitals, while those treated at home have decreased from 41 in 1914 to 12 in 1916. Careful inquiries have been made into the housing accommodation of the applicants, and it was found that about 74 per cent. lived in houses of only one or two apartments. In the two-roomed houses there were on the average 5.73 persons per house, the average for the county being 4.85, while the death-rate was 26.64 per cent. as compared with the average

for the county of 20.57. From a classification of trades it appears the miners yielded 14 patients, mill workers 13, domestic servants 11, and labourers 10. There were 32 applications from married women and 65 in respect of children of school age, which accounts for 77 per cent. of the applications from dependants. There has been a steady and gratifying increase in the number of persons whose health is good after treatment under the committee, and a number of them are now serving in the army abroad, and report themselves as in good health. It is hoped to inaugurate an after care committee during the present year. The information which the committee has been able to collect about the housing accommodation of the patients shows how important this factor is. The report expresses the opinion that "the sooner insurance committees obtain wider and fuller powers the better it will be for the nation."

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—Fleet Surgeons J. Shand, M.B., to the *Victory*; F. J. A. Dalton to Portland Hospital. Staff Surgeons J. J. H. Rooney and A. H. Davidson to the *Pembroke*. Surgeons B. Taylor to the *Patrol*; F. St. B. Wickham to the *Fivid*, additional. Temporary Surgeons J. D. Bangay to the *Fivid*; J. H. Newmarch, M.B., S. L. Higgs, A. R. Matheson, M.B., A. T. Woodward, M.B., to the *Fivid*, additional for Plymouth Hospital; A. G. Bee, T. S. Duncan, M.B., to the *Victory*, additional for Haslar Hospital; C. S. Owen to the *Sapphire*; S. D. Kilner to the *Colossus*, vice Martin; H. O. Martin to the *Eurymachus*, vice North; G. G. Menbery, M.D., to the *Fivid*, additional. To be temporary Surgeons: L. G. Higgins, A. M. MacGillivray, W. W. Forsyth, H. A. L. Guthrie, W. M. Fairlie, M.D., A. L. Abel, J. M. Tyrrell, M.B.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationers C. Holmes to the *Harry*, H. A. Morton to the *Hydra*, J. B. Whiteford to the *Zephyr*, W. E. Johnston to the *Cynthia*, R. E. Joyce to the *Falcon*, G. L. Bell to the *Fame*, W. H. Miller to the *Fervent*, H. I. Palmer to the *Garry*, T. B. Feick to the *Gipsy*, H. S. Little to the *Grasshopper*, K. T. H. Davies to the *Greyhound*, W. I. Cryderman to the *Acorn*, W. A. Dafoe to the *Ambuscade*, W. P. Hogarth to the *Alarm*, H. I. Quinn to the *Conflict*, F. C. Speechley to the *Kangaroo*, C. Shaw to the *Kestrel*, W. P. Wilson to the *Wizard*. To be Surgeon Probationers: A. H. Hall, D. J. Whitton, R. C. Shaw, A. Roe, J. Macfarlane, W. C. Holdsworth, G. McCoull, J. L. Coventry, F. C. W. Capps.

ARMY MEDICAL SERVICE.

Colonel C. A. Lane, M.B., is retained on the active list and to be supernumerary.

Lieut.-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of a Division: G. St. C. Thom, C.M.G., M.B., J. W. H. Houghton, M.B. (Substituted for the notification in the *London Gazette* of April 28th.)

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel J. D. Ferguson, C.M.G., D.S.O., to be temporary Colonel whilst specially employed.

Temporary honorary Lieut.-Colonel C. H. Fagge, M.B., F.R.C.S. (Major R.A.M.C.T.F.), relinquishes his temporary rank on reposting, May 30th. (Substituted for the notification in the *London Gazette* of May 29th.)

Majors to be acting Lieut.-Colonels whilst holding the appointment of Assistant Director of Medical Services of the Army: P. Davidson, C.M.G., D.S.O., M.B., W. F. Tyndale, C.M.G., M.D.

Major J. C. Duffey, M.D., is restored to the establishment.

Major W. M. Power is placed on the half pay list.

Major (temporary Lieut.-Colonel) T. H. Gibbon, M.D., relinquishes his temporary rank on reposting.

Captains to be Majors: J. S. Dunne, F.R.C.S.I., A. D. O'Carroll.

Temporary Captains to be temporary Majors whilst employed at the Keighley War Hospital: H. S. Brauder, M.D., J. N. Dobie, M.B., J. M. Crocker.

Granted temporary rank:—As Lieut.-Colonels: Temporary honorary Major T. G. Moorhead, T. E. Gordon. As Majors: C. P. Ball, A. J. McA. Blayney, D. Kennedy. As Captains: R. J. Rowlette, W. J. Corbett, G. E. P. Meldon, M. R. J. Hayes.

Temporary Captain T. Walcott to be acting Major whilst commanding troops on a hospital ship.

The name of temporary Captain William Parry Morgan, M.B., is as now described and not as in the *London Gazette* of December 11th, 1916.

Temporary honorary Captain J. L. MacIlwaine, M.D., having resigned his appointment with the St. John Ambulance Brigade Hospital, relinquishes his commission.

The following officers relinquish their commissions: Temporary Captains R. F. Yencken (on account of ill health), W. F. McGlashan, W. C. Gowley, M.D., V. G. Williams, M.D.; temporary Lieutenants J. M. Cophins (on account of ill health), J. A. Aitken, J. Aylen; temporary honorary Lieutenant A. Banks, F.R.C.S.

To be temporary Captains: A. Levy, A. Wilson, E. H. Lawson, A. E. Kelsey (late Fleet Surgeon R.N.), S. A. Montgomery, R. W. Russell-Jones, J. S. K. Smith, R. V. Dolby, L. C. Smith, R. G. Riches.

Lieutenants to be temporary Captains: C. B. G. Anderson, M.B., P. D. Pank, G. Moulson.

G. B. Hillman, late temporary Captain, to be honorary Captain.

Temporary Lieutenants to be temporary Captains: J. L. O. Tilley, D. W. Roy, J. M. Taylor, M.B., E. T. Jameson, J. McMurray, H. E. Brown, M.B., G. W. Aherm, M.B.

Temporary Lieutenant Christopher Baylor is dismissed the service by sentence of a general court-martial.

Temporary honorary Lieutenant W. R. Hayes, M.D., having ceased to be employed with No. 8 British Red Cross (Baltic and Corn Exchange) Hospital, relinquishes his commission.

To be temporary Lieutenants: H. P. MacKendrick, M.D., E. H. Struthers, M.B., C. G. G. Winter, G. R. Phillips, T. S. Greenaway, R. T. St. J. Brooks, M.D., H. E. Gray, D. G. Halsted, M.B., J. L. McCann, M.B., S. D. Bridge, E. H. R. Harries, M.D., W. W. Walker, A. M. Hewat, M.D., D. Burrows, J. A. Loughbridge, M.B., J. A. Clarke, M.D., H. M. Raven, R. M. Menzies, M.B., G. E. Beaumont, M.B., G. Taylor, M.B., W. A. Mahon, W. A. Wilson-Smith, M.D., G. H. H. Almond, M.B., H. Chapple, M.B., F.R.C.S., R. McN. Wilson, M.B., G. M. Coope, A. F. Sanderson, A. M. Jones, M.D., G. S. Gordon, M.B.,

A. Rhodes, M. Hocken, M.B., N. K. Foster, M.B., J. C. Middleton, M.B., A. Allison, M.B., C. W. Ewing, R. Wade, C. Beards, M.B., E. D. W. Reid, M.B., C. R. Wilkiss, M.B., K. H. Bennett, A. L. Robinson, J. S. Leslie, W. O'Donnell, E. R. Holbrow, M.B., F. H. Flack, M.B., S. S. M. Wood, G. J. Eady, D. Martin, M.B., H. Sinson, M.B., W. M. Hume, M.D., F.R.C.S.E., J. Hunter, M.B., A. Browne, M.B., A. Brownlie, M.B., J. H. Thompson, M.B., J. E. R. McDonagh, F.R.C.S., L. G. Leonard, D. L. Stewart, M.B., C. Garner, M.D., C. A. H. Gee, M.B., W. A. L. Marriott, M.B., W. J. Ashby, M.D., J. A. Brown, M.D., T. N. Wilthow, W. Murray, M.B., F. Butler, A. White, D. McC. Aitken, M.B., F.R.C.S., J. D. Kenyon, M.B., W. J. McFeat, M.B., R. J. Archibald, T. D. Graham, M.B., D. A. Chamberlain, O. C. Johnson, H. J. Van Praagh, M.D., W. B. M. Martin, M.D., R. N. Berman, M.B., J. S. Simpson, A. Bradshaw, A. G. Craib, M.B., D. M. McGillivray, M.B., A. D. Yule, M.B., W. Gorrie, M.D., W. J. Taggart, M.B., W. Boyd, M.B., T. W. Bayne, M.B., G. B. Charnock, R. Parry, W. E. Cooper, G. B. Warburton, M.B., F.R.C.S., G. Cockcroft, M.B., G. Newstead, M.D., W. Angus, M.D., A. W. K. Straton, J. K. Willis, M.B., F. B. O'Dowd, G. H. Mead, V. Glendinning, M.B., F.R.C.S., J. Pender, M.B., R. J. Reynolds, M.B., B. Blackwood, M.B., J. H. Sutcliffe, G. R. Potter, H. H. Jenkins, J. K. Hamilton, M.B., G. A. Rorie, M.D., A. S. Campbell, M.B.

Temporary honorary Lieutenant S. Wicks to be temporary honorary Captain whilst employed with No. 8 British Red Cross (Baltic and Corn Exchange) Hospital.

To be temporary honorary Lieutenants: R. M. Bradley, M.B., G. W. Stephens, J. B. Fearn, M.D., W. H. Irish.

INDIAN MEDICAL SERVICE.

Captain P. M. Rennie, M.B., appointed substantively *pro tempore* to be Health Officer, Simla, with effect from April 11th.

Captain G. Tate appointed to be a temporary Deputy Medical Storekeeper to Government, with effect from May 14th.

Major W. F. Harvey, M.B., on reversion from military duty, has been posted to the Central Research Institute, Kasauli, as Director, relieving Major J. Cunningham, M.D., who has reverted to the post of Assistant Director.

Major F. Norman White, C.I.E., M.D., Assistant Director-General, Indian Medical Service (Sanitary), has been appointed to hold charge of current duties of the office of the Sanitary Commissioner with the Government of India in addition to his own, with effect from May 28th.

Captain G. Holroyd has been appointed to hold charge of the current duties of Agency Surgeon, Bhopal, in addition to his military duties, with effect from April 28th.

To be Colonel: Lieut.-Colonel W. Molesworth, C.I.E., M.B., V.H.S., vice Colonel A. C. Evans, retired, with effect January 22nd, 1917.

Colonel J. Smyth, M.D., V.H.S., has been retained in the service for the period of the war.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

To be Lieutenants: D. McK. Sutherland, M.B., from Manchester University Contingent O.T.C., O. M. Miryless, M.B., W. L. Agnew, M.B. The notification in the *London Gazette* of June 19th regarding Lieutenant C. E. G. Winter is cancelled.

Lieutenant (on probation) A. W. D. Magee relinquishes his commission.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL CORPS.

To be temporary Lieut.-Colonels: Temporary Major T. McC. Leask, and to command a Canadian Field Ambulance; T. McCrae, M.D.; temporary Major J. R. Speir (substituted for *London Gazette* notification, May 12th, incorrectly describing name as J. R. Spires).

Temporary Captain H. W. Wadge, M.C., to be temporary Major.

Temporary Captain W. Mason to take rank and precedence in the C.A.M.C. and in the army as if his appointment as temporary Captain bore date June 18th.

The *London Gazette* notification of May 12th regarding the promotion to the temporary rank of Captain of temporary Lieutenant E. V. Frederick is cancelled.

To be temporary Captains: Sergeant H. W. Whytock, D. A. Murray, W. J. Bell (substituted for *London Gazette* notifications, May 12th, incorrectly describing ranks as temporary Lieutenants).

The *London Gazette* notifications, May 12th, regarding the appointment to temporary commissions of the following are cancelled: Sergeant J. G. Gibson, Sergeant-Major C. A. Brisco, Corporal B. E. Scott, Corporal C. M. Keiller, Sergeant R. B. Martin, Private M. E. Gorman.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Major (temporary Lieut.-Colonel) W. L. Bentley relinquishes the temporary rank on alteration in posting.

Major (temporary Lieut.-Colonel) H. A. Ballance, M.D., F.R.C.S., is seconded for duty with a general hospital, and to retain his temporary rank whilst so employed.

Major W. M. Hamilton relinquishes his commission on account of ill health.

Captain H. F. Everitt is granted the rank of temporary Major whilst commanding troops on a hospital ship.

Captain J. H. Baldwin from T.F.R. to be Captain with precedence from April 1st, 1915.

Lieutenants to be Captains: R. Grey, M.B., F. Simmers, M.B.

To be Lieutenants: Acting Sergeant A. H. Hasnip, Staff Sergeants D. M. Neil and S. W. Wingfield.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BARNSELY: BECKETT HOSPITAL.—Two Lady House-Surgeons.

BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary, £8 8s. per week.

Bristol ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURSLIM: HAYWOOD HOSPITAL.—Resident Medical Officer (female). Salary, £350 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Physician. Salary, £150 per annum.

CHELMSFORD: ESSEX COUNTY COUNCIL.—Tuberculosis Officer. Salary, £500 per annum.

DERBY: DERBYSHIRE ROYAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.

EAST SUFFOLK AND IPSWICH HOSPITAL.—Lady Resident.

EDMONTON: GENERAL MILITARY HOSPITAL.—Medical Officers. Salary, £1 per day and keep; if living out, £4 a month extra allowance.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Haverstock Hill, N.W.—House-Physician. Salary £200 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Brompton, S.W.—House-Physician, Honorarium, 30 guineas for six months.

IPSWICH: MENTAL HOSPITAL.—Locumtenent Medical Officer.

KENSINGTON DISPENSARY AND CHILDREN'S HOSPITAL.—Church Street, W.—Resident Medical Officer (temporary).

KENSINGTON GUARDIANS.—Locumtenent for the Institution. Salary, £7 7s. per week.

KIRK WALL: PARISH OF EDAY.—Medical Officer.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

MAIDSTONE: WEST KENT GENERAL HOSPITAL.—(1) House-Surgeon. (2) Assistant House-Surgeon. Salary, £250 and £125 per annum respectively.

MANCHESTER ROYAL EYE HOSPITAL.—House-Surgeon. Salary, £120 per annum.

PORTSMOUTH PARISH.—First Assistant Medical Officer for the Workhouse Infirmary, etc. Salary, £300 per annum.

QUEEN'S HOSPITAL FOR CHILDREN. Hackney Road, E.—Medical Officer in charge of Electrical Department. Salary, £100 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House-Surgeon.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM. City Road, E.C.—House-Surgeon.

SALFORD ROYAL HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

SHEFFIELD: ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

STAFFORD: STAFFORDSHIRE EDUCATION COMMITTEE.—Women Assistant School Medical Inspectors. Salary, £460 per annum.

STOKE-ON-TRENT BOROUGH.—Assistant Lady Medical Officer. Salary, £350 per annum.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House-Surgeon. Salary, £120 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £150 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

KHARAS, Homi, M.B., B.S. Bombay. Assistant School Medical Officer to the Notts Education Committee.

McINNES, A., M.B., Ch.B. Glas. Certifying Factory Surgeon for the Raunds District, co. Northampton.

McKINNEY, B. W., M.B. Certifying Factory Surgeon for the Lisnaska District, co. Fermanagh.

VALSH, F. P., L.R.C.P. and S. Edin., L.F.P.S. Glas. Certifying Factory Surgeon for the Rosscabery District, co. Cork.

WHITNEY, C. U., M.R.C.S., L.R.C.P. Assistant Medical Officer of the Fulham Road Infirmary of the City of Westminster Union.

EDINBURGH ROYAL INFIRMARY.—The following appointments have been made:—Resident Physicians: H. B. Dykes, M.B., Ch.B.; J. G. Allan, M.B., Ch.B., B.Sc.; T. W. Lowden, A. Robertson, C. Simpson, L. Nott, and E. B. Brown. Resident Surgeons: J. H. Kerr, J. Rauch, J. E. Purves, H. M. Jacobs, B. L. Galloway, H. G. Smith, C. R. C. Moon, E. C. Fahmy, W. O. Morris, F. G. Pyott, K. Gillies, and J. Thompson. Clinical Assistant: Miss A. A. Wilson. Dr. Frederick Gardiner, one of the Physicians for Diseases of the Skin, was reappointed for a further period of five years.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

FELDMAN.—On July 27th, at Abbotsford, 875, Finchley Road, Golder's Green, the wife of Dr. W. M. Feldman, of a son.

MARRIAGE.

BEAUMONT-HAMILL.—On July 23rd, at Chiswick, George Ernest Beaumont, M.A., B.M. Oxon., M.R.C.P. Lond., to Norah Hamill, M.B., B.S. Lond.

DEATHS.

DARLING.—In Alvie Church, Arriemore, on Sabbath, July 29th, suddenly, Thomas Brown Darling, M.D., of The Hawthorns, 13, Merchiston Place, Edinburgh, in his 59th year. Friends please accept this (the only) intimation.

DAVIES.—On July 19th, at 18, Badminton Grove, Ebbw Vale, in his 68th year, John William Davies, M.R.C.S.E., L.R.C.P.L., J.P.; for thirty-six years Medical Officer of Health to the Ebbw Vale Urban District Council, and District Medical Officer to the Bedwelly Union, Certifying Factory Surgeon, School Medical Inspector, and Medical Officer to the Maternity and Infant Welfare Centre.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, AUGUST 11th, 1917.

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MEDICAL OFFICERS FOR THE ARMY: EXHAUSTION OF THE SUPPLY.

NOTIFICATION BY THE CENTRAL MEDICAL WAR COMMITTEE TO THE SECRETARY OF STATE FOR WAR.

The following letter has been addressed to the Secretary of State for War by the Central Medical War Committee. Copies have been sent to the Local Government Board and the National Insurance Commissioners:

CENTRAL MEDICAL WAR COMMITTEE.

Mr. T. JENNER VERRALL, LL.D., Bath, *Chairman.*

Members:

Sir Rickman Godlee, Bt., K.C.V.O., Ex-President Royal College of Surgeons of England.
Professor Harvey Littlejohn, Dean of the Faculty of Medicine, University of Edinburgh.
Sir William Osler, Bt., F.R.S., Oxford.
Dr. A. E. Shipley, F.R.S., Master of Christ's College, Cambridge.
Dr. T. W. Shore, Dean of the Medical School of St. Bartholomew's Hospital.
Sir Frederick Taylor, Bt., President Royal College of Physicians, London.
Sir T. Clifford Allbutt, K.C.B., F.R.S., Cambridge (President B.M.A.).
Mr. E. B. Turner, F.R.C.S., London (Chairman of Representative Meetings, B.M.A.).
Dr. J. A. Macdonald, LL.D., Taunton (Chairman of Council, B.M.A.).
Dr. G. E. Haslip, London (Treasurer, B.M.A.).
Lieut.-Colonel Sir James Barr, LL.D., Liverpool.
Dr. Mary Bell, London.
Lieut.-Colonel R. A. Bolam, Newcastle-on-Tyne.
Dr. H. W. Langley Browne, West Bromwich.
Dr. C. Buttar, London.
Dr. H. J. Campbell, Bradford.
Dr. H. J. Cardale, London.
Lieut.-Colonel J. Michell Clarke, Bristol.
Dr. Adam Fulton, Nottingham.
Dr. T. W. H. Garstang, Altrincham.
Major W. J. Greer, Newport, Mon.
Dr. Thomas Hennessy, Joint Honorary Secretary, Irish Medical War Committee.
Major Albert Lucas, Birmingham.
Dr. Arnold Lyndon, Hindhead.
Dr. D. Naunton Morgan, Bridgend.
Dr. Edwin Rayner, Stockport.
Dr. B. A. Richmond, Secretary, London Panel Committee.
Dr. H. J. Starling, Norwich.

429, Strand, London, W.C.2.,
August 3rd, 1917.

MY LORD,

We are instructed to inform you that the Central Medical War Committee, after a careful survey of the whole of England and Wales, is of opinion that no more medical men can be called upon to take commissions in the R.A.M.C. without seriously endangering the supply of doctors for the treatment of the civil community, and that further depletion can only be effected on the responsibility of the Government after carefully comparing the military with the civil needs. A few more appeals still remain to be heard before the last man considered available by the

Committee has entered the army, but from September onwards it will be quite impossible, under present powers and conditions, to satisfy the large demands of the Army Medical Department, which are now stated to be greatly increased.

In this connexion the Committee desires us to remind you of the letters sent to you on April 25th, April 27th, and June 2nd, 1917, and the suggestions made therein.

We have the honour to be,

My Lord,

Your most obedient servants,

(Signed) N. BISHOP HARMAN,

ALFRED COX,

Secretaries.

The Right Hon. the Earl of Derby,
War Office, Whitehall, S.W.

BRITISH PHARMACOPOEIA.

OMISSION OF PREPARATIONS.

The General Medical Council, acting in pursuance of the Medical Act, 1858, and the Medical Council Act, 1862, have withdrawn from the *British Pharmacopoeia*, 1914, the following medicines and compounds, which thereby cease to be included among the official preparations of the *British Pharmacopoeia* until further notice:

All *Confectiones*, except *Confectio Piperis*, *Confectio Rosae Gallicae*.
All *Glycerina*, except *Glycerinum*.
All *Misturæ*, except *Mistura Cretæ*, *Mistura Ferri Composita*, *Mistura Olei Ricini*.
All *Syrupi*, except *Syrupus*, *Syrupus Chloral*, *Syrupus Codeinæ*, *Phosphatis*, *Syrupus Ferri Iodidi*, *Syrupus Ferri Phosphatis cum Quinina et Strychnina*, *Syrupus Glucosi*.
All *Trochisci*, except *Trochiscus Krameriae* et *Cocainæ*, *Trochiscus Morphinae*, *Trochiscus Morphinae et Ipecacuanhae*.
Also
Caffeinae Citras Effervescens.
Decoctum Aloes Compositum.
Extractum Gossypii Radicis Corticis Liquidum.
Linimentum Potassii Iodidi cum Sapone.
Liquor Calcis Saccharatus.
Magnesii Sulphas Effervescens.
Mel Boracis.
Pulvis Amygdalæ Compositus.
Pulvis Glycyrrhizæ Compositus.
Pulvis Tragacanthæ Compositus.
Sodii Citro-Tartarus Effervescens.
Suppositoria Glycerini.
Tinctura Cardamomi Composita.
Tinctura Kino.
Tinctura Pruni Virginianæ.
Tinctura Rhei Composita.
Tinctura Sennæ Composita.
Unguentum Iodi.

EIGHTY-FIFTH ANNUAL MEETING

OF THE

British Medical Association.

LONDON, 1917.

ANNUAL REPRESENTATIVE MEETING.

Friday, July 27th (continued).

MR. E. B. TURNER, F.R.C.S. (Chairman of Representative Meetings); in the Chair.

A MINISTRY OF HEALTH.

On Friday, July 27th, the meeting resumed discussion on the question of a Ministry of Health, having before it the recommendations of Council under Medico-Political (SUPPLEMENT, May 5th, pp. 89-90).

In reporting the opening of the discussion on this subject an unfortunate error occurred, by which a large part of the speech in which Dr. Garstang, Chairman of the Medico-Political Committee, moved the resolution, eventually carried, in favour of the establishment of a Ministry of Health, was attributed to Dr. Macdonald. All the remarks set down to Dr. Macdonald on page 30 should have been assigned to Dr. Garstang, whose speech had great influence with the meeting.

Dr. R. A. LUNDIE (Edinburgh) now moved:

That, while welcoming the appointment of a Ministry of Health, this meeting is of opinion that the scheme for giving effect to this requires very careful consideration, and is strongly of opinion that the circumstances under which the profession is at present placed make it impossible effectively to consider any scheme before the end of the war, and it therefore cannot give its support at this time to the scheme proposed by the Council of the Association and very strongly protests against a provisional scheme having been forwarded by the Council of the Association to the Government on the plea of urgency.

He said that however desirable such a Ministry might be, the present time was the worst possible for such a radical change in the machinery of government, in view of the large number of men away on service who were prevented from expressing an opinion.

Dr. W. McE. CLENDINEN (Mid-Staffordshire) thought that the Council was being rushed to formulate a scheme. Matters had been pushed forward by the Government, and although it was probably necessary for the Council to consider the question, a bolder front might have been shown against impetuous proposals.

Dr. R. C. BUST (Dundee) pointed out that in 1903, in obedience to a resolution, the Council actually drafted a bill for the reorganization of the Local Government Board. If this general question of the co-ordination of the central medical service was one upon which they had been steadily working for about fifteen years, why should they refuse the opportunity of realizing their object when they had a chance?

Dr. J. A. MACDONALD said that it was in 1868 that the matter was first mooted by the Association.

Dr. C. E. S. FLEMING (Salisbury, Swindon, and Trowbridge) said that they had been told in that meeting that all the Council or the Association ought to do in the absence of their colleagues at the front was to adopt a defensive attitude and prevent anything being done which would not be agreeable to them, but surely the best means of preventing what one did not want was to construct what one did want. Either they had to accept—and allow to be accepted for those away—a scheme evolved by a lay body, or to endeavour to get accepted as far as possible a scheme which had been approved by the men whom those who were absent had trusted to look after the interests of their profession.

Mr. BISHOP HARMAN (Marylebone) said that a rider which appeared in the name of his Division seemed preferable to the Edinburgh amendment. That rider was adopted unanimously by Marylebone, which recognized that, while it would be impossible at such a great meeting as they were having that day to discuss adequately the details of a scheme, they could make certain general suggestions, and the Council would have sufficient information as to the trend of feeling to enable it to go on with the work it had begun. There was never such a time to get reforms of all sorts as a time of war. He regretted exceedingly that Lord Rhondda had gone from the Local

Government Board, for he seemed to have very clear ideas on the subject.

Dr. JOHNSON SMYTH (Bournemouth) said that the Government and the socialistic element behind it was not likely to wait. He hoped that Edinburgh would not press the matter.

Dr. JOHN STEVENS (Edinburgh and Leith) said that the Edinburgh amendment was the result of careful and repeated discussion by the profession in the Edinburgh Branch. It was passed in the Edinburgh Branch Council, in the Edinburgh annual meeting, in the Lothians Division, in the Edinburgh and Leith Division, and (in a somewhat restricted form) in the South-Eastern Counties (of Scotland) Division. Finally, the previous week a meeting of the whole profession in Edinburgh was held, and a similar resolution passed. It did not seem desirable for the profession even to commit themselves as to the formation of a Ministry of Health until some indication was given of what the proposals of the Government were to be.

Dr. J. P. CARTWRIGHT (Shropshire and Mid-Wales) said that he had been instructed to move an amendment similar to that of Edinburgh, save for the omission of all the words after "the end of the war."

The Edinburgh amendment was then put to the meeting and lost, and similar amendments by South Staffordshire and Southport consequently fell to the ground.

Dr. EVAN JONES (City) then moved:

That a small Committee, representative of the whole profession, be elected to consider the question of the establishment of a Health Ministry, and to draw up a comprehensive scheme, including every branch of medical science, for submission to the Prime Minister. That every effort should be made to postpone the establishment of a Health Ministry until this Committee has reported.

He said that as an emergency scheme the recommendations of the Council were commendable. But this was an enormous proposition, touching medical work in every aspect. Section 13 of the recommendations clearly showed that some kind of State service was contemplated even in the scheme of the Council itself. Did not that section foreshadow some great departure from medical practice as they had it now? Much greater elaboration of the scheme was necessary. It was suggested even at this stage that laymen should form a bare majority of the local administrative health committee. But if they once departed from the fundamental position that all the treatment centres should be under medical control, and admitted lay control, they were selling the pass. The cardinal principle of control of medical treatment by the medical profession must be safeguarded. The laymen must have their committees and demand what they wanted done, but the professional committees should be regarded not as their servants, but as contractors on a fair and square basis. That was not brought out in the Council's scheme to the satisfaction of the City Division. The Council had done well, but he hoped it would give them a little further lead.

Dr. GARSTANG, Chairman of the Medico-Political Committee, said that no single section of the scheme should be pulled out of its context and given an entirely imaginary value, as had been done in the case of Section 13 by Dr. Evan Jones. This section was entirely dependent upon the previous acceptance of the first twelve sections. And the essence of Section 13 was to safeguard the position of the general practitioner. He was entirely in sympathy with the principle that medical affairs should be governed by the profession, but it must be remembered that in all schemes it was the lay element, whether the Government or the county authorities, which found the money, and as long as the lay people found the money the profession would not realize its utopian dream, however much they all—and he included himself—wished it might be realized.

Major D. F. TODD (Sunderland) thought it a good thing that the Government and the general community had a say in these matters. On the general question, he said that defence was good, but attack was much better, and they were now in a position to attack. The one false step made by the Committee which had done this work, and done it remarkably well, was that they did not issue a short preface explaining why they acted as they did. If they had done so, there would not have been a word of dissent, but a vote of thanks at every meeting.

Dr. J. WISHART KERR (Glasgow Eastern) said that it looked very well on paper to speak of a small committee, but no small committee could carry out the vast amount

of work to be done under any such proposal. And where were they to get such a committee at the present time? The Council was the right body to do the work.

Major R. WALLACE HENRY (Leicester and Rutland) agreed that it was desirable that the matter should be threshed out in detail by the Council or another committee. The profession, however, ought to have another opportunity of considering it before it was submitted to the Government as a scheme.

General Approval of Scheme.

Mr. BISHOP HARMAN objected to the proposal of the City. The small committee was to be "representative of the whole profession." But could they bring in the malcontents? Could they agree on specific details? The resolution of Marylebone, on the other hand, did not commit them to any detail, nor prevent any resolution being sent up to the Council to be considered in relation to the broad lines of the scheme. It asked for general approval. The wording of the resolution was that of his colleague, Dr. Hawthorne, and showed his usual facility in framing reasoned propositions. Accordingly he moved:

That the Representative Meeting approves generally the scheme submitted for the establishment of a Ministry of Health, and leaves to the Council the duty of representing the scheme to the Government and of securing its acceptance so far as this is found to be possible.

This was taken as an amendment to the City motion.

Dr. MACDONALD pointed out that if they adopted the recommendation of the Marylebone Division they would be putting the matter into the hands of the Council. Let them not blame the Council afterwards if the Council had not exactly carried out the scheme.

Captain FOTHERGILL said that he hoped they would give due consideration before they adopted Mr. Bishop Harman's proposal. Had they their constituents behind them in adopting this policy?

Dr. E. J. DOMVILLE (Exeter) asked the meeting to give the Council a good lead. They should instruct the Council to consider the whole scheme, including amendments suggested by that meeting, and any further suggestions that might be sent in by the Divisions. There was no time to be lost. Legislation was being carried out by piecemeal departmental orders, and if they did not look out the whole details of the scheme would be arranged for them by the Local Government Board officials. Never before in the history of the Association, so far as he knew it, had they been so willingly listened to by the heads of the Government in matters of public health. As Chairman of the Public Health Committee, he had consented to the whole thing being taken out of his hands, and it had been referred to the strongest committee of Council they ever had. He moved an amendment to the Marylebone resolution, inserting an instruction to the Council to consider amendments presented to that meeting or by any of the Divisions, and this was accepted by Mr. Bishop Harman.

Dr. W. J. YOUNG (Cambridge and Huntingdon) supported the Marylebone amendment.

Dr. G. E. HASLIP (Westminster) thought that if they confined themselves to the first six clauses of the recommendation they would be perfectly safe. These dealt with central organization. But when they came to local organization it was a different matter. It appeared to him that they must go more deeply and fundamentally into the whole matter. Not a word was said about the housing question, and yet how vital that was to the health of the nation. As to the hospitals, were they going to throw over the voluntary system and have State hospitals? He thought that the main question was evaded in this scheme—touched upon, but not boldly dealt with. He asked the meeting to confine itself to giving approval up to clause No. 6, and after that the matter could be thoroughly gone into again.

Dr. H. B. BRACKENBURY said that Mr. Bishop Harman's amendment asked them to affirm the general principles which had been enunciated in the scheme, and the scheme did little more than enunciate them. If they were going into details they would find themselves hopelessly confused at that meeting.

The Marylebone amendment was then put to the meeting and carried, and thus became the substantive motion.

Dr. J. STEVENS asked if this meant that the Council would elaborate the scheme and present it to the Government without the profession having any further opportunity of considering it.

The CHAIRMAN explained that if the Council thought it necessary a Special Representative Meeting would be called.

Dr. HASLIP moved an amendment embodying the proposal he had just made in his remarks:

That only Clauses 1 to 6 of the scheme concerning a Ministry of Health be approved.

Dr. Haslip's amendment was lost.

Major WALLACE HENRY (Leicester and Rutland) moved an amendment which left to the Council, after submission to the Divisions, the duty of presenting the scheme to the Government so as to secure its acceptance as far as this was found possible. Unless the profession through the Divisions were consulted, the loyalty of some in the country was going to be shaken still further, and among these some who were fighting hard for the Association.

The CHAIRMAN asked in what way the mover of this amendment proposed to submit the scheme to the Divisions, and was informed that it could be submitted by letter with a request for reply.

Dr. MACDONALD asked the Representatives again to be clear as to what they were doing. This matter had gone through the regular course by which anything was placed before the Divisions. It was published in the SUPPLEMENT of May 5th—that was more than two months ago. Then he wished them to heed a newspaper extract which he read: "Mr. Bonar Law informed Mr. Charles Roberts that it was not intended to introduce the Ministry of Health Bill before the adjournment." Evidently, then, the bill was already drafted, and therefore the profession must decide quickly. If the Divisions had not taken the opportunity of studying the proposals laid before them, that was not the fault of the Council.

Dr. R. C. BUIST asked Dr. Macdonald whether, as an experienced parliamentarian on behalf of the profession, he could give them any idea as to whether a Ministry of Health Bill would be likely to cover more than the general policy of the first six propositions which they had been debating or would enter into matters of local arrangement.

Dr. MACDONALD said that those who remembered the introduction of the Insurance Act would bear in mind that there were a certain number of principles enunciated in the Act and a great deal of the working was left to regulations, which, of course, had the force of law. It might well be the same in this instance.

Dr. JENNER VERRALL pointed out that if Major Wallace Henry's amendment were accepted it left unsettled the point as to whether the meeting did or did not approve generally of this scheme. Any expression of opinion from that meeting would be dropped out.

Dr. D. A. SHEAHAN (Portsmouth) said that the Ministry of Health meant one of two things—either that they (the practitioners) freed themselves and gained the liberty they lost under the Insurance Act regulations, or that they perpetually locked the fetters upon themselves which had been placed upon them in the first instance through having medical matters discussed and arranged by local insurance committees. The mind of the governing body was at the present time in a fluid condition, and therefore now was the moment for them, if they meant to do anything, to try and secure such part as they could in the government of medical affairs by medical men. A frequent objection urged against the idea that medical authority should dominate medical contract work was that the taxpayer ought to have something to say in the matter. But what had the taxpayer to say concerning the army and navy save through the respective ministries? The Ministry of Health would furnish the same connecting link in this instance. He supported the view that the scheme, after being discussed by the Council, should be referred to the constituencies generally.

The amendment was lost, and the Marylebone amendment was carried as the substantive motion as follows:

That the Representative Meeting approves generally the scheme submitted for the establishment of a Ministry of Health, and instructs the Council to consider the amendments presented to the Representative Meeting, or by any Divisions, to present the scheme to the Government, and to secure its acceptance so far as it is found to be possible.

CONFIDENCE IN THE ASSOCIATION.

Dr. EVAN JONES (City) moved, without a speech, an amendment standing in the name of his Division:

That this Division and many other members are fast losing what confidence they had in the governing body of the

Association owing to their neglect of the interests of the profession, and as evidence we know of many cases of members who have resigned for this reason, and of many others who are contemplating a similar step.

Dr. MACDONALD protested warmly against such a motion as this being brought forward formally. If a Division thought it right to formulate such an amendment, their Representative ought to justify it. Men who had been working their hardest in the Association's interests found it difficult to speak without anger of such a proceeding. (Hear, hear.)

Major RUSSELL COOMBE, in reply to Mr. Bishop Harman, said that since the recent propaganda was instituted there had been 687 definite applications for membership.

Dr. C. O. HAWTHORNE (Marylebone) hoped that on this matter a word would be allowed, not only to an official representative of the Council, but to an ordinary private member like himself. He was not in the least disposed to blame the City Division for arraigning the Council, but there was a word to be said in reference to the form in which this amendment was presented. In the first place, they were told that the City Division spoke not only for itself but for other members outside. By what constitutional authority did it do so? Then, again, it could not be congratulated on its editorial skill. The amendment began loftily in the third person, and before it finished it declined to the sweet simplicity of the first. Apart altogether from the question rightly raised by the Chairman of Council, the form as well as the substance of the amendment reflected no credit upon the City Division. When the Division next embarked upon enterprises of this kind he hoped it would bear in mind that ignorant outsiders might possibly judge the Association as a whole from one of its Divisions, and therefore he hoped that those who drew up such amendments in the future would have some respect for the primitive delicacies of the English tongue, and, moreover, that they would express their sentiments, whatever they might be, in terms capable of being understood by the average person.

Dr. EVAN JONES said that the amendment was moved and seconded by two of the oldest and most respected members of the City Division. He apologized for not having spoken when moving it, but he was unprepared for it being called on, believing that an amendment in similar terms which came later superseded it.

On a show of hands the amendment received practically no support.

MATERNITY AND CHILD WELFARE.

Dr. C. W. CENNINGTON (Hampstead) moved two riders standing in the name of his Division, one of them urging that a medical practitioner engaged by any organizations concerned in social work, such as maternity and child welfare, should not be in active practice in the district; and the other that where public funds were placed at the discretion of such an organization, the majority of the administrative body should consist of the representatives of the borough councils concerned.

Dr. H. B. BRACKENBURY said that the intention of the first rider seemed to be that when the general practitioner was made the salaried officer of a maternity centre it was better that he should be brought in from outside than that he should be picked out by a lay body from the practitioners of the district. If this was carried, it meant that local practitioners of a particular neighbourhood would have no opportunity of doing this work if they desired it. He thought that such an opportunity should not be ruled out.

The first rider was lost and the second was withdrawn, the mover stating that he was content that the matter should be left to the Council.

WAR PENSIONS COMMITTEES.

Dr. W. E. THOMAS, on behalf of North Carnarvon and Anglesey, moved:

That the fees for the examination of and report upon discharged soldiers for the local War Pensions Committees be provisionally fixed at 5s. in accordance with the opinion of the Council as expressed in para. 78 of report (SUPPLEMENT, May 5th, p. 90); but that this meeting does not consider such a fee, as a permanent arrangement, adequate remuneration for the information required.

Dr. C. E. S. FLEMING (Salisbury, Swindon, and Trowbridge) said that an attempt was being made by the county disablement committees through the statutory

committee to restrict to certain medical men in the district the right to issue these reports. That was a very dangerous principle. At a meeting of medical men in Wiltshire it was agreed that any medical man who was considered fit to take charge of a disabled soldier was also fit to issue a report on him; and not only so, but he was the best person to do it. There might be cases where a medical man did not feel himself competent to issue such a report, hence special referees should be appointed. With regard to the fees, they did not see why a second certificate should be given at a lower fee than a first, since a second certificate generally indicated a difficult case; where a referee was required the fee should be at least a guinea. After these matters were discussed they were brought before the War Pensions Committee, which showed at first some unwillingness, but when the Committee was informed that the British Medical Association had decided that the fee for examination should be provisionally fixed at 5s., the chairman of the meeting said that in that case they had no alternative but to accept it, which was something of a tribute to the Association.

The rider was carried.

SUPPLY OF PETROL AND REPAIR OF MOTOR CARS.

Dr. A. O. HOLBECH (Worcester) moved that a strongly worded representation be sent to the proper authorities and the Petrol Department that the present facilities granted to the medical profession were not sufficient.

Dr. CRAWFORD TREASURE mentioned the great difficulty of getting attention to repairs—a serious matter in many districts where medical men were absolutely dependent upon their cars.

The CHAIRMAN said that the Ministry of Munitions would have to be approached with regard to repairs. He suggested that in the covering letter from the office it should be insisted that the diminished number of medical men now left in practice must have every facility for getting about.

The rider was adopted.

MEDICAL FEES.

Dr. EVAN JONES brought forward an amendment by the City Division expressing disappointment that the Council had done nothing to make the public realize the justice of the increase of all medical fees owing to the increased cost of war time.

Dr. BUIST moved that they proceed to the next business, which was agreed to.

On the motion of Dr. H. J. ROBINSON (Burnley), it was agreed to enter a protest against the mean action of the Government in reducing the fee for the notification of infectious diseases from 2s. 6d. to 1s.

MEDICAL CERTIFICATES FOR MUNITION WORKERS.

Dr. G. H. LODGE moved a rider on behalf of the Sheffield Division, that when a medical certificate was required by the Ministry of Munitions the form should be issued by the firm requiring it, and should bear their stamp and date, and that the fee charged by the doctor should be not less than 2s. 6d.

The CHAIRMAN pointing out that the Ministry of Munitions had issued these certificates, Dr. LODGE explained that the form of the certificate was approved; the intention of the rider was to insist that the certificate should bear the firm's stamp.

Dr. G. H. LOWE (Cleveland) said that in his district these certificates were largely ignored. The doctors had given their own.

The rider was lost.

THE METRIC SYSTEM IN PRESCRIBING AND DISPENSING.

A rider was moved on behalf of Belfast, advocating the general use of the metric system in dispensing, prescribing, and treatment.

Dr. R. C. BUIST (Dundee) said that the Association issued a special report in 1911 and secured the sanction of the Representative Meeting (see SUPPLEMENT, April 29th, 1911).

Mr. BISHOP HARMAN (Marylebone) suggested that it would be a better course to recommend to colleges and universities that lecturers should teach their students in this fashion.

Dr. E. O. PRICE (North Carnarvon and Anglesey) thought that it would be a disgrace to them as a body of scientific men if they did not adopt a resolution of this

sort. They were not legislating, but simply recommending.

Dr. C. O. HAWTHORNE (Maylebone) said that the metric system had been pushed upon the attention of the General Medical Council to such an extent that they now had it partially recognized in the *Pharmacopoeia*, where the terms of dosage were set out in the metric as well as in the imperial notation, and therefore it was possible for the student at least to familiarize himself with it.

On the amendment of Mr. BISHOP HARMAN, accepted by the Belfast representative, the rider was narrowed down to expressing the opinion that "the general use of the metric system in the teaching of dispensing, prescribing, and treatment would be beneficial to the scientific interests of the medical profession," and in this form was carried.

PROPOSED ANNUAL HANDBOOK.

Dr. C. J. PALMER (Nottingham) moved:

That the Council publish an annual handbook giving decisions of Council and of the Representative Body on subjects of medico-political importance, and such other matters as may be thought desirable.

He said that such a manual would do something to dissipate the ignorance which prevailed in some quarters as to what the Association did. It would at least bring the matter succinctly before members and prospective members. He did not believe that the issue would be a charge upon the Association, for, published at a shilling or even half a crown, it would command a profitable sale.

Dr. GARSTANG said that at the last Council meeting a resolution to this effect from the Medico-Political Committee was considered and in principle accepted, and the details were referred to the next meeting of the Organization Committee. The somewhat large and imposing handbook which they had had ten or eleven years ago was not likely to be revived, and he did not want his answer to be interpreted more favourably than the occasion warranted, but the matter would receive the greatest possible consideration as soon as the new session began.

The rider was agreed to.

COMPENSATION ACTIONS.

Dr. CRAWFORD TREASURE (Cardiff) moved:

That the Association press on the Government the necessity that in all compensation actions in the county courts the presiding judge should be required to have the assistance of one or more medical assessors to sit with him, to guide him on technical medical details, in the same manner as a stipendiary magistrate is assisted by nautical assessors when conducting a wreck inquiry.

Major D. F. TODD (Sunderland) said that in the Workmen's Compensation Act the whole machinery was laid down for the employment of a medical assessor. The weak point was that the employment of such assessor was left to the judge's discretion.

Dr. SELLERS said that it was open to both sides to ask for the assessor.

Dr. TREASURE said that the rider covered the specific point mentioned by Major Todd.

The rider was carried.

CERTIFYING SURGEONS UNDER THE FACTORY ACTS.

Dr. W. F. DEARDEN (Manchester) moved on his own initiative, and not from his Division:

That it be an instruction to the Council to take any action it may deem necessary in any legislative attempt which may be made to transfer any of the duties of certifying surgeons under the Factory Act to school medical officers.

The motion was seconded by Dr. J. D'EWART.

Major D. F. TODD urged that this matter should not be brought forward now. It was one of the things which would come up under the Ministry of Health.

Dr. H. B. BRACKENBURY said that this was not a question as between the school medical officer and the factory certifying surgeon. Nobody could transfer their functions, short of Parliament transferring the functions of the Home Office to the Education Department. But it had been mooted that the education officer should examine young persons employed in factories. The Council in drawing up its scheme for a Ministry of Health could bear such points in mind.

Dr. DEARDEN said that all he wanted was that the Council should be in a position to act if anything of the kind suggested in the motion should materialize.

The motion was lost, and the remainder of the reports were approved.

Dr. GARSTANG expressed his thanks to the Representative Body for the courtesy they had shown him while he had been bringing forward a great deal of contentious matter.

ORGANIZATION.

Major RUSSELL COOMBE, as Chairman of the Organization Committee, moved the Council's recommendations with regard to deputy Representatives, membership of Organization Committee, representation of certain committees on others, and grouping of Branches for election of Council, as given in the SUPPLEMENT, May 5th, pp. 83-84, paras. 31-37, and July 7th, p. 3, para. 171, and these were approved.

Dr. EVAN JONES (City) moved an amendment urging that a committee of investigation, unconnected with the working of the Association, should be appointed to inquire into its working, and for this purpose to be empowered to employ the services of a trained business expert. He said that a certain amount of dissatisfaction existed, possibly over small matters.

A motion to proceed to the next business was carried, and the whole of the reports under "Organization" were approved.

THE JOURNAL.

Major ALBERT LUCAS, Chairman of the Journal Committee, moved that the Annual Report of Council under that heading be approved. He said that the difficulties in the publication of the JOURNAL in war time were necessarily very great. Pages had been curtailed, and the price of paper had risen enormously. The addition of a penny to the cost of the production of each JOURNAL meant an increase in the Association's expenditure of £5,000 a year. Thanks to the Financial Secretary, the income from advertisements had kept up very well. He had no doubt the new Assistant Editor would prove a most efficient officer of the Association. Both the Editor and Assistant Editor were paid an inclusive salary which covered their contributions.

Major D. F. TODD (Sunderland) said that he was pleased that this question of editorial contributions had been settled in a businesslike way, but he noticed some members of the staff still received payments for contributions. In his view there should be no such extra payments to whole-time officers.

Dr. HAWTHORNE asked whether reference was permitted to the subcommittee charged with the inquiry into the suitability of the contents of the JOURNAL.

Major LUCAS said that at the meeting of the Journal Committee on April 4th a subcommittee was appointed to consider the whole question of the suitability of contents of the JOURNAL and SUPPLEMENT to the present needs of the Association. The subcommittee had met and reported, but the Journal Committee had not yet had an opportunity of receiving and considering the report. In reply to Major Todd's remark, the rule as to an inclusive salary now obtained both with regard to the Editor and Assistant Editor. As to the Sub-editor the matter was on a rather different footing owing to a pre-existing arrangement, but should they at any time appoint a new Sub-editor they would doubtless be able to arrange for an inclusive salary. The small payments made to other members of the staff were for work done outside office hours.

Dr. HAWTHORNE said that there was some feeling that the contents of the JOURNAL, while meriting high eulogies from many points of view, might be improved by the inclusion of a greater number of papers of distinct clinical interest to men engaged in civil practice.

Dr. W. H. I. SELLERS (Preston) moved that the SUPPLEMENT be issued only to members of the Association. Many matters were discussed in their own meetings long before they were ready to be given broadcast to the public.

Major LUCAS said that not everything was published in the SUPPLEMENT. Matters were not disclosed therein which could be used against them by the other side. Even if the SUPPLEMENT were restricted to members, some 20,000 copies would be published, and outside bodies would generally find it easy to obtain a copy from some member of the Association. To publish an issue without the SUPPLEMENT would also involve technical difficulties in connexion with printing and publication.

Dr. C. H. PANTING (South-West Essex) said that it was annoying to have the SUPPLEMENT waved in one's face in insurance committees. So long as the public could possess themselves of copies in the ordinary way it was no good protesting against the use of information by outside bodies.

Dr. Sellers's rider was lost. A further rider, that the price of the JOURNAL to non-members should be 1s., was withdrawn, and the Report of Council under this heading was approved.

SCIENCE COMMITTEE.

The Annual and Supplementary Reports of Council under the heading "Science" (SUPPLEMENT, May 5th, p. 85, and July 7th, p. 4) were approved, on the motion of the CHAIRMAN.

OVERSEAS BRANCHES.

On the motion of Dr. J. A. MACDONALD, the Annual Report under the heading "Overseas Branches" (SUPPLEMENT, May 5th, p. 99) was approved.

MEDICAL ETHICS.

Position of Medical Referee in relation to Medical Attendant.

Dr. M. G. BIGGS, Chairman of the Central Ethical Committee, moved the approval of the memorandum on the question of whether a medical referee or inspector should inform the medical attendant of any modification in the treatment of a case which he found it necessary to recommend to his employer (SUPPLEMENT, May 5th, Appendix i, p. 100). This was agreed to without discussion.

Dr. Biggs then moved the addition of the following rule to those already approved by the Representative Body in respect of the position of medical practitioners called upon to examine (otherwise than by request of the patient or persons acting on his behalf) patients under the care of other practitioners:

If the medical inspector finds it necessary to report to his employer that any modification in the treatment which is being carried out is in his opinion necessary to the more rapid recovery of the case, he shall so inform the medical attendant.

The CHAIRMAN explained that the Representative Body had already decided that the medical inspector might make such an examination and report upon it, but this did not say that he was to report to the medical adviser.

Dr. J. STEVENS moved an amendment to delete the words "it necessary to report to his employer."

Major A. LUCAS seconded. He said that they examined patients for different bodies, companies, corporations, and all kinds of people, many third party cases and the like, and the effect of the rule as it stood would be to put them on the same terms as a workman. The omission of three or four words would get over the difficulty.

Dr. MACDONALD supposed a case in which a person had an interest in the recovery of the patient at the earliest possible time; had not that person a right to demand from the medical inspector a report which included any suggestion he might think fit to make with regard to future treatment?

The SOLICITOR said, in reply, that that person was entitled under the law to such advice on that matter as the medical inspector could give, and if the medical inspector felt that the circumstances were such as were not contributing to the recovery of that patient, he was entitled to say so.

Major D. F. TOMB (Sunderland) pointed out that an indiscreet medical inspector might raise a number of points with regard to treatment which would have the effect of casting the whole affair into a hopeless muddle. The common-sense of the matter would be for the inspector to communicate with the medical attendant and, if necessary, suggest other lines of treatment.

The SOLICITOR said that Major Todd had put it that the medical inspector should make suggestions as to the form of treatment he considered right. Supposing these suggestions were ignored and not followed? Surely the inspector must see that they were carried out?

Major TOMB thought that the legal adviser was raising a fresh issue.

Dr. BIGGS said that the rule had been brought forward largely as a result of the advice given by the Solicitor, which he had repeated there that day. If the words with regard to the employer were left out, as proposed by Dr.

Stevens, the specific part of the rule was taken away and the whole thing spoilt.

Dr. STEVENS's amendment was lost.

Major G. PARKER (Bristol) failed to understand Major Todd's contention that the inspector should not report to the employer on the subject of treatment. How could he, in a given case, disagree with the diagnosis without saying also that he disagreed with the treatment? The business of the referee was to give a perfectly honest report upon the facts, including both treatment and diagnosis.

Sir CLIFFORD ALLBUTT suggested that the following words be added to the rule: "If possible in the first instance" after the word "shall." This would save a good deal of friction and annoyance. He moved the insertion of these words.

Dr. C. E. S. FLEMMING (Salisbury, etc.) seconded, and pointed out that the medical inspector in his report had to say how long it would be before the man was fit to work; could he do so unless he knew what sort of treatment the man was having, and without making suggestions as to different treatment if necessary?

Dr. C. E. ROBERTSON (Glasgow Southern) said that he would like to ask what was the exact position of the referee. Were they bound as a profession to accept the referee's opinion?

Dr. MACDONALD thought it should be made clear that by "the employer" was meant the employer of the medical inspector, not of the patient.

Dr. W. E. THOMAS (North Glamorgan) asked whether the medical inspector had the right to divulge the facts of the case to the indemnity society.

The SOLICITOR asked whether Dr. Thomas's suggestion was that such an act on the part of the medical referee or inspector in communicating to the indemnity society amounted to libel, and on Dr. Thomas saying that that was his suggestion, the Solicitor said that his answer would negative that, and he would be prepared to defend it.

The new rule was adopted, with the addition of the words suggested by Sir Clifford Allbutt.

Two amendments by Liverpool to paras. 58 and 59 of the report (SUPPLEMENT, May 5th, pp. 85 and 86) were negatived. The first, which thanked the General Medical Council for refusing to assist the British Medical Association in getting members struck off before proof of fault, was described by Dr. BIGGS as amounting to a vote of censure; the second was an objection to the wording of the paragraph.

Practitioners Examining Patients under Care of other Practitioners.

Appendix II (position of practitioners examining patients under care of other practitioners), of SUPPLEMENT, May 5th, p. 100, was the subject of a series of resolutions moved by Dr. A. O. HOLBECH (Worcester). The first, which was accepted by Dr. Biggs and carried, referred it to the Council to consider whether the word "examination" should be substituted for the word "visit" in Rule (i). The second related to the desirability of adding to Rule (iv) that "bandages, dressings, or appliances shall not be removed without the consent of the medical attendant." Mr. BISHOP HARMAN pointed out that this would place an absolute embargo upon a large proportion of examinations. Dr. HOLBECH said that the object he had in view was to afford the medical attendant every opportunity to be present on these occasions.

Dr. F. L. POEHN (Oldham) said that in every case of this kind with which he had had to do the medical attendant of the patient was notified as to the hour and day of his visit, but in not two per cent. of his cases did the medical attendant turn up. He thought the situation was quite sufficiently safeguarded without the amendment.

The motion was lost, but another motion by Dr. HOLBECH with regard to Rule (v), suggesting the alternative opening words "That when the medical attendant fails to answer a communication made to him by the medical inspector," was accepted as a reference to the Council.

Major G. PARKER (Bristol) moved an amendment, which was seconded, referring it to the Council to consider whether the rules in Appendix II should be held to include hospital as well as private patients.

Major LUCAS said that the passing of these last resolutions did not necessarily commit the Central Ethical

Committee or the Council, but they embodied principles of very serious import to large numbers of medical men—especially the alteration suggested for Rule (i)—and if they were carried out in regulations these men could not and would not remain members of the Association. The effect of the alterations proposed by Worcester would be to make the position in an industrial area, where there were hundreds of cases to be seen, absurd and impossible.

Major Parker's amendment was lost, and the whole of the reports of the Council under "Medical Ethics" were approved.

NATIONAL HEALTH INSURANCE.

CONSTITUTION OF INSURANCE ACTS COMMITTEE.

Dr. H. B. BRACKENBURY, Chairman of the Insurance Acts Committee, moved the adoption of the amended schedule as to the constitution of the Committee (SUPPLEMENT, May 5th, p. 92). He said that if it had not been that a contrary amendment stood on the paper he would have thought that this would be considered entirely a formal matter, and passed without discussion. The question at issue was whether it was desirable that the Committee should contain a proportion of men who were not working under the Insurance Acts. He had been in various parts of the country urging it as one of the virtues of the Insurance Acts Committee that it did not consist wholly of men working the Insurance Act. The functions of the Committee were important and manifold, and they were, broadly, to deal with all matters arising in connexion with the National Insurance Acts, not merely the relationship between the insurance practitioners and those Acts, and it was of vast importance in view of various eventualities that there should be upon the Committee a certain number of members who were not in insurance practice. The proposed alteration in the constitution of the Committee was that instead of six direct representatives of Local Medical and Panel Committees there should be fifteen. That was done on the recommendation of the Conference of representatives of those committees held last October.

Dr. E. A. STARLING (Tunbridge Wells) formally moved that, with the exception of the *ex officio* members of the Association, the Committee should consist of panel practitioners only. The amendment was lost, and the original motion agreed to.

The CHAIRMAN pointed out that it was very important that the Insurance Acts Committee in as entire a form as possible should continue in office until the next Conference of Local Medical and Panel Committees, and on his motion it was agreed to authorize the continuance in office until the next conference of those members of the Committee who were elected for 1916-17 on the nomination of Local Medical and Panel Committees.

STATE MEDICAL SERVICE.

Dr. M. G. BIGGS (Chairman of the Non-Panel Committee) moved on behalf of the Council the recommendations with regard to medical attendance and treatment of industrial and poorer classes (SUPPLEMENT, July 7th, p. 7, para. 204). As to the first of these, that such medical treatment should not be carried out by a whole-time salaried State medical service,

Captain FOTHERGILL asked what was the urgency of this question. The question of the improvement of the Insurance Act or the general future of National Insurance was being considered by the Insurance Acts Committee, who had already prepared a report. When that matter had been before the Divisions again, the Insurance Acts Committee would meet further and consider the whole question. Was there any urgent reason why the situation should be anticipated by this resolution?

Dr. R. C. BRIST (Dundee) said that his Division had not instructed him to support a salaried State service, but they were very strongly of opinion that to adopt a simple negative motion of this kind at the present time would be leading the Association into danger of another disaster. It was common knowledge that from one side or another the offer of a salaried State service was going to be made. They did not know what the strength of the outside demand for that was likely to be, but that the offer would be made seemed most probable, and they had to face it. A considerable number of members of the profession here and there had expressed themselves in favour of a salaried

State service. If the offer of the conditions were sufficiently attractive they would be faced with a very serious division of opinion in the profession, which the Association would not be able to hold in check, and the opinion of the Association and of the profession as a whole should be formed on much more intelligent grounds than any they had had up to the present time. His Division suggested that the Council should consider the matter of a State medical service, and let them know what they were proposing to favour or to refuse. He moved an amendment on those lines.

Major TODD suggested that this would open up the detail they had avoided that morning in discussing the Ministry of Health.

The amendment was lost, and the original motion carried.

Dr. BIGGS moved the second of the recommendations, which was agreed to after being amended to read that the medical treatment of these classes should be carried out by a "modified and (instead of or) improved insurance scheme." To the third of these recommendations,

INSURED PERSONS AS PRIVATE PATIENTS,

Dr. JOHN STEVENS (Edinburgh and Leith) moved an amendment:

That every insured person shall have the right to be attended as a private patient by any registered medical practitioner willing to attend, without the necessity of any form of contract on the part of the practitioner, and without the loss to the insured of any of the benefits of the National Insurance Act; and that the British Medical Association be requested to incorporate this provision in their proposed amendments to the Act.

He said that this was not brought forward in any spirit of antagonism to the principle of National Insurance, and still less to those who had joined the panel. About two-thirds of the insured persons were previously not attended under contract conditions, but in the main as private patients, and he claimed that the Association ought to adopt the policy of demanding that there should be a restitution of the conditions under which these people were attended, so that they should have the right to be treated as private patients once more. If effect were given to his amendment, it would go a long way towards healing the present division in the Association over the Insurance Act, and that was the object, more than any other, with which he submitted it. The proposition could not hurt or threaten any one.

Captain E. R. FOTHERGILL said that there must be a contract of some sort. They could not imagine, unless they lived in Utopia, that any nation was going to allow doctors to attend persons who came under an Act and a certain amount of discipline without any contract whatever and yet receive payment.

Dr. I. W. JOHNSON (Bury) said that it was at the unanimous request of his Division that he opposed contracting out under the Insurance Act in every shape and form in which the matter might come before the meeting.

Dr. H. B. BRACKENBURY said that it was not a question of contracting out under the Insurance Act. What the amendment said was that doctors should be allowed to take State pay without being obliged to do anything for it. Could that proposition commend itself to any body of medical men?

Dr. D. A. SHEAHAN (Portsmouth) said that he did not understand the amendment in the sense in which Dr. Brackenbury had interpreted it. Many people were forced under the Insurance Act who wished to have a private doctor and pay him for work done. These people did not trust contract practice.

Major W. J. GREER (Monmouthshire) strongly opposed the amendment. The proposal had been brought up time after time at the Representative Meetings and ought to have been dead long ago.

Dr. STEVENS, in replying, brought forward some quotations from Mr. Lloyd George, one of them affirming that there was nothing in the Act which enforced contract practice anywhere. He cited the number of insured persons who had refused to put their names on the lists of panel doctors—about 20,000 in Edinburgh, out of a total of a little over 100,000 insured persons—as a proof that a considerable body of people demanded the restitution of their former rights.

The amendment was lost.

MEDICAL TREATMENT OF THE INDUSTRIAL AND POORER CLASSES.

Captain FOTHERGILL, speaking on the main proposition, objected to its drafting. Under the sweeping dictum of (a) ("complete and efficient medical and surgical treatment to that section of the community which is unable to provide such treatment for itself") seemed to be included a number of their private patients who at the present moment paid them fees up to 7s. 6d. and 10s. 6d. but were not able to pay the fees for large operations. He knew the Committee did not mean it—it was bad drafting—but the recommendation suggested that all that class of patients should be put in category (a). According to (b) ("freedom to any other person involved in any system of State medical service to make his own individual arrangements for treatment if he so desire") the industrial working classes were to have absolute freedom of choice for making their own arrangements in the Edinburgh style. Why this *volte face*?

Dr. BRIGGS said that what was present to the minds of the Non-Panel Committee was the abuse that had taken place in Wales, and they wanted to word their resolution so as to shut out any chance of that occurring. Captain Fothergill had set up a bogey. The class named under (a) were very poor persons indeed and could not possibly include people paying a half-guinea fee.

The motion was lost.

MEDICAL REFEREES.

Major TODD, in the absence of the Representative of Worcester, moved an amendment disapproving the scheme for the payment of 5s. fees to local referees appointed by approved societies (SUPPLEMENT, May 5th, p. 96, para. 125). In his own area they had stood out loyally for a fee of 10s. 6d., but some areas had broken away.

Dr. BRACKENBURY said that there had been no departure from the policy of the Association, but the actual resolution, while making the minimum fee 10s. 6d. for cases seen as individual cases, gave power to the Council to sanction a scheme sent up by any Division involving smaller fees where men had accepted appointments to approved societies if such sanction could be reasonably given. The Council had handed over the matter to the Insurance Acts Committee, and permission had been given in three cases, always, however, subject to the Committee being satisfied (1) that there was a real scheme in that area for dealing with the matter, (2) that there was a fairly unanimous opinion in the Division in its favour, (3) that there would be no difficulty in surrounding areas.

Dr. H. F. OLDHAM (Lancaster) said that with considerable trouble he had, as chairman of the Division, obtained the resignation of the appointments offered them of referee by men in his Division who had been acting for the 5s. fee. The one man who refused to be guided by the opinion of the Division was the only one who profited; the others, who had loyally fallen in with the chairman, had lost by it, and would be up in arms against the Association for leaving them in the lurch.

The CHAIRMAN suggested to Dr. Oldham that the gentlemen of whom he had spoken should abide by the decision of the Representative Body, and if any gentleman did not, the matter should be referred to the Ethical Committee. He added that the Representative Meeting took a very wise course in that it practically left the whole matter to the option of the Divisions.

A motion to proceed to the next business was carried.

Dr. G. E. HASLIP (Westminster) desired to ask the Chairman of the Insurance Acts Committee, not in any personal way, whether that committee was an advisory committee to the Commissioners or a fighting committee for the profession. He belonged to a Panel Committee in which this question was being constantly discussed.

Dr. BRACKENBURY maintained that it was a fighting committee, but before it fought it attempted to negotiate. He denied that its relative position towards a Government department was that of a subordinate advisory committee.

The whole of the report under "National Health Insurance" (SUPPLEMENT, May 5th, p. 92) was then approved.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

Dr. BRACKENBURY, in moving the approval of the Supplementary Report under the heading "National Insurance," spoke at length on the question of discharged disabled

soldiers and sailors. They had maintained that disabled men must necessarily require greater medical attendance than healthy persons, and that therefore special provision ought to be made for payment. They had negotiated with the Commissioners and with the Government generally, and eventually persuaded them that it was necessary to make special arrangements. They had not much difficulty in convincing the Commissioners, but the difficulty was much greater with the Treasury. Of course they had no positive proof of the truth of their case, though they considered it to be axiomatic; still less had they any means of gauging what would be a proper remuneration for the extra attendance. Being unable to make out a statistical case for an increased capitation grant with regard to these men, they were obliged to accept payment by attendance as an experiment until they had accumulated data which would enable them to determine the proper remuneration. The treatment of these men therefore, while it was not taken entirely outside the machinery of the Insurance Acts, was taken outside their monetary provisions. If the pool did not meet the bills sent in on an attendance basis, the Treasury would make up the pool to the amount required. The payment would be the same as for temporary residents. That was simple enough so far as men hereafter to be discharged were concerned, but with men already discharged the case was more difficult, because some were already on the list of an insurance practitioner. That practitioner would have the option as these men presented themselves to him of continuing attendance according to the old capitation arrangements or of transferring them to this new order. Statistics would be got out and reports made quarter by quarter during the next twelve months or so, and then it would be open to them to consider the whole matter. There had specially to be considered the class of persons who were coming out of the army and were not insured. There had been placed on the Statute Book this session Insurance Act No. 3, dealing with these men, and putting them in the same position as insured persons so far as this was concerned. The Committee made the arrangement that it should be open to any discharged disabled soldier or sailor to choose any doctor he liked, whether on the panel or not, who signified his willingness to treat him; and they went a step further, allowing all these men to have this freedom of choice, whether they were insured persons or not. As some of the men coming out of the army had considerable incomes, it was necessary that the same income basis—namely, £160 per annum—should be applied as to voluntary contributors.

Dr. J. R. RATCLIFFE (Birmingham Central) asked whether the Council took into consideration the question of the treatment of discharged soldiers suffering from tuberculosis.

Dr. BRACKENBURY replied that sanatorium benefit came under the same regulations.

Dr. J. W. BONE (Bedford) referred to hospitals which had been approached by War Pensions Committees to take discharged soldiers as out-patients at 6d. per attendance in ordinary cases, and 1s. 6d. in cases where the attendance included massage and electrical treatment, and as in-patients at 4s. a day.

Dr. R. A. LUNDIE (Edinburgh and Leith) moved:

That any provision made for medical attendance on discharged disabled soldiers and sailors ought to be outside the National Insurance Acts.

He said that this amendment was brought up in order to maintain what had been hitherto the official attitude of the Association, and had been lost sight of.

Dr. H. B. BRACKENBURY said that he was sure the Representative Body would not do anything so foolish as to pass an amendment of this kind. It was entirely futile. Parliament had said that these people were to be dealt with under the Insurance Act machinery. The Committee had succeeded, in spite of this, in getting them dealt with under a more liberal scheme than that laid down for the ordinary insured person. The Act was the law of the land. He trusted they would not develop into passive resisters.

Dr. J. STEVENS (Edinburgh and Leith) submitted that it could not be futile so long as the regulations were not out—the regulations were the important thing.

The amendment was lost, but the following rider, moved by Dr. LUNDIE, was adopted:

That this provision ought to be made under conditions which will allow of these persons being attended by any registered medical practitioner they may respectively choose.

Dr. JAMES PATTON (Consett and Gateshead) hoped the meeting would not approve the same payment as for temporary residents. He suggested that the fee should be 3s. per attendance, in view of the probable large number of heart and kidney cases and cases needing dressings, and moved a rider to that effect.

Dr. BRACKENBURY put it to the meeting that Dr. Patton's rider would scrap the bargain which after so much labour the Committee had arrived at on behalf of the profession.

The rider was lost.

FEDERATIONS OF MEDICAL AND PANEL COMMITTEES.

Dr. F. L. POCHIN (Oldham) moved:

That federations of Medical and Panel Committees formed locally for exchange of information, and the discussion of problems peculiar to the conditions of practice in their own areas with a view to securing concerted action thereupon, if necessary, through the British Medical Association, should be encouraged by the Insurance Acts Committee.

He said that the idea was to form the federation on strictly non-party lines. It would be in no way antagonistic to the British Medical Association, but would serve to keep touch between the various Panel Committees of the area. The aid of the Association would be called in when necessary, but the greater part of the business of the federations would not be important enough to warrant that intervention.

Dr. J. McCREA (Reading) suggested the adoption of the Reading plan by which they had arranged to hold the borough panel meeting, the county panel meeting, and the local Association meeting in a time relation to one another, and afterwards to hold a meeting of all the executive officers of the three bodies.

Dr. BRACKENBURY said that the opinion of the Insurance Acts Committee was against the formation of such federations. They felt that, although it was desirable that there should be consultations between Panel Committees about matters in which they were mutually interested, federation of such bodies was a dangerous thing to encourage, and might easily militate against the success of the Association in any fight it had to undertake. He hoped Panel Committees would leave those things in the hands of the central authority.

Captain FOTHERGILL preferred the word "conferences" to "federations."

Dr. BUIST said they had had a favourable experience of provincial conferences in Scotland.

On Captain FOTHERGILL's suggestion, which was accepted by the Oldham Representative, the motion was amended, and was carried in the following form:

That conferences of neighbouring Local Medical and Panel Committees held to exchange information and for the discussion of problems peculiar to the conditions of practice in their own areas with a view to securing concerted action thereupon, through the British Medical Association, should be encouraged by the Insurance Acts Committee.

THE FUTURE OF INSURANCE PRACTICE.

Dr. BRACKENBURY, in introducing the interim report on the future of the Insurance Acts, said that there were some points in it upon which an exchange of ideas would be useful. It was an interim report only, and the final report which would be arrived at in two or three months' time might be very different; but this report had been received with a very large measure of approval throughout the country. He invited suggestions through Divisions and Local Medical and Panel Committees, in order that all the matters contained in the report might be co-ordinated and taken into consideration.

Dr. D'EWART (Manchester) said that a considerable opinion in the country, while passively accepting the principles of the Insurance Acts, did not really approve of them, and did not desire any extension of them. He moved as a rider that no further steps be taken on the question of the extension of insurance until a referendum of the profession had been taken with this direct question.

Dr. BRACKENBURY said that considerations as to what extension meant and would involve and the consequential changes were all set forth in the interim report, and every Division and Branch was invited to express opinions thereupon. When these opinions were finally collated, they would be in a position to judge what the general opinion of the profession was. Manchester, they knew, took a peculiar view about these things. Manchester was

in a minority of one on one of the most important questions put to and answered by the local areas.

On a show of hands, the CHAIRMAN declared Dr. D'EWART's rider lost by a very large majority.

Dr. W. J. YOUNG (Cambridge and Huntingdon) thought that some of the answers received showed the futility of certain of the Divisions. As between leaving the matter to the Divisions or to the Council, he would plump for the Council every time.

Dr. G. E. HASLIP (Westminster) said that he had no wish to slay the slain, but he would like to point out a few questions to which, he thought, the Insurance Acts Committee might give a little further consideration. The first thing that was said when the profession fought the Insurance Act was that they would be free of the control of the approved societies. He would like all the Divisions to consider whether they were free of the approved societies. If they were free of local approved societies, were they free of the large institutions—the insurance companies? Out of the 14 millions of insured persons how many were direct contributors to the State? Quite two-thirds were in the large insurance companies, which had their agents distributed in all parts of the country. These agents were upon local committees; mixing with the classes with which they came in contact through insurance, they had certain political power. He hoped the Council would give serious consideration to this and other points which arose out of the question. Another matter was the extension of the Act to dependants. This meant more officials and greater cost. Was that cost going to be taken out of the remuneration of the doctors? In his Division they believed that to make the Act a success in populous districts they should have local clinics; by that means they felt that the work would be done very much better.

Dr. J. R. RATCLIFFE (Birmingham Central) objected to the "penny each, two for three ha'pence" method of payment for dependants. The incidence of sickness in the general run of cases did not justify this, and to take two or more children at a reduced fee would be dangerous. He strongly urged that wherever children or dependants were insured the full capitation fee should be paid for each.

Dr. H. F. OLDHAM (Lancaster) asked, in order that the synopsis of replies received to the questions might be appreciated at its true value, how much overlapping there had been. He himself could have given an answer three times over to these questions.

Dr. BRACKENBURY said that care had been taken in obtaining the replies to avoid overlapping as far as possible. The conditions in Lancashire were rather difficult from the point of view of eliciting the opinion of the various areas, but he could assure Dr. Oldham that any banking up of opinion had occurred only very rarely. In reply to Dr. LEWIS-LLOYD, he said that the scheme of election of the Local Medical and Panel representatives on the Insurance Acts Committee would be referred to the Local Medical and Panel Committees before the Panel Conference was held.

Dr. J. STEVENS (Edinburgh) moved, and Dr. LUNDIE seconded, that in any amendment of the Acts, medical benefit should be limited to the necessitous, and that the rest of the public who were able to provide it for themselves should be left free to have their medical attendance under the conditions of private practice. This was put to the meeting and lost.

Dr. J. CLARKE (Woolwich and Lewisham) approved of every bit of the interim report, which had prepared them as an Association for any attacks of the enemy. He spoke as a non-panel doctor, but as one who under certain schemes was perfectly willing to come in.

Dr. BRACKENBURY said that the Committee was very grateful for such an expression of opinion. The Committee took immense pains to produce this report and to survey the whole question from a statesmanlike standpoint. The attack upon the position of the general practitioner was still in evidence, and in considering this report they should remember that while they might not like the extension of the Insurance Acts to the dependants of insured persons, the alternative was a whole-time salaried officer at a clinic.

On the motion of Dr. JAMES PATTON (Gateshead) the meeting called upon the Insurance Commissioners for additional remuneration commensurate with the increased cost of living.

Dr. J. R. RATCLIFFE drew attention to the regulations made with regard to the treatment of disabled men discharged from the army suffering from tuberculosis. These men were entitled to sanatorium benefit, but in his experience comparatively few of them applied, and there were no means of forcing these men into sanatoriums. He moved the reference of the whole question to the Council, and this was agreed to.

The Supplementary Report under this heading was then approved.

PUBLIC HEALTH AND POOR LAW.

Dr. E. J. DOMVILLE, Chairman of the Public Health Committee, submitted the reports of the Council under the heading "Public Health and Poor Law," and these were approved. On his proposition it was also agreed—

That the grants for nutrition and such like provided for young children by maternity and child welfare centres should not be made from Poor Law funds.

Dr. JOHNSON SMYTH (Bournemouth) moved that it be an instruction to the Council to inquire through the Divisions into the remuneration and conditions of service governing Poor Law appointments in Great Britain. The motion was lost.

HOSPITALS.

Dr. H. J. CAMPBELL, Chairman of the Hospitals Committee, moved that the principles first suggested in the Association's model scheme for the treatment of tuberculosis and approved in 1914, and set out again in SUPPLEMENT, May 5th, p. 97) be adopted by voluntary hospitals treating patients maintained by public funds, so as to avoid the services of the medical profession being given gratuitously to such patients whilst the hospitals at the same time continued their voluntary status as regards their purely charitable work.

This was agreed to, and a rider by Mr. BISHOP HARMAN was also adopted:

That it is the duty of the State to provide the accommodation needed for the medical and surgical treatment and care of the sick, wounded and disabled sailors and soldiers, and that if the voluntary hospitals be asked to assist in this work these hospitals should not, as is frequent at present, provide for the accommodation of the sailors and soldiers by the sacrifice of facilities for the medical and surgical treatment and care of the civilian sick poor.

Mr. Bishop Harman said that the motion was a protest against the scandalous fashion in which the poor were deprived of their proper facilities for treatment at the voluntary hospitals. It was all very well at the beginning of the war, but it was quite another thing to keep such wards still tenanted. The fault was not entirely that of the War Office; it was mainly the fault of the hospital authorities, who wished to use the soldiers as an advertising medium for their institutions.

Dr. C. E. ROBERTSON (Glasgow) protested against the last statement. He did not think the governors of any hospital used the soldiers as an advertising medium. He was quite sure that what was being done had a grander and more patriotic motive.

Dr. BRACKENBURY said that an arrangement which the Advisory Committee had tried to make with the Ministry of Pensions with regard to payment for the treatment of soldiers and sailors in voluntary hospitals had fallen through, and it would be necessary for the staffs of the hospitals themselves to take action.

Major McADAM ECCLES (Marylebone) referred to a document just issued by the Ministry of Pensions, governing payment for the treatment of discharged sailors and soldiers at voluntary hospitals. The payment was not to exceed, except with the sanction of the Minister of Pensions, 21s. weekly at convalescent homes, and 28s. weekly at other institutions, including ordinary civilian hospitals. There was no reference to any other payment which could go to the medical officers of these institutions. It was also stated that where out-patient treatment was given at an institution the fee payable by the local committee should not exceed 1s. for the first and 6d. for each subsequent visit, while 1s. 6d. was put down for special treatment, including x rays. He moved:

That the question of the payment for treatment of discharged sailors and soldiers at voluntary hospitals be referred to the Council for consideration and such action as may be found necessary.

Dr. CAMPBELL (Chairman of the Hospitals Committee) pointed out that the Pensions Committee—so he understood—were being instructed to approach the local hospitals one by one and attempt to get them to agree to these utterly inadequate terms. Hence it was not a general proposal, but a specific proposal to each voluntary hospital. In certain areas the hospitals had been offered even smaller sums than those mentioned in the document to which Major Eccles had referred.

Major Eccles's motion was carried, and the reports under "Hospitals" were approved.

SCOTLAND AND IRELAND.

Dr. JOHN ADAMS, Chairman of the Scottish Committee, in moving the approval of the Annual and Supplementary Reports of the Council under that heading, reviewed the work of the Medical Service War Emergency Committee of Scotland and the inquiry it had conducted as to the opinions held among the profession in Scotland with regard to compulsory mobilization. In Scotland also they were in process of forming a special subcommittee to deal with questions under the Insurance Act. This did not mean merely looking after the interests of panel practitioners, although the men on the committee would mostly be panel men, because after all the panel interests of most general practitioners were far smaller than their other interests which they had in common with all general practitioners.

The reports were approved, as also were those under heading "Ireland," moved by Dr. J. S. DARLING (Portadown and West Down) in the absence of the Chairman of the Irish Committee.

NAVAL AND MILITARY.

The Indian Medical Service.

On the motion of the CHAIRMAN it was resolved that the following be appointed representatives of the Services on the Council for the period 1917-20:

Royal Navy Medical Service: Fleet Surgeon F. D. Lumley, R.N.(ret.).

Army Medical Service: Colonel R. I. D. Hackett, A.M.S.(ret.).
Indian Medical Service: Lieut.-Colonel R. H. Elliot, I.M.S.(ret.).

In the absence of the Chairman of the Naval and Military Committee, Lieut.-Colonel R. H. ELLIOT moved:

That the Representative Body approves the memorandum submitted by the Council on that part of the Report of the Royal Commission on the Public Services in India which deals with the Indian Medical Service.

Lieut.-Colonel Elliot dealt in feeling terms with the Report of the Royal Commission and the injustices under which the men of the Indian Medical Service had to labour. It was preposterous that the opinion of a surgeon-general should be liable to reversal at the dictation of a young civilian who knew nothing whatever about medical matters. Yet in point of fact that was what was happening frequently all over India, and it would continue to happen until the Director-General and the Surgeon-Generals were made secretaries to their Government. The biggest question of all was the right of private practice. It was not possible for the profession to dictate to the Secretary of State, but they could find out from him clearly what terms he meant to give the young medical officer of the future, and advise accordingly.

The meeting listened to Lieut.-Colonel Elliot with evident sympathy, and the motion was carried, as also a further motion, proposed by him, approving the remainder of the Report of the Council under heading "Naval and Military" (SUPPLEMENT, July 7th, p. 8).

ELECTION RETURNS.

In the course of the proceedings the CHAIRMAN and MEDICAL SECRETARY announced the results of elections as these were determined. The returns were as follows:

Chairman of Representative Body, 1917-18 (only one nomination):
Mr. F. B. TURNER.
Deputy Chairman (only one nomination): Dr. T. W. H. GARSTANG.

Election of Four Members of Council by Representative Meeting.
Dr. E. J. DOMVILLE. Dr. W. JOHNSON SMYTH.
Major ALBERT LUCAS. Dr. T. JENNER VERRALL.

Election of Twelve Members of Council by Grouped Representatives
(contest only in the first of the following groups).
Major A. C. FARQUHARSON: North of England, North Lancashire and South Westmorland, and Yorkshire Branches.
Dr. I. W. JOHNSON: Lancashire and Cheshire Branch.

Colonel C. H. MILBURN: East York and North Lincoln, Midland, Cambridge and Huntingdon, East Anglian, and South Midland Branches.
 Dr. H. C. MACRIER: Birmingham, Staffordshire, North Wales, Shropshire and Mid-Wales, and South Wales and Monmouthshire Branches.
 Mr. N. BISHOP HARMAN: Metropolitan Counties, Inner Group.
 Dr. R. LANGDON-DOWN: Metropolitan Counties, Outer Group.
 Dr. S. NOY SCOTT: Bath and Bristol, Gloucestershire, West Somerset, Worcestershire and Herefordshire, Dorset and West Hants, South-Western, and Wiltshire Branches.
 Captain E. R. FOTHERGILL: Oxford and Reading, Southern, Kent, Surrey, and Sussex Branches.
 Lieut.-Colonel J. MUNRO MOIR: Aberdeen, Northern Counties, Dundee, Perth, Edinburgh, and Fife Branches.
 Dr. J. MILLS: Connaught, South-Eastern of Ireland, and Leinster Branches.
 Dr. J. S. DARLING: Munster and Ulster Branches.

Election of Twelve Members of Insurance Acts Committee (contest only in Metropolitan Counties, Outer Group).

Major A. C. FARQUHARSON: North of England, North Lancashire and South Westmorland, and Yorkshire Branches.
 Dr. J. RATCLIFFE-GAYLARD: Lancashire and Cheshire Branch.
 Dr. C. J. PALMER: East York and North Lincoln, Midland, Cambridge and Huntingdon, East Anglian, and South Midland Branches.
 Dr. W. B. CRAWFORD TREASURE: Birmingham, Staffordshire, North Wales, Shropshire, and Mid Wales, and South Wales and Monmouthshire Branches.
 Dr. B. A. RICHMOND: Metropolitan Counties, Inner Group.
 Dr. J. A. P. BARNES: Metropolitan Counties, Outer Group.
 Dr. R. HARDING: Bath and Bristol, Gloucestershire, West Somerset, Worcestershire and Hereford, Dorset and West Hants, South-Western, and Wiltshire Branches.
 Captain E. R. FOTHERGILL: Oxford and Reading, Kent, Southern, Surrey, and Sussex Branches.
 Dr. JOHN HUNTER: Aberdeen, Northern Counties of Scotland, Dundee, Perth, Edinburgh, and Fife Branches.
 Dr. JOHN ADAMS: Glasgow and West of Scotland, Border Counties, and Stirling Branches.
 Dr. J. S. DARLING: Munster and Ulster Branches.
 No nomination: Connaught, South-Eastern of Ireland, and Leinster Branches.

CLOSING PROCEEDINGS.

Dr. MACDONALD having moved that, subject to the amendments and other resolutions adopted by the meeting, the Annual and Supplementary Reports of the Council be approved as a whole, this was carried *unanimously contra-dicente*.

The CHAIRMAN said that the Association owed a debt of gratitude to the Representatives who had come, in spite of the great pressure at the present time, and had got through the business in so thorough and determined a fashion.

Major WALLACE HENRY moved a very hearty vote of thanks to the Chairman, and this was seconded by Dr. JENNER VERRALL, and carried by acclamation.

Mr. TURNER, in reply, said that it had been a great pleasure to him to preside. He feared they had found him something of a slave-driver, but he could assure them that if they met under circumstances of greater leisure they would find him one of the most indulgent of chairmen.

On the motion of Major RUSSELL COOMBE, the staff were thanked for the way in which they had contributed to the expeditious carrying out of the business of the meeting.

The proceedings then concluded.

Meetings of Branches and Divisions.

CAMBRIDGE AND HUNTINGDON BRANCH.

THE seventy-third annual meeting of the Branch was held at Cambridge on July 11th, when the following officers were re-elected:

President: Dr. Grove. *Vice-Presidents:* Drs. Meacock and Newton.

Honorary Secretary and Treasurer: Dr. Ezard.

Representative: Dr. Young.

Joint Disablement Committee.—Lieut.-Colonel WHERRY was elected to represent the area on the Norfolk, Suffolk, and Cambridgeshire Joint (Disablement) Committee, subject to his consenting to serve.

Attendance on Discharged Sailors and Soldiers.—The following resolution, reported by the Cambridge and Huntingdon Division, was endorsed by the Branch:

That this Division recommends that payment for the treatment of discharged sailors and soldiers be made upon the attendance scale laid down in Army Form O. 1667.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

COUNTY OF FORFAR.

At an adjourned meeting of the Local Medical Committee on July 4th it was resolved to disapprove of the Interim Report of the Insurance Acts Reconstruction Subcommittee of the York Local Medical and Panel Committee, and to uphold the policy of the British Medical Association.

Dr. Burgess (Forfar) and Professor Kynoch (Dundee) were nominated for vacancies on the new Statutory Advisory Committee under Section 58 of the National Health Insurance Act, 1911.

It was decided to inform the Secretary of the Scottish Association of Insurance Committees that the provision of a clinic in Forfarshire was unnecessary, and that there was at present no difficulty in getting specialists and consultants in the area.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—
 Surgeon-General D. T. Hoskyn has been placed on the retired list.
 Fleet Surgeon M. J. Smith, M.D., to the *Fivid*. Surgeon R. M. Riggall granted the acting rank of Staff Surgeon. Surgeon A. R. Sharrod, M.B., to the *Victory*. Temporary Surgeons: H. A. L. Guthrie to the *Pembroke*, additional for Chatham Hospital; W. W. Forsyth, M.B., J. F. Fleming, M.B., and L. H. Horsley, M.B., to Chatham Hospital; J. L. Owen, M.B., to the *Victory*; R. G. Melrose to the *Fivid*; J. G. Pearson, M.B., H. Robertson, M.B., and F. W. Poole to Plymouth Hospital; P. E. F. Frossard to the *Drake*. To be temporary Surgeons: H. C. C. Joyce, H. R. Buttery, F. W. Leech, M.B., T. O. Clark, M.B., F. R. Law.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon W. G. Evans, M.D., to the *Pembroke*. Surgeon probationer D. C. Lamond has been granted a temporary commission as Dental Surgeon. To be Surgeon probationers: R. M. Galloway, H. D. Low, J. Reid, G. Burnett, G. P. Monk, E. R. Murray, G. Tudhope, H. R. Griffith.

ARMY MEDICAL SERVICE.

ROYAL ARMY MEDICAL CORPS.

Temporary honorary Lieut.-Colonel Sir J. Collie, M.D., to be temporary honorary Colonel.

Sir A. MacCormick, M.D., F.R.C.S., to be temporary Colonel. Lieut.-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of a Division: G. G. Delap, D.S.O., G. A. T. Bray.

To be acting Lieut.-Colonels: Majors M. W. Falkner, F.R.C.S.I., and W. MacD. MacDowall whilst in command of a stationary hospital; Captain E. W. Wade, M.B., whilst in command of a field ambulance; Major (Brevet Lieut.-Colonel) P. H. Henderson, D.S.O., M.B., whilst employed as Assistant Director of Medical Services of a Division; Major J. A. Hartigan, D.S.O., M.B., whilst in command of a casualty clearing station.

C. T. Parsons, M.D., to be temporary Lieut.-Colonel whilst employed at the Fulham Military Hospital.

Temporary Major R. L. Guthrie, M.D. (Captain R.A.M.C.T.F.) having ceased to be employed with the Fulham Military Hospital relinquishes his temporary commission.

T. M. Martin, M.D., to be temporary Major.

F. P. Nunneley, M.D., to be temporary honorary Major.

Temporary Captain H. D. Gillies, F.R.C.S., to be temporary Major.

The following officers relinquish their commissions:—Temporary Captains: F. L. Hill, M.D., A. E. London, M.D., S. S. Ball, M.B., T. O. Hutton, M.B., W. J. Grant, M.D., W. J. Patterson, M.B., E. W. Anderson, M.B., G. A. Pringle, M.D., R. A. Facey, D. Tenison, T. J. Phillips, M.B., A. Hallidie, M.B., F.R.C.S., A. W. Senior, G. H. Simpson, A. O. Sturdy, F.R.C.S., C. V. Cornish, F.R.C.S., G. F. Laing, M.D., J. Russell, M.D., W. S. O. Waring, M.B., C. H. Evers, J. E. Long, M.D., E. F. Clowes, H. W. Drew, F.R.C.S., D. F. Shearer, M.B., F.R.C.S., J. D. Harmer, M.B., F.R.C.S., J. Corcoran, G. B. Hillman, J. M. Keegan, M.B., F.R.C.S., T. E. Cottu, J. E. Paterson, M.B., E. A. Wilson, M.D., A. E. Hutton, A. B. Gordon, M.D., F.R.C.S., J. F. Coates, M.D., H. P. Sheppard, M.B., T. J. Costello, M.D., C. B. Kidd, M.D., E. S. Holloway, M.B., G. S. Coghlan, A. S. Gillett, T. Bell, M.D., H. M. Macgill, M.D., W. S. Finch, C. G. Monro, M.B., J. T. Myles, M.D., F.R.C.S.I., N. C. Wallis, C. B. Wainwright, M.B., N. S. Whitton, M.C., M.B., C. C. Holman, M.B., F.R.C.S., S. J. Staples, M.B., J. McGrath, M.B., F. L. Apperly, Harold Gray, W. S. Pratt, M.D., B. Lyons, M.B., J. Kirk, M.D., B. B. Metcalfe, R. Craven, M.B., C. T. Parsons, M.D., H. S. Smith, M.B. (on account of ill health). Temporary Lieutenants: C. C. Fissette, M.D., R. H. Lee, M.D., E. Connell, C. C. Coghlan, P. J. Rooney, A. L. White, F.R.C.S.E., F. C. V. Thompson, R. McLaren, J. Sterry, E. Fidler, M.B.

Temporary Lieutenants to be temporary Captains: H. F. Fenton, M.P., L. E. Bolster, M.B., C. T. Cheadle, P. G. Russell, C. E. Barlett, H. J. Bensted, H. B. Jones, M.B., P. J. Lydon, M.B., J. P. Good, M.D., W. McKee, M.B., H. C. Nickson, M.B., L. M. Reston, M.B., W. Niccol, M.B., F. S. Machin, B. Wood-White, M.B., A. A. Lees, C. G. Teall, M.B., J. L. Gordon, M.D., W. J. P. Lillis, C. W. Budden, M.D., J. A. Dickson, M.B., A. R. Lindsay, M.B., C. J. McN. Willoughby, M.B., P. A. Sarjeant, M.B., L. R. Hill, J. A. Stanley, M.B., J. Lindsay, M.B., P. H. Cooke, A. W. Ritchie, M.D., S. Samuel, M.B., G. E. Charters, M.D., R. H. Astbury, M.B., W. T. Currie, M.B., S. G. Scott, M.B., W. S. Booth, M.B., A. J. Neillan, M.B., R. W. Light, M.B., W. L. Millar, M.B., F. H. Pickin, A. Cleland, M.B., A. J. Caird, M.B., J. D. Macfie, M.B., H. M. Cade, R. T. G. Atkin, M.D., J. B. Mason, A. R. G. Milton, B. T. Parsons-Smith, M.D., J. M. Kelly, M.D., A. H. Turner, W. Balgarnie, M.B., F. R. C.S., H. G. Smith, M.B., A. V. Dill, M.B., W. M. Jeffreys, M.B., M. Lyons,

F. G. D. Murray, D. K. Henderson, M.D., J. H. Wilson, M.D., P. S. MacLaren, M.D., A. H. Turner, M.K. Robertson, P. K. McCowan, M.B., P. W. Dove, M.B., C. P. Charles, R. C. Crawford, M.B., P. C. West, M.B., T. D. Morgan, H. A. Tillman, M.D., J. Butler, M.B., J. M. Taylor, M.B., C. J. D. Bergin, G. B. Wild, A. W. George, M.B., R. H. Smythe, E. H. Morris, H. W. Garden, M.B., S. B. Hanbury, J. W. Cowie, F. H. Storey, M.B., H. M. Leathes, W. H. Booth, J. C. N. Harris, H. C. Wilson, M.D., F.R.C.S., R. H. Ratray, E. R. Bastard, C. S. O'Neill, M.D., H. C. Harper, A. B. Howitt, M.D., D. N. Knox, M.B., E. G. D. Milsom, E. G. H. Weir, M.D., E. Rommel, R. Maclean, E. W. H. Cruickshank, M.B., J. M. Kelly.

Temporary Lieutenants Robert Orr, M.B., and Donald M. M. Ross, M.B., are dismissed the service by sentence of a general court-martial.

Temporary Lieutenant Robert Hugh Cotton is cashiered by sentence of a general court-martial.

F. Coates, M.D., to be temporary honorary Lieutenant.
To be temporary Quartermasters, with the honorary rank of Lieutenants: W. E. Maitland, P. J. Watkins, W. G. Wilmsburst, A. W. Shreeve, G. Carroll, W. H. Tonks, E. C. Sherwood, E. J. Trafford, A. N. Girling.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

To be Lieutenants: W. Eidinow and A. G. F. McArthur from University of London Contingent O.T.C.; A. B. Platt, M.B., E. N. P. Martland, M.B., W. T. G. Boul, M.B., from Manchester University Contingent O.T.C.; J. A. Keen from University of London Contingent O.T.C. (substituted for notification in the *London Gazette* of May 25th, 1917), C. G. Irwin, M.B.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL CORPS.

Temporary Major H. E. Kendall to be acting Lieutenant-Colonel whilst in command of a Canadian Stationary Hospital.
Temporary Captains to be temporary Majors: E. S. Jeffrey, D. J. Cochrane.

To be temporary Captains: I. W. Dickson, G. F. Laing, M.D.
Sergeant-Major W. Hogg to be temporary Quartermaster with the honorary rank of Lieutenant.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Lieut.-Colonel H. D. Brook, M.D., to be Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.
To be Deputy Assistant Directors of Medical Services: Captains K. W. Jones, M.D., W. F. Corfield, M.D., J. Chalmers, M.B.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel A. W. Mackintosh, M.D., is seconded for duty with a general hospital.

Major (temporary Lieut.-Colonel) F. D. Boyd, C.M.G., M.D., relinquishes his temporary rank on alteration in posting, and is restored to the establishment.

To be acting Lieut.-Colonels whilst commanding a field ambulance: Majors G. Ashton, M.D., A. Callam, M.B., A. D. Ducat, M.B., J. M. Gover, M.B.; Captain H. N. B. Cunningham, M.D.

Captain (acting Lieut.-Colonel) O. L. Appleton relinquishes his acting rank on ceasing to command a field ambulance.

Captains seconded for duty with a general hospital: G. S. Haynes, M.D., S. W. Curl.

Captain (acting Major) T. W. Morcom-Harneis relinquishes his acting rank on ceasing to command a field ambulance.

The announcement regarding Captain (acting Lieut.-Colonel) J. Blackwood, which appeared in the *London Gazette* of July 14th, 1917, is cancelled.

Captain R. L. Guthrie, M.D., is restored to the establishment.

Lieutenant E. S. Simpson, M.B., to be Captain.

Acting Sergeant F. Fletcher to be Lieutenant.

Vacancies and Appointments.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BARNSELY: BECKETT HOSPITAL.—Two Lady House-Surgeons.
BEDFORD COUNTY HOSPITAL.—House-Physician. Salary, £150 per annum.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Resident Medical Officer. Salary, £100 per annum.

BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary, £8 8s. per week.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURSLEM: HAYWOOD HOSPITAL.—Resident Medical Officer (female). Salary, £300 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Physician. Salary, £150 per annum.

CHARING CROSS HOSPITAL.—(1) Resident House-Physician. (2) Resident House-Surgeon. Salary, £100 per annum.

DERBY: DERBYSHIRE ROYAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.

DURHAM COUNTY HOSPITAL.—House-Surgeon. Salary and bonus at the rate of £180 per annum.

EAST SUFFOLK AND IPSWICH HOSPITAL.—Lady Resident.

FOLKESTONE: ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary, £250 per annum.

GRAT YARMOUTH: GENERAL HOSPITAL.—House-Surgeon. Salary, £200 per annum.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Haverstock Hill, N.W.—House-Physician. Salary, £200 per annum.

IPSWICH: EAST SUFFOLK AND IPSWICH HOSPITAL.—Two House-Surgeons.

KIRKWALL: PARISH OF EDAY.—Medical Officer.

LEICESTER ROYAL INFIRMARY.—House Surgeon. Salary, £250 per annum.

LINSEY, COUNTY OF THE PARTS OF.—Lady Assistant Medical Officer of Health. Salary, £400 per annum.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

MAIDSTONE: WEST KENT GENERAL HOSPITAL.—(1) House-Surgeon. (2) Assistant House-Surgeon. Salary, £250 and £125 per annum respectively.

MANCHESTER: ST. MARY'S HOSPITALS.—Honorary Pathologist.

NETLEY: BRITISH RED CROSS HOSPITAL.—Medical Officer.

OXFORD UNIVERSITY.—Woman Assistant Demonstrator of Anatomy. Stipend, £150 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road, N.W.—District Medical Officer. Salary at the rate of £60 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST-END.—House-Surgeon.

READING: BERKSHIRE EDUCATION COMMITTEE.—Assistant Medical Inspector of Schools. Salary, £400 per annum.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Junior Resident House-Surgeon. Salary, £150 per annum.

SALFORD ROYAL HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

SALFORD UNION INFIRMARY.—Assistant Resident Medical Officer (female). Salary, £250 per annum.

SALISBURY GENERAL HOSPITAL.—House-Surgeon. Salary, £150 per annum.

SCOTTISH WOMEN'S HOSPITALS.—Junior Medical Officer (female) for Macedonia. Salary, £300 per annum.

SHEFFIELD: JESSOP HOSPITAL.—Senior Lady House-Surgeon. Salary, £300 per annum.

SHEFFIELD ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

STAFFORD: STAFFORDSHIRE EDUCATION COMMITTEE.—Women Assistant School Medical Inspectors. Salary, £400 per annum.

STOKE-ON-TRENT BOROUGH.—Assistant Lady Medical Officer. Salary, £350 per annum.

SWANSEA EDUCATION COMMITTEE.—Lady Assistant School Medical Officer. Salary, £350 per annum.

VENTNOR: ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Locumtenent Assistant Medical Officer. Salary, £5 per week.

WINSLEY SANATORIUM FOR CONSUMPTION.—Assistant Resident Medical Officer. Salary, £250 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £150 per annum.

WOLVERHAMPTON UNION.—Assistant (Resident) Medical Officer. Salary, £300 per annum.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointment: Ebbw Vale (Monmouth).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

BARBER, A., M.B., B.S.Lond., District Medical Officer of the Isle of Wight Union.

CORE, Donald E., M.D.Vict., Honorary Assistant Physician to the Manchester Royal Infirmary.

COSTELLO, Christopher, M.B., B.Ch.N.U.I., Assistant Medical Officer to the Richmond District Asylum, Dublin.

ELLIS, V. C., M.B., B.Ch.N.U.I., Assistant Medical Officer to the Richmond District Asylum, Dublin.

St. Thomas's Hospital.—The following appointments have been made:—Casualty Officers and Resident Anaesthetists: J. P. S. Walker, M.A., M.B., B.Ch.Oxon., A. G. F. McArthur, B.A.Cantab., M.R.C.S., L.R.C.P., G. H. Ward, B.A.Cantab., M.R.C.S., L.R.C.P., A. H. Hilmy, M.R.C.S., L.R.C.P., Resident House-Physicians: W. E. Le Gros Clark, M.R.C.S., L.R.C.P., J. S. Eloff, M.R.C.S., L.R.C.P., S. Anwyl Davies, M.R.C.S., L.R.C.P., L. G. Higgins, B.A.Cantab., M.R.C.S., L.R.C.P., Resident House-Surgeons: J. F. Ryan, M.R.C.S., L.R.C.P., C. B. Wainwright, B.A., M.B., B.C.Cantab., M.R.C.S., L.R.C.P., T. F. M. Diiworth, M.B., B.Ch., B.A.O.N.U.I., M. Edwards, M.R.C.S., L.R.C.P., House-Surgeon to Block 8: R. A. Walker, Obstetric House-Physician: J. Hale, B.A.Cantab., M.R.C.S., L.R.C.P., Ophthalmic House-Surgeon: H. E. Jennings, M.R.C.S., L.R.C.P.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

HARRISON.—On August 5th, at Shawmut, Windlesham Road, Brighton, to Surgeon (R.N.V.R.) and Mrs. Parker Harrison, the gift of a son.

DEATHS.

CALTHROP.—On July 30th, 1917, at 90, St. George's Square, S.W., of toxic neuritis, Edward Spencer Calthrop, M.B., B.S., Temporary Surgeon R.N., husband of Eleanor Calthrop and second son of the late Mr. and Mrs. Edward Calthrop.

WADE.—On August 7th, suddenly, at Tolecarne, Boscastle, Cornwall, Charles Wade, M.R.C.S., L.R.C.P., aged 52.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, AUGUST 18TH, 1917.

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HOSPITAL TREATMENT OF DISCHARGED DISABLED MEN.

THE POSITION OF STAFFS OF VOLUNTARY HOSPITALS.

THE following letter has been addressed to the secretaries of the honorary medical staffs of voluntary hospitals with reference to the instruction of the Ministry of Pensions to the local Pensions Committees empowering the Committees to refer discharged disabled soldiers and sailors to general hospitals:

British Medical Association,
429, Strand, London, W.C.2.
August 8th, 1917.

Dear Sir,

The Ministry of Pensions has recently issued to Local Pensions Committees a Book of Instructions and Notes on the Treatment and Training of Disabled Men. *Inter alia* these Instructions empower the Committees to refer discharged disabled soldiers and sailors to general hospitals for special treatment as in- or out-patients when no military hospital is available.

Accordingly most Pensions Committees will shortly be trying to make arrangements with the governing bodies of civil hospitals for the treatment of men for whose treatment the Committees are responsible. According to Schedule I of the Instructions referred to above—

The weekly charge for in-patient treatment for which the Local Committee may accept liability shall not exceed (except with the sanction of the Minister of Pensions) the minimum charge made in the case of ordinary patients by the managers of the Institutions, and shall in no case exceed (except with such sanction)

the sum of 21s. weekly in the case of convalescent homes
the sum of 28s. weekly in the case of other institutions.

In any case where out-patient treatment is given at an institution the fee (if any) payable by the Local Committee shall not exceed 1s. for the first and 6d. for each subsequent attendance of the patient, unless treatment consists of or includes massage, electrical, x-ray, or other special form of treatment, in which case the fee shall not exceed 2s. 6d. for the first visit, and 1s. 6d. for each subsequent visit to include all services.

In pursuance of its policy that the services of the medical profession should not be given gratuitously to patients who are maintained by public funds, the British Medical Association desires to call the attention of the staff of your hospital to the serious position which now arises. By the proposed arrangements between Local Pensions Committees and general hospitals many State-maintained patients will shortly be treated in these institutions, and it seems to be assumed that the members of the medical profession will give their services gratuitously though the hospitals will be paid for maintenance. In the opinion of the Association it will be most unfortunate if this assumption is allowed to go unchallenged.

At a deputation from the Association which was received by the Minister of Pensions on May 15th, 1917, Mr. Barnes asked the Association to nominate three members of a Medical Advisory Committee which he proposed to consult on matters specially affecting the profession, and Drs. H. B. Brackenbury and Alfred Cox and Mr. Bishop Harman were nominated. To these the Minister added Sir Frederick Taylor, Bt., and Dr. Sidney Martin from the

Royal College of Physicians of London, and Sir W. Watson Cheyne, Bt., and Sir J. Rickman Godlee, Bt., from the Royal College of Surgeons of England. After the first meeting of that Committee, at which the subject now under discussion was discussed, the letter which is appended (Appendix A) was sent to the Ministry by Sir Rickman Godlee writing on behalf of all the members of the Medical Advisory Committee. The reply was to the following effect: That the instructions for treatment and training of discharged soldiers were, after prolonged consideration, being circulated to Local Committees, and their issue could not be suspended to allow of the consideration of the big question raised, which was not one affecting the Ministry alone. Other public departments and local bodies were, using both general and special hospitals for treatment, and have been doing so for some years on the basis of payment of the charges made by the Institutions for the individual cases sent, and these departments and bodies would have to be consulted before the Ministry could inaugurate a new policy of special payment for the services of the hospital staff in addition to the charge made for the bed. The Ministry was in a different position from that of the local authorities referred to, and it was thought that the Minister could not pronounce in favour of the suggestion made, as a general principle, without raising the whole question of the responsibility of the hospitals to public authority in the matter of their staff.

The Association places these facts before the members of your Staff in the hope that if your hospital is being asked to treat discharged disabled men the Staff will at once meet to consider the matter, and will, it is hoped, inform the governing body of the hospital that these cases cannot be treated as a matter of charity.

I append a scheme (Appendix B.) approved by the Association for dealing with similar cases, by means of which it is believed that State-aided patients may be dealt with without infringing the honorary character of the general work of the staff. It is very difficult at the present time to suggest the payment which medical staffs should demand to be earmarked for the medical treatment of each case, as the cases vary so much in difficulty and in the amount of work which they entail. It is advisable that for the present a purely experimental arrangement should be made which would be subject to adjustment in the light of experience.

I am instructed to express the hope that your Staff, realizing the importance of this matter, will be good enough to inform the Association:

(1) If any Local Pensions Committee has entered into arrangements with your hospital.

(2) What action your Staff has taken or proposes to take.

(3) What arrangement has been made for the earmarking of part of the money received on behalf of disabled men for the use of the medical staff, and to what use it is intended to put the money so earmarked.

A copy of a letter addressed to the Governing Bodies of Voluntary Hospitals is enclosed.

I am, yours faithfully,

ALFRED COX,
Medical Secretary.

To the Secretaries of the Honorary
Medical Staffs of Voluntary Hospitals.

APPENDIX A.

COPY OF A LETTER SENT ON BEHALF OF THE MEMBERS OF
THE MEDICAL ADVISORY COMMITTEE TO THE
MINISTRY OF PENSIONS.

19, Wimpole Street, W.,
June 28th, 1917.

Dear Sir,

Since the members of the Medical Advisory Committee met you on the 4th inst., the subject of the admission to voluntary hospitals of discharged men for special treatment had been discussed by us, and we have unanimously arrived at certain conclusions which I wish on their behalf to place before you in order, if possible, to influence the nature of the proposals to be made on behalf of the Ministry of Pensions to those voluntary hospitals which may be asked to receive cases.

You will remember that in the draft circular you submitted to us on the 4th inst., it was proposed that 28s. per week should be paid to voluntary hospitals for each in-patient treated, and the question was asked whether or not this sum included any payment for the medical men who gave the treatment. You stated that it did not, and after a discussion, in which it was evident that the opinion of the members of the Advisory Committee was divided, you came to the conclusion that the matter had better not be mentioned in the circular but be left to be raised by any hospital whose staff desired payment.

On further consideration we think this would be a mistake, for the matter is bound to be raised soon, and we believe it had better be dealt with centrally than left to be a bone of contention between Local Pensions Committees and hospitals. Some hospitals would apply for payment for their staffs and some might not. If this were so and payment were made to the former there would be suspicion of differential treatment which we believe would be most unfortunate. If payment were refused we have reason to believe that there would be much dissatisfaction on the part of medical men, who hold strongly that they ought not to be expected to give their services as a charity to persons for whom the State is responsible. We think these risks should be avoided by a statement on the part of the Ministry that the medical men who give the treatment to patients for whom you are responsible will be paid. There is precedent for this. The London County Council, for example, refers large numbers of school children to voluntary hospitals in London for treatment of eye and throat affections, and, besides making a payment towards the hospital funds, the Council earmarks a definite separate payment for the doctors who do the work. There is also an arrangement in the County of Durham whereby the County Council pays a flat rate of £2 for every case of surgical tuberculosis admitted to certain hospitals on the recommendation of the County Council. This amount is paid over to the medical staff.

It is very difficult to suggest the appropriate rate of payment for the class of cases now under consideration. We should, however, be willing to go further into the matter and present a scheme if you should consent to adopt the principle that any payments made to voluntary hospitals for the treatment of men for whom the Ministry is responsible shall include an amount earmarked for the medical staff and entirely at their disposition.

I am, yours faithfully,

RICKMAN J. GODLEE.

Colonel Sir A. Griffith-Boscawen, M.P.,
Ministry of Pensions.

Appendix B, containing the suggestions of the British Medical Association to members of the honorary medical staffs of voluntary hospitals for dealing with the question of State-aided patients receiving treatment at their hospitals, was published in the Annual Report of Council in the section dealing with hospitals (SUPPLEMENT, May 5th, p. 98).

A letter has also been addressed to the secretaries of the governing bodies of voluntary hospitals pointing out that as the voluntary hospitals throughout the country are at present only able with difficulty to cope with the work entailed by the care of the sick poor, this extra work which it is proposed to throw upon them can only in most cases be undertaken by an extension of the accommodation for in-patients and of the arrangements for the care of out-patients. The hope is expressed that, in taking into consideration the question of the adequacy of the payments suggested, the governing body will agree with the opinion of the British Medical Association that not only maintenance but also professional attendance should be paid for by the State, and the hospital board is asked before agreeing to terms to take the opinion of its honorary medical staff on the whole question.

MEDICAL OFFICERS FOR THE ARMY.

PROPOSED COMMITTEE OF INQUIRY.

At a joint meeting of the Committee of Reference of the Royal Colleges in England and the Central Medical War Committee on August 15th, the position disclosed by the letter addressed to the Secretary of State for War on August 3rd and printed in the SUPPLEMENT last week, p. 35, was further considered. The letter, it will be remembered, stated that in the opinion of the Central Medical War Committee no more medical men from England and Wales could be called upon to take commissions in the army without seriously endangering the supply of doctors for the treatment of the civil community, and that further depletion could only be effected on the responsibility of the Government after carefully comparing the military with the civil needs. In the course of the discussion it was pointed out that a widespread feeling appeared to exist among medical men, both inside and outside the army, that something could be done to relieve the situation by better organization in the use made of the personnel of the R.A.M.C. At the conclusion of the discussion the Committee adopted the following resolution, which was directed to be sent to the Prime Minister, the Secretary of the War Cabinet, the Secretary of State for War, and the Director-General A.M.S.:

The Central Medical War Committee understands, from reports of the proceedings in Parliament, that the Government has in contemplation the appointment of a small committee of inquiry into the practical working of the Army Medical Service in the field. The Committee welcomes this announcement, believing from statements made to it that such an inquiry is certainly advisable, and is calculated to allay much unrest. The Committee trusts, however, that the inquiry will be extended to include the working of the service in this country. The Committee suggests that in view of the difficulty of supplying from the civil community more doctors for the army the reference to the committee of inquiry should include the duty of instituting a careful comparison between the medical needs of the civil community and the army respectively. The Central Medical War Committee would venture to urge that, in view of the responsibility which has rested on it of selecting from civil practice the bulk of the doctors now serving in the army, the committee of inquiry should include representatives of the Central Medical War Committee.

LOCAL MEETINGS OF PRACTITIONERS.

BUCKINGHAMSHIRE.

A MEETING of practitioners, convened by the Local Medical War Committee, the Buckinghamshire Division of the British Medical Association, and the Local Medical and Panel Committees, was held at Aylesbury on July 19th.

Local Medical War Committee.—It was decided to accede to the request of the medical men practising in the Eton Union district that they should have four representatives on the Local Medical War Committee, as it was impossible for any one man to guarantee to be always present, on the understanding that if all four were present at a meeting the votes of two only should count in any decision.

The following were elected as the Local Medical War Committee:—*North Bucks:* Drs. Benson, Bradbrook, Harris, Chignell, Kennish, and Larking. *Mid Bucks:* Drs. Baker, Churchill, Long, Rose, E. O. Turner, Woollerton, and Smith-Wynne. *South Bucks:* Drs. Weaver Adams, Ansler, Selborne Bailey, Bell, Bieneman, Brooks, Dickson, Fraser, Harwood-Yarred, Reynolds, and Watson.

Ministry of Health.—After discussion the scheme of the British Medical Association with reference to a Ministry of Health was agreed to, with the exception that it was considered that the distinction between a State Preventive and a State Clinical department was inadvisable, and that there should be a chief medical officer over the whole. It was also agreed that in any system all branches of State medicine should be included, and the opinion was expressed that as there was no guarantee that any new committees dealing with public health would do any better than the present Public Health Committee of the county councils, the establishment of new local health committees was unnecessary. It was also agreed that, as part-time medical men did their work better than whole-time ones, having a smaller area to work in, the general practitioner should have as much of the work as possible,

and that the chief medical officer should have full control over departments such as school work, tuberculosis, venereal diseases, Poor Law infirmaries, lunacy institutions, maternity and child welfare, sanitation and infectious diseases. There should also be a department for research, statistics, etc., and two or more counties should unite in some instances.

Payments to Medical Officers to V.A.D. Hospitals.—A discussion on the payments of medical officers to V.A.D. hospitals led to various opinions being expressed, some being in favour of doing the work voluntarily and others that all ought to be paid.

INSURANCE.

NATIONAL INSURANCE ADVISORY COMMITTEE.

A LETTER has been received from the National Insurance Joint Committee notifying that the Chairman, Sir Edwin Cornwall, has sent invitations to the following to serve on the Advisory Committee:

Dr. Mabel L. Ramsay, Plymouth.	Dr. J. A. Macdonald, Taunton.
Dr. J. Singleton Darling, Lurgan.	Dr. Lauriston E. Shaw, London.
Dr. John Adams, Glasgow.	Dr. R. Wallace Henry, Leicester.
Dr. Norman Walker, Edinburgh.	Professor A. Bostock Hill, Birmingham.
Dr. E. J. Maclean, Cardiff.	Mr. E. B. Turner, London.
Dr. E. O. Price, Bangor.	Dr. A. Fulton, Old Basford.
Dr. T. Ridley Bailey, Gorleston.	Dr. Alfred Cox, London.

Dr. Brackenbury, whose name had also been suggested by the Association, is already a member of the Advisory Committee.

In acknowledging the receipt of this intimation, Dr. Cox, the Medical Secretary of the British Medical Association, stated that he was instructed by the Chairman of the Insurance Acts Committee to state that he considered it very unfortunate that two of the names forwarded by the Association—namely, Dr. Crawford Treasure and Dr. R. Harding—had been omitted from Sir Edwin Cornwall's selection, as preference for them was very clearly indicated by the large number of nominations received on their behalf from the Local Medical Committees of the country. It was pointed out also that an incidental result of the non-acceptance of these nominations was that the Advisory Committee now contained no representative of rural practitioners, though the list forwarded by the Association contained two names—Dr. R. Harding and Dr. T. Wood Locket.

LOCAL MEDICAL AND PANEL COMMITTEES.

BEDFORDSHIRE.

At a recent meeting of the Local Medical and Panel Committee a subcommittee was appointed to examine in detail the scripts of those eight doctors who had exceeded the average of eighteenpence per insured person on their list.

It was agreed that it was not desirable to have an election for the Panel Committee during 1917.

With reference to the British Medical Association's circular (M. 10) as to the future of the medical profession, the Committee was in favour of a unified system of public health under a separate Minister, but considered that it was of primary importance for the success and general acceptance of any scheme to secure the services of the family doctor and general practitioner.

At a meeting of the Local Medical Committee on the same day two representatives were nominated to serve on the Special Disablement Subcommittee of the Bedford War Pensions, etc., Committee.

DERBYSHIRE.

A MEETING of the Derbyshire Panel Committee was held on August 9th, when Dr. A. COURT was in the chair.

Specialist's Prescription.—In reply to a communication from the clerk to the Derbyshire Insurance Committee, it was resolved that if a panel practitioner continued expensive treatment prescribed by a specialist, who had been consulted without his knowledge or request, and which treatment was not approved by him, the panel patient should be held responsible for such expense.

Antitetanus Serum.—The question of the liability of a panel practitioner to pay for the cost of providing antitetanus serum was raised by another letter from the clerk to the Insurance Committee. It stated that application had been made to the Commissioners to authorize payment of the cost of the order, and that the Commissioners' reply was that the question was covered by the capitation payment under Clause XII (1) of the Panel Agreement, but that if the Insurance and Panel Committees desired that the clause be amended to admit of special payment the Commissioners would consider any proposals submitted. The Committee resolved:

That the use of the serum was necessary to the preservation of the patient's life; that the practitioner should not be called upon to pay for the serum; and that the cost of it should not be borne by the Drug Fund, but should be the subject of a special provision.

Tariff.—The Committee resolved not to accept the suggestion that the ratios between the prices of the two tariffs as ascertained for the first quarter of 1916 should be adopted for the year, on the following grounds: (1) The first quarter of the year is the heaviest, as it includes the largest amount of sickness. (2) The local pharmacopoeia came into use during that year with resulting economy. (3) In consequence of advisory warnings issued to the practitioners the expense of prescribing has decreased.

Votes of Thanks and Congratulations.—The resignation of Dr. Roberts on leaving the district to take up war work was accepted with regret, and the Committee expressed its appreciation of his valuable services. Votes of congratulation to Dr. Macdonald, J.P., on his appointment as alderman of the Derbyshire County Council, and to Dr. Smiley on his election to the chairmanship of the Derbyshire Insurance Committee, were adopted, and these gentlemen replied.

Association Notices.

THE LIBRARY OF THE BRITISH MEDICAL ASSOCIATION.

A LIST of periodical publications, official reports, and Blue Books in the Library of the British Medical Association available for issue to members on loan has been printed, and copies can be obtained free on application to the Librarian at the house of the Association, 429, Strand, W.C. The regulations governing the loan of these publications are stated in the introduction to the list. The Library is open for consultation from 10 a.m. till 5 p.m. (on Saturdays till 2 p.m.).

BRANCH AND DIVISION MEETINGS TO BE HELD.

NORTH OF ENGLAND BRANCH.—Dr. James Don, Honorary Secretary (1, Grove Street, Newcastle-on-Tyne), gives notice that the annual meeting of the North of England Branch will be held at 25, Ridley Place, Newcastle-on-Tyne, on Friday, September 7th, at 3.15 p.m.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—Surgeon-General P. B. Handyside, M.B., to Chatham Hospital. Fleet Surgeons K. A. Jones, M.B., to the *Pembroke*, additional, for medical transport duties; J. Whelan to the *Royal Arthur*; R. L. Jones to the *Victory*, additional. Staff Surgeon S. S. H. Shannon to the *Amphitrite*. Temporary Surgeons: F. W. Leech, M.B., T. C. Clark, M.B., and F. R. Law to Haslar Hospital; C. Colner, M.B., W. Everett, M.B., to Plymouth Hospital; K. B. Aikman to Chatham Hospital; D. Sutherland, M.B., to the *Victory*, additional; J. A. Hadfield, M.B., to the *Victory*, for Royal Naval Division.

ROYAL NAVAL VOLUNTEER RESERVE.

To be Surgeon probationers: A. G. Smith, S. W. T. Lee, A. E. Reid, D. R. Macdonald, T. H. Kirk, B. C. McLeannan, J. C. McNaught.

ARMY MEDICAL SERVICE.

ROYAL ARMY MEDICAL CORPS.

Honorary Lieut.-Colonel A. S. Woodward, M.D., to be temporary Lieut. Colonel.

J. F. O'Carroll, M.D., F.R.C.P.I., to be temporary honorary Lieut. Colonel.

Honorary Major S. W. Woollett to be temporary Major.

Lieut. Colonel W. T. F. Davies, D.S.O., M.B., late Imperial Light Horse, to be temporary Major (substituted for notification in the *London Gazette* of July 17th).

Vacancies and Appointments.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

Major W. L. Bennett, M.B., F.R.C.S.E., is placed on the half-pay list. Temporary Captain R. H. Bremridge, M.B., to be temporary Major. Officers T.F. to be granted temporary rank as stated:—As Lieut.-Colonel: Lieut.-Colonels J. Godding and J. W. H. Brown. As Major: Majors H. T. Jenkins, S. G. Ogilvy, M.D., J. Gott, T. W. Mead, J. A. Wait, M.B., W. E. M. Corbett, W. Murray, M.D., As Captain: C. W. Milner, F. R. Lucas, As Lieutenant: Lieutenant R. G. Oran. To be temporary Captains: Temporary Captain E. M. Lithgow, M.B., Royal Highlanders; J. J. Boyd, M.D., T. R. St. Johnston, W. P. H. Munden, M.D., C. A. Moseley, M.D., G. E. Manning, M.D., F.R.C.S., R. F. Gil, M.D., J. M. Renton, M.B., F.R.C.S.E., R. Milne, M.D., F.R.C.S., J. S. Joly, M.D., F.R.C.S.; temporary Captain O. R. M. Kelly, M.B., from general list. A. E. Lyster, M.D., and R. F. Yencken, late temporary Captains, to be honorary Captains.

Temporary honorary Captain C. F. R. McDowall, M.D., having ceased to be employed with the Moss Side Military Hospital, relinquishes his commission.

Temporary Lieutenants to be temporary Captains: D. McC. Aitken, M.B., F.R.C.S.E., J. E. Sandilands, M.D., R. Massie, F.R.C.S.E., W. P. Wippell, J. J. Anning.

The following officers relinquish their commissions: Temporary Captains H. J. M. Adams, M.B. (on account of ill health), N. E. MacDougall, M.D., M. C. Burke, M.C., M.D., F. J. Brodie, M.D., F.R.C.S.E., G. M. Gregoire, M.D., S. J. C. Fraser, M.D.; temporary Lieutenants D. North, A. H. McCandlish, and G. C. March (on account of ill health).

G. Hodge, M.B., to be temporary honorary Lieutenant whilst employed at the Springburn and Woodside Hospital.

To be temporary Lieutenants: H. L. Clift, M.B., J. R. Watson, M.B., W. J. Stephens, A. T. Mackenzie, M.D., F.R.S.E., S. Bree, M.B., S. G. Corner, M.D., D. A. Dewar, M.B., W. J. D. Brouley, M.B., T. Winning, M.B., A. Davies, M.B., R. Davidson, M.B., R. Wade, M.D., J. W. Simon, K. R. C. Hallows, M.B., F. D. Parbury, S. L. O. Young, M.D., N. McC. Hutchison, M.B., F. D. Nicholson, M.D., W. L. English, M.B., C. U. Whitney, T. B. Mitchell, M.B., E. Banks, M.B., P. T. J. O'Farrell, C. A. Joll, M.B., F.R.C.S., A. S. M. Pabner, M.D., E. E. Cassidy, M.B., I. D. Stamp, M.D., H. P. Dawson, M.B., A. M. Laurie, J. Donaldson, M.B., E. U. Williams, H. M. Reeve, M.B., M. F. Emrys-Jones, S. M. Vassals, M.D., W. G. Riley, M.B., J. F. Hornsey, M.B., A. Morton, M.B., A. Barker, D. Purdie, M.B., R. L. E. Downer, M.D., B. Barnett, J. P. Findlay, M.R., H. J. Beddow, N. Leonard, M.D., R. L. Haines, L. G. Teece, M.B., E. F. Thomas, M.B., A. D. Crofts, H. J. Rae, M.B., G. C. B. Mieville, C. W. Hutt, M.D., J. S. Mitchell, M.B., F.R.C.S.E., R. S. Roper, F.R.C.S.E., P. W. Stewart, M.B., F. F. Laidlaw, H. C. Martin, M.B., A. V. Ledger, M.D., J. Fletcher, M.B., N. C. Rogers, M.B., H. Snape, M.B., K. S. Melvin, M.B., J. R. Cameron, M.D., G. W. B. Shaw, M.B., H. H. Molloy, M.B., T. Miller, M.B., A. Robertson, M.B., N. Bradley, M.D., P. E. Carroll, M.B., H. J. Hoile, M.B., M. T. D. McMurich, M.B., A. Boyle, M.B., E. E. Atkin, M.B. L. T. Kewer to be temporary honorary Lieutenant.

To be temporary Quartermasters with the honorary rank of Lieutenant: J. O. Ibell, J. Tasker.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

To be Lieutenants: N. Kletz, M.B., and W. M. Jones, M.B., from Manchester University Contingent O.T.C.; R. D. Aylward, S. H. de G. Pritchard and P. W. A. Watt, from University of London Contingent O.T.C.; H. M. Holt, M.B., from Leeds University Contingent O.T.C.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL SERVICE.

Deputy Director of Medical Services: Temporary Colonel M. MacLaren, C.M.G., C.A.M.C.

Assistant Director of Medical Services: Temporary Lieut.-Colonel C. E. Doherty, C.A.M.C.

Deputy Assistant Directors of Medical Services: Temporary Major J. S. Jenkins, D.S.O., C.A.M.C., temporary Captain H. B. Logie, C.A.M.C.

CANADIAN ARMY MEDICAL CORPS.

Temporary Major J. C. Meakins to be acting Lieut.-Colonel while specially employed.

Temporary honorary Major J. W. Good resigns his temporary commission.

Temporary Captain A. L. Johnson to be temporary Major.

Temporary Captain R. J. McEwen to be acting Major while specially employed.

Temporary Captain H. G. Gillissie resigns his temporary commission.

To be temporary Captains: C. B. Kidd, A. F. Menzies, J. W. McIntosh, M.D., E. Fidler, M.D., A. W. Macbeth, E. Sheffield.

Temporary Lieutenant W. McL. Moore, from general list to be temporary Quartermaster with the honorary rank of Lieutenant.

H. A. Des Brisay, M.D., to be temporary Lieutenant.

SOUTH AFRICAN MEDICAL CORPS.

Temporary Lieut.-Colonel P. G. Stock, M.B., relinquishes his commission.

R. C. Mullins, M.D., to be temporary Captain.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Captain H. F. Humphreys, M.B., to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Major F. W. Johnson, M.B., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Major (acting Lieut.-Colonel) G. Ashton, M.D., relinquishes his acting rank on ceasing to command a field ambulance.

Captain L. A. Dingley, M.D., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain B. H. C. Lea-Wilson remains seconded for duty with the Egyptian Army.

Captain W. Seymour, M.B., is restored to the establishment.

Captains (temporary Majors) A. Young, M.B., and L. G. J. Mackey, M.D., relinquish their temporary rank on alteration in posting and are restored to the establishment.

Captain J. P. Fagan relinquishes his commission on account of ill health.

To be Lieutenants: Acting Sergeant Mark Canton, Lieutenant D. H. Burrell, from Special List; Staff Sergeant R. S. Moon.

BARNSELY AND WAKEFIELD JOINT SANATORIUM COMMITTEE. Assistant Tuberculosis Officer for the Borough, and Resident Medical Officer at Mount Vernon Sanatorium. Salary, £300 per annum.

Bristol Royal Infirmary.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Physician. Salary, £150 per annum.

CHELTHAM EYE, EAR, AND THROAT FREE HOSPITAL.—Honorary Surgeon.

EASTBOURNE EYE INFIRMARY.—Ophthalmic Surgeon.

GREAT YARMOUTH: GENERAL HOSPITAL.—House-Surgeon (male). Salary, £200 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—House-Physician. Honorarium, 30 guineas for six months.

KIRKSTALL: PARISH OF EDAY.—Medical Officer.

LEICESTER ROYAL INFIRMARY.—House-Surgeon. Salary, £250 per annum.

LINDSEY, COUNTY OF THE PARTS OF.—Lady Assistant Medical Officer of Health. Salary, £400 per annum.

LIVERPOOL EYE AND EAR INFIRMARY.—Lady House-Surgeon.

MAIDSTONE: WEST KENT GENERAL HOSPITAL.—1) House-Surgeon. (2) Assistant House-Surgeon. Salary, £250 and £125 per annum respectively.

MANCHESTER: ANCOATS HOSPITAL.—Resident (unqualified). Salary, £50 per annum.

MATERNITY AND INFANT WELFARE CENTRES OF KING EDWARD INSTITUTION, Albert Street, E.—Medical Officer for consultation weekly for antenatal clinic. Fee, 1 guinea.

NORTH-EASTERN HOSPITAL, St. Ann's Road, Tottenham, N.—Lady Assistant Medical Officer. Salary, 7 guineas per week.

NORWICH CITY ASYLUM, Hellesdon.—Assistant Medical Officer (male). Salary, £300 per annum.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Junior Resident House-Surgeon. Salary, £150 per annum.

ST. MARK'S HOSPITAL FOR CANCER, Etc., City Road, E.C.—House-Surgeon.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

SHEFFIELD: JESSOP HOSPITAL FOR WOMEN.—Senior Lady House-Surgeon. Salary, £200 per annum.

SHEFFIELD ROYAL INFIRMARY.—Two House-Surgeons. Salary £120 per annum each.

SWANSEA EDUCATION COMMITTEE.—Lady Assistant School Medical Officer. Salary, £350 per annum.

WELSH METROPOLITAN WAR HOSPITAL, Whitechurch.—Resident Physicians with experience in the treatment of mental disorders.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £150 per annum.

WOOLWICH TUBERCULOSIS DISPENSARY.—Locumtenent.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

BETTERIDGE, T., M.B., B.C. Cantab., District Medical Officer of the Tamworth Union.

BUTLER, L. H., M.B., Ch.B. Leeds, Certifying Factory Surgeon for the Castleford District, co. Yorks.

DRAKE, D. J., M.R.C.S., L.R.C.P., District Medical Officer of the Faversham Union.

HASLUCK, E. P., L.R.C.P. and S. Edin., District Medical Officer of the Wellington (Somerset) Union.

HUNNARD, A., M.B., B.S. Lond., Visiting Surgeon at the Mansfield Union Workhouse.

JEFFERISS, I. M., M.R.C.S., L.R.C.P., District Medical Officer of the Medway Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTHS.

JACK.—At Kendal, on August 5th, the wife of Wm. B. Jack, M.D., Lieutenant R.A.M.C., a daughter.

STATHERS.—On August 12th, at The Elms, Turweston, Brackley, the wife of Surgeon Gerald Stathers, R.N., a daughter.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, AUGUST 25TH, 1917.

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British Medical Association.

CURRENT NOTES.

Petrol for Medical Practitioners.

In the JOURNAL of August 4th (p. 159) we stated certain facts as to the position as regards the supply of petrol to medical practitioners for use in professional work. As from August 1st, 1917, the Petrol Control Department is issuing no new licences for more than 50 gallons a month. The Deputy-Controller of the department, however, on July 31st promised the British Medical Association that the department would consider any case in which a practitioner could prove conclusively that 50 gallons a month would be inadequate for his work. The Association subsequently laid before the department the particulars of several cases in which it was obvious that the practitioners concerned could not carry out their work on an expenditure of only 50 gallons a month, and in reply was informed by the Deputy-Controller that the question of the issue of supplementary licences in these cases would receive careful consideration. The Association is now informed that the Controller of the department is not in a position to increase the quantity at present beyond the 50 gallons a month already allotted to each of these doctors. As it is essential that practitioners, the majority of whom are at present doing work greatly in excess of that of pre-war times, shall if possible obtain adequate supplies, the Association is taking further steps.

Repair of Doctors' Cars.

The following letter, which explains itself, has been received by the Medical Secretary of the British Medical Association:

MINISTRY OF MUNITIONS OF WAR.
Priority Branch,
1, Caxton Street, Westminster, S.W.,
17th August, 1917.

Sir,
I am directed to acknowledge the receipt of your letter of the 13th August, and to refer to the interview which I had with you this morning with respect to the difficulty which medical practitioners sometimes experience in getting their motor cars repaired.

I think it is clear as the result of our conversation that the difficulty is for the most part not experienced in obtaining a certificate, but in getting the work done once the certificate has been obtained. I am afraid that, owing to the urgent war work on which not a few of the motor car manufacturers of this country are at the present time exclusively engaged, difficulties must continue to occur in the future in the case of certain makes of car.

It is clear, however, that in certain cases the maintenance and running repairs to doctors' cars are of equal importance with direct war work. Of these cases the British Medical Association is the best judge. If, therefore, in any case the British Medical Association will take the responsibility of stating that a repair is of urgent importance this department will be quite willing to issue a Priority 4 Certificate instructing all firms concerned that this particular repair is to be executed as war work. Even so, in the case of certain firms it is to be regretted that they will in all probability be unable to execute orders for spare parts with any reasonable promptitude, owing to the exceedingly urgent nature of the work on which they are engaged.

In the case of spare parts required for Ford cars, I am

informed that instructions have been sent to the Ford Company to release such parts to doctors without the necessity of applying for a certificate.

I am, Sir, your obedient servant,
W. T. SWAN SONNENSCHN
(For Deputy-Controller, Priority Department).

In acknowledging this letter Dr. Cox stated that the British Medical Association would be glad to take the responsibility in suitable cases submitted to it of reporting to the Priority Department that a repair is of such urgent importance that the department would be justified in issuing a Priority 4 Certificate.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

NORTH OF ENGLAND BRANCH.—Dr. James Don, Honorary Secretary (1, Grove Street, Newcastle-on-Tyne), gives notice that the annual meeting of the North of England Branch will be held at 23, Ridley Place, Newcastle-on-Tyne, on Friday, September 7th, at 3.15 p.m.

INSURANCE NOTES.

COMPULSORY HEALTH INSURANCE: AN AMERICAN VIEW.

A PAMPHLET entitled, *Facts and Fallacies of Compulsory Health Insurance*, by Dr. Frederick J. Hoffman, issued by the Prudential Insurance Company of America, can only be regarded as a strong attack on the movement in America in favour of compulsory health insurance. To begin with, Dr. Hoffman says that compulsory health insurance is not in fact an insurance, but essentially an arbitrary taxation providing for an inequitable distribution of cost in the proportion of 40 per cent. contribution by wage earners, 40 per cent. by employers, and 20 per cent. by taxpayers at large, and that on any such basis it is only poor relief under another name. He then attempts to show that the degree of poverty in America is not of such serious importance as to require what he calls the "paternalistic form of government" of Germany. Strong criticism is directed against exaggerated statements about the physical deterioration in America, where the death-rate is so low (about 13.5 per 1,000) that there is no need, in the author's opinion, for such special remedies as compulsory health insurance. The whole movement in favour of it is treated as a propaganda for State socialism and class legislation, and it is stated that numerous medical societies have passed resolutions of disapproval. An attempt is then made to show that insurance has been a failure in England, the author evidently depending largely on the report of the Fabian Research Department, of which Mr. Sidney Webb was chairman. In further support of his view, Dr. Hoffman states that "every week the BRITISH MEDICAL JOURNAL contains in a SUPPLEMENT an extended account of seemingly endless quarrels, dissensions and disputes concerning fees, allotments, prescriptions, reductions, settlements, etc.," and he says, "it is a safe conclusion that the economic status of the medical profession will not be improved under compulsory health insurance in America." Further quotations from English medical journals are given as showing the deplorable effects of national insurance on medical practice and in reducing the standard of medical treatment. A good deal is also made of the argument that sickness insurance offers a pecuniary inducement to malingering. It is stated that the amount

of sickness in America has been grossly exaggerated and that America compares very favourably with Germany in this respect in spite of the German insurance.

The author tells us that the American Federation of Labour opposes compulsory insurance as inimical to labour welfare and public policy. What may be necessary for persons near or below the poverty line is not necessarily desirable for those who are able to provide for their own medical and other needs, and we read, "the tragedy of the National Health Insurance in England is that it has not improved the condition of the poor, but that the benefits have accrued to those least urgently in need of pecuniary assistance and free medical treatment," as the vast multi-plied brought within the Act were already providing what was requisite for themselves. The insurance medical service in England is characterized as "intolerably incomplete, intolerably wasteful, and intolerably costly," and the author claims that far better results would be got by insurance on a voluntary basis. He sees a solution of the difficulties in a more intelligently conceived State medical service and more systematic and well-considered poor relief, with an improvement in institutional facilities for medical treatment irrespective of social or economic status. Other measures advocated are a reform of the abuses of medical charities, compensation for industrial or occupational diseases as well as for industrial accidents, greater co-operation for sanitary services, better facilities for education in personal and public hygiene, and specially an improvement in the numerous forms of voluntary insurance and thrift movements, with proper State supervision.

We do not know whether Dr. Hoffman's views will meet with any general support in America. His statement that insurance in England is a failure is certainly open to dispute. Even if it were admitted that the results have not reached expectations, it might still be argued that any such comparative failure arose from the insurance not going far enough, or from details in administration which experience will correct, and not from any defect necessarily inherent in compulsory health insurance.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty: Fleet Surgeon C. S. Woodright has been promoted to the rank of Deputy Surgeon-General. Fleet Surgeon A. I. Sheldon to the *Pembroke*; Staff Surgeon G. O. M. Dickenson, M.B., to Haslar Hospital Camp; Surgeon A. Fairley, M.B., to the *Victory*. Temporary Surgeons C. de C. W. Langdon to Portsmouth Dockyard, temporary; M. Vlasto to the *Victory*; J. R. W. Stephens to Plymouth Hospital; R. Silcock to Haslar Hospital; E. Bayley, M.D., to the *Hindustan*, vice Townley; H. McC. Bainschell, D.S.C., and G. W. Pratt, to Chatham Hospital; W. H. Kay, M.B., to the *Pembroke*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationer H. A. Potter to the *Contest*. Surgeon Probationer A. D. MacHaffie has been granted a temporary commission as dental surgeon, and appointed to the *Europa*. To be Surgeon Probationers: H. L. Sackett, A. J. De La O'Connor.

ARMY MEDICAL SERVICE.

Surgeon-General Sir T. P. Woodhouse, K.C.M.G., C.B., and Colonel R. J. Windle, M.B., are retained on the active list, and to be supernumerary.

Lieut.-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services: G. W. Tate, M.B., F. E. Gunter, M.B. (substituted for notification in the *London Gazette* of January 27th, 1917).

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel G. J. A. Ormsby, D.S.O., M.B., to be temporary Colonel whilst an Assistant Director of Medical Services of a Division. Major (temporary Lieut.-Colonel) E. McDonnell, D.S.O., M.B., to be an Assistant Director of Medical Services of a Division, and to retain his temporary rank whilst so employed.

Major R. B. Holt, M.B., and Major (Brevet Lieut.-Colonel) C. R. S. Bradley, to be acting Lieut.-Colonels whilst in command of a stationary hospital.

Majors W. J. Waters and J. M. H. Conway, D.S.O., F.R.C.S.I., to be acting Lieut.-Colonels whilst in command of a casualty clearing station.

Captain R. E. U. Newman, M.C., M.B., to be acting Lieut.-Colonel whilst in command of a field ambulance.

Temporary Captain A. W. Robertson to be temporary Major.

Temporary Lieutenants to be temporary Captains: H. H. R. Bayley, F. K. Campbell, M.B., F.R.C.S.

Officers relinquish their commissions: Temporary Captains D. Villisid (on account of ill health), R. V. McDonnell, M.C., F. J. Livingston, M.B., V. F. Stock; Temporary Lieutenant R. D. Ferguson, M.D.

To be temporary honorary Lieutenants: C. E. Allison, F. A. Simonds.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL SERVICE.

Deputy Assistant Director of Medical Services temporary Captain H. C. Messerian, C.A.M.C., relinquishes his appointment.

CANADIAN ARMY MEDICAL CORPS.

Temporary Major J. R. Spier to be temporary Lieut.-Colonel (substituted for the *London Gazette* notification July 27th incorrectly specifying name of "Speir").

Temporary Majors to be temporary Lieut.-Colonels: C. S. McVicar, W. J. O. Malloch.

Temporary Captains to be temporary Majors: S. G. Chown, H. E. Cumming.

Temporary Captains to be acting Majors, whilst specially employed: D. A. L. Graham, W. H. Lowry, R. G. Armour.

Temporary Lieutenant E. S. Jeffrey to be temporary Captain.

Temporary Quartermaster and honorary Captain J. W. White to be honorary Major whilst specially employed.

Sergeant-Major M. F. Millard to be temporary Quartermaster with the honorary rank of Lieutenant (substituted for *London Gazette* notification of July 19th incorrectly specifying initials as "F. M.").

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel H. W. Webber, F.R.C.S., is seconded for duty with a general hospital.

Temporary Lieut.-Colonel R. P. Jack, M.B., Scottish Rifles, T.F., to be temporary Lieut.-Colonel.

Major P. G. Williamson, M.C., M.B., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain (acting Lieut.-Colonel) R. W. Brimacombe to be Major and acting Lieut.-Colonel.

Captain J. W. Mackenzie, M.D., to be Major.

Captain (temporary Major) E. M. Jenkins, M.B., relinquishes his temporary rank on ceasing to command a field ambulance.

Captain J. G. Emanuel, M.D., is seconded for duty with a general hospital.

The Christian names of Captain Philip Halbert Green, M.B., are as now stated and not as announced in the *London Gazette* of August 21st.

Captains S. G. Webb, M.D., and J. Gilchrist, M.D., are restored to the establishment.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

AYRSHIRE: COLMONELL PARISH.—Medical Officer for the Lower District. Salary, £70 per annum; vaccination salary, £2.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURSLER: HAYWOOD HOSPITAL.—Resident Medical Officer (female). Salary, £300 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Physician. Salary, £150 per annum.

COVENTRY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary, £350 per annum.

DEVON COUNTY EDUCATION COMMITTEE, Exeter.—Temporary Oculist. Salary, £8 8s. per week.

EASTBOURNE EYE INFIRMARY.—Ophthalmic Surgeon.

EDINBURGH: ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN.—Four Resident Medical Officers.

KIRKWALL: PARISH OF EDAY.—Medical Officer.

LINDSEY, COUNTY OF THE PARTS OF.—Lady Assistant Medical Officer of Health. Salary, £400 per annum.

NETLEY: BRITISH RED CROSS HOSPITAL.—Medical Officer.

OXFORD UNIVERSITY.—Woman Assistant Demonstrator of Anatomy. Stipend, £150 per annum.

ROTHERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Third House-Surgeon. Salary, £50 per annum.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, Etc., City Road.—House-Surgeon.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

SHEFFIELD ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

STOCKPORT INFIRMARY.—(1) Senior House-Surgeon; (2) Junior House-Surgeon. Salary, £250 and £200 per annum respectively.

SWANSEA EDUCATION COMMITTEE.—Lady Assistant School Medical Officer. Salary, £350 per annum.

WORCESTERSHIRE ASYLUM, Bromsgrove.—Temporary Assistant Medical Officer.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointment: Radcliffe (Nottingham).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

BENNETT, P. M. B., B.Ch., R.U.I. District Medical Officer of the Sheffield Union.

BRIM, T. P., L.S.A. District Medical Officer of the Halifax Union.

WIGHAM, W. H., M.D., Darb. Certifying Factory Surgeon for the Tattenhall District, co. Chester.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 1st, 1917.

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British Medical Association.

CURRENT NOTES.

The Army Medical Service Inquiry.

At its meeting on August 29th the Central Medical War Committee resolved to represent to the Government that, in view of the composition of the Committee of Inquiry (the only intimation of which it had received through the public press), it is emphatically of opinion that unless at least the Chairman of the Central Medical War Committee is added thereto the personnel of the new Committee will not satisfy the opinion of the general body of medical practitioners in this country.

Medical Recruiting Boards.

In a communication from the Secretary of the Select Committee on the Military Service (Review of Exceptions) Act to the Central Medical War Committee, it was stated that the Select Committee would probable hear no further evidence until after the recess, and that it had not decided on the procedure for the next session. In the meantime it asked whether the Central Medical War Committee desired to present a memorandum or witnesses. From this it is to be gathered that the Select Committee has not completed its inquiry, which will come as something of a shock to many people who hoped that this body would soon issue its report and then cease from troubling.

Petrol for Medical Practitioners.

In last week's SUPPLEMENT we referred again to the supply of petrol to medical practitioners for use in professional work, and to the representations made by the British Medical Association to the Petrol Control Department for the issue of supplementary licences for doctors who could not carry out their work on an allowance of 50 gallons a month. The Association was informed that the Controller of the department was not in a position to allow an increase in any of the cases submitted by the Association. In view of the serious effect of this refusal, the Deputy Medical Secretary addressed a letter on August 22nd to the President of the Board of Trade, pointing out that a strict limitation to a maximum of 50 gallons a month without regard to special circumstances would force certain practitioners to give up a considerable portion of their work, with the result that some sections of the community would have to go without medical attendance altogether. The letter went on to say that the Association fully realizes the seriousness of the petrol situation, and is doing all in its power to secure that doctors shall exercise the utmost care in the use of petrol; but in view of the importance of maintaining an efficient medical service for the civil community it urges the Board of Trade to authorize the issue of a supplementary licence to those doctors who can prove that the restriction to 50 gallons a month will prevent them from fulfilling their duties to the public. The President of the Board of Trade has replied that the Controller of Petrol Supplies has now further considered the matter. While of opinion that the maximum

of 50 gallons should, generally speaking, suffice for the absolutely necessary use of a motor car for professional purposes, the Controller recognizes that the medical profession is working under very great pressure at the present time, and that many doctors are doing double duty, and he is now prepared, where the need for more than 50 gallons of petrol is exceptional, to give a special licence in excess of that amount. Every effort must be made to limit such applications, as the fixed maximum can only be exceeded in cases of the utmost necessity. This concession is important, and will be appreciated by the medical profession and by the public which it serves.

Shortage of Rubber Operating Gloves.

The prohibition by the Board of Trade of the importation of rubber operating gloves was referred to in the JOURNAL of August 18th, p. 228, and the serious effect of such action upon civilian surgical practice was pointed out. As already announced, the British Medical Association has taken up the matter with the Board of Trade with a view to permission being granted for the importation of adequate supplies for the needs of the civil community. In the meantime the Association has received a communication from the secretary of the Rubber and Tin Exports Committee, from which it appears that applications for licences to export rubber gloves are of frequent occurrence. In dealing with such applications the prime consideration has been to deprive the enemy of any chance of obtaining supplies, and licences have been granted only when the destination of the goods was considered safe. In view of the information which we published, the Committee suggests that the shortage at home might perhaps be relieved in some measure by a closer restriction of export licences, even to the extent of total suspension, except for allied destinations. The curious position is thus revealed that while the Board of Trade on the one hand was proceeding to produce a shortage of rubber gloves by stopping their importation, another Government authority was granting licences for the export of such gloves in ignorance of their scarcity in this country. The Deputy Medical Secretary of the British Medical Association has replied to the Rubber and Tin Exports Committee, stating that the Association is informed that surgical gloves cannot be made in sufficient numbers in this country for present requirements, and will shortly be unobtainable for operations on civilians; that the Association has urged the Board of Trade to allow adequate imports, and trusts that the Rubber and Tin Exports Committee will at once consider the advisability of exercising the closest restriction on export licences, even to the extent of their total suspension. We hope that the situation will soon be relieved now that the official inlet and outlet are both aware of the danger.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

NORTH OF ENGLAND BRANCH.—Dr. James Don, Honorary Secretary (1, Grove Street, Newcastle-on-Tyne), gives notice that the annual meeting of the North of England Branch will be held at 23, Ridley Place, Newcastle-on-Tyne, on Friday, September 7th, at 3.15 p.m.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty: Fleet Surgeon R. Miller, M.B., is placed on the retired list at his own request, with the rank of Deputy Surgeon-General. Fleet Surgeons M. P. Jones, J. D. Milligan, M.B., and A. W. Walker to the *Frigate*, additional; E. A. Shaw, M.D. (retired), to the *Victory*, additional; R. W. Townley, F.R.C.S., to the *Pembroke*, additional. Staff Surgeons W. N. Blackford to the *Frigate*; J. H. Wright, M.B., to Chatham Dockyard; Surgeon S. L. McBean, M.B., to the *Victory*. Temporary Surgeons A. W. Gunn, M.D., and D. S. MacKnight, M.B., to the *Pembroke*; C. H. Gould to the *Research* for Portland Hospital; F. A. Knott to the *Achilles*; W. F. Jones to the *Harrier*; M. Fawkes, M.B., to the *Euroda*; A. McMillan to the *Pembroke*, additional. To be temporary Surgeon: K. R. Hill.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon probationer G. Burnett to the *Legion*. To be Surgeon probationer: M. D. Cadman, R. L. Dodds.

ARMY MEDICAL SERVICE.

Colonel F. W. C. Jones, C.B., M.B., is retained on the active list and to be supernumerary.

Captain W. C. Smales, D.S.O., R.A.M.C., to be Deputy Assistant Director-General.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel (temporary Colonel) P. Evans, C.M.G., M.B., relinquishes his temporary rank on reposting.

Officers granted temporary rank as stated:—As Lieut.-Colonels: Lieut.-Colonels F. H. Maturin (Hampshire Regiment) and J. F. Haswell, M.D. (Border Regiment). Temporary Lieut.-Colonel F. R. Hill, M.B. (R.F.A.). As Majors: Majors F. R. S. Cosens (Devon Regiment), T. B. Higgs, M.D. (East Kent Regiment).

Major W. C. Croly and Captain J. L. Wood relinquish the acting rank of Lieut.-Colonel on reposting.

To be acting Lieut.-Colonels: Major T. E. Fielding, D.S.O., M.B., and temporary Major H. H. Serpell whilst in command of a general hospital; Major E. W. Sibery whilst in command of a casualty clearing station; Captain H. G. Monteith, D.S.O., whilst in command of a field ambulance.

Temporary Captain C. S. Miller, M.B., relinquishes his commission, and is granted the honorary rank of Captain.

Temporary Captain J. H. Patterson relinquishes his commission.

Temporary Lieutenants to be temporary Captains: C. G. McAdam, M.B., H. Harrison, G. H. U. Corbett, M.B., A. B. Moffat, M.B., H. O'Neill, M.B.

Temporary Lieutenant J. Young relinquishes his commission.

H. F. Bold-Williams, M.B., to be temporary honorary Lieutenant whilst doing duty with No. 8 Red Cross (Baltic and Corn Exchange) Hospital.

To be temporary honorary Lieutenants: M. C. Pruitt, R. G. Carothers, J. F. Harvey, C. K. Valade.

INDIAN MEDICAL SERVICE.

Brevet Colonel Sir B. G. Seton, Bt., has been permitted to retire from the service with effect from May 27th, 1917.

Major J. M. Holmes, appointed to be a Deputy Assistant Director, Medical Services, with effect from March 29th, 1917.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Major J. Clarke to be acting Lieut.-Colonel whilst in command of a stationery hospital.

Captain A. G. W. Compton, M.C., relinquishes his commission on account of ill health.

Captain A. T. Pitts, from R.A.M.C.(T.F.), to be Captain, with seniority next below Captain W. J. S. Ingram, M.C., M.B.

Lieutenants to be Captains: D. Stewart, L. P. Johns.

To be Lieutenants: J. W. Bowman, M.B., C. A. Harvey, M.B., and G. F. Mitchell, M.B., from Aberdeen University Contingent O.T.C.;

J. Irvine, M.B., J. Kinnear, M.B., and F. J. Charlton, M.B., from St. Andrews University Contingent O.T.C.;

D. J. Valentine, S. W. Page, C. M. Titterton, and E. H. Glenny from University of London Contingent O.T.C.;

H. B. Dykes, M.B., from Edinburgh University Contingent O.T.C.;

G. K. Fulton, M.B., W. Adams, M.B., R. Aitken, M.B., T. Fleming, M.B., J. S. Martin, M.B., N. MacKillop, M.B., W. Dempster, M.B., E. P. Irving, M.B., J. H. Shearer, M.B., W. McWilliam, M.B., J. Ashforth, M.B., and J. S. Craig, M.B., from Glasgow University Contingent O.T.C.;

H. E. Charles, M.B., C. H. Smith, M.B., P. Shillito, M.B., N. Pick, M.B., G. F. Hurst, M.B., H. V. Horsfall, J. H. Parker, M.B., S. Adler, M.B., from Leeds University Contingent O.T.C.;

T. J. Shaw, P. V. Anderson, M.B., H. J. Rice, M.B.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Colonel J. B. Mann relinquishes his commission on account of ill health, and is granted permission to retain his rank and wear the prescribed uniform.

Lieut.-Colonel R. Pickard, C.M.G., M.D., to be Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Captain H. M. Calder, D.S.O., M.B., to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel R. Pickard, C.M.G., M.D., is seconded whilst holding an appointment as Assistant Director of Medical Services.

Major W. D. Watson to be acting Lieut.-Colonel whilst commanding a field ambulance.

Major (acting Lieut.-Colonel) W. A. Burns, M.B., relinquishes his acting rank on ceasing to command a field ambulance.

Captain (acting Lieut.-Colonel) J. Blackwood relinquishes his acting rank on ceasing to command a field ambulance.

Major C. J. Martin, M.B., from A.M.S., to be Major.

Captain H. M. Calder, D.S.O., M.B., is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Captains F. J. Stansfield and R. Mitchell are restored to the establishment.

Captain A. R. Short, M.D., is seconded for duty with a casualty clearing station.

Lieutenant W. Brander, M.D., to be Captain, with precedence as from March 31st, 1915.

Private J. W. Munro to be Lieutenant.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

ANCOATS HOSPITAL, Manchester.—Honorary Physician to Skin Department. Remuneration, 3 guineas per clinic.

AYRSHIRE: COLMONEILL PARISH.—Medical Officer for the Lower District. Salary, £70 per annum; vaccination salary, £2.

BECKETT HOSPITAL, Barnsley.—Second Lady House-Surgeon. Salary, £200 per annum.

BIRKENHEAD UNION.—Junior Female Resident Assistant Medical Officer. Salary, £300 per annum.

BOLTON INFIRMARY.—Lady Locumtenent as Assistant Surgeon.

BOROUGH OF MANFIELD.—Medical Officer of Health and School Medical Officer (temporary). Salary, £500 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Physician. Salary, £150 per annum.

CHELTEMHAM EYE, EAR, AND THROAT FREE HOSPITAL.—Honorary Surgeon.

CUMBERLAND COUNTY.—Lady Assistant Medical Officer. Salary, £350 per annum.

DERRYSHIRE ROYAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.

DEVON COUNTY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary, £8 8s. per week.

DORSET COUNTY COUNCIL.—Clinical Tuberculosis Officer. Salary, £33 6s. 8d. per month.

EASTBOURNE EYE INFIRMARY.—Ophthalmic Surgeon.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—House-Physician. Honorarium, 30 guineas for six months.

KIRKALL: PARISH OF EDAY.—Medical Officer.

NORTHERN HOSPITAL, Winchmore Hill, N.21.—Assistant Medical Officer. Salary, 7 guineas per week, with allowances.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—House-Physician. Salary, £100 per annum.

PORTSMOUTH: ROYAL PORTSMOUTH HOSPITAL.—House-Surgeon. Salary, £250 per annum.

ROTHERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Third House-Surgeon. Salary, £50 per annum.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, Etc., City Road, E.C.—House-Surgeon. Salary, £250 per annum.

SALFORD ROYAL HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

SHEFFIELD ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

STAFFORDSHIRE, WOLVERHAMPTON AND DUDLEY JOINT COMMITTEE FOR TUBERCULOSIS.—Resident Medical Officer for Moxley Sanatorium. Salary, £350 per annum.

STOCKPORT INFIRMARY.—(1) Senior House-Surgeon; (2) Junior House-Surgeon. Salary, £250 and £200 per annum respectively.

VICTORIA HOSPITAL FOR SICK CHILDREN, Hull.—House-Surgeon.

WORCESTERSHIRE ASYLUM, Barnsley Hall, Bromsgrove.—Temporary Assistant Medical Officer for duration of the war.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointments: Burton Labiner (Northampton), Pangbourne (Berks), Whitehaven (Cumberland).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTHS.

CRICHTON-MILLER.—At Bowden House, Harrow-on-the-Hill, on August 27th, the wife of H. Crichton-Miller, M.D., of 114a, Harley Street, of a daughter.

DABY.—At Edinburgh, on August 19th, the wife of Captain F. Eldon Daut, M.B., R.S. Lond., R.A.M.C., of a daughter.

HAINES.—On August 29th, at St. Luke's House, Gloucester, the wife of Lieutenant R. L. Haines, R.A.M.C., of a daughter.

DEATHS.

ROE.—On Sunday, August 26th, at 90, Beverley Road, Hull, Robert Henry, the dearly-loved son of Dr. and Mrs. Alfred Roe, aged 25. (Medical Student of Leeds University.)

SYMONS.—On the 29th August, 1917, William Henry Symons, M.D., D.P.H., of 39, Combe Park, Bath, aged 62. Cremation, Golder's Green, Wednesday, 29th August, 10 o'clock. Interment, Hampstead Cemetery, 3 o'clock.

DIARY OF THE ASSOCIATION.

Date. Meetings to be Held.

SEPTEMBER.

6 Thur. London: Insurance Acts Committee, 11.30 a.m.
7 Fri. North of England Branch, Annual Meeting, Newcastle-on-Tyne, 3.15 p.m.

SUPPLEMENT

TO THE

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 8th, 1917.

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British Medical Association.

CURRENT NOTES.

The Army Medical Service Inquiry.

WITH reference to the resolution passed on August 29th by the Central Medical War Committee, and reported in this column last week, we have received the following statement from the Vice-Chairman of the Committee:

The Central Medical War Committee desired that its Chairman should be added to the Committee of Inquiry proceeding to France, but Lord Derby has expressed "his regret that it is impossible to make any alteration in the constitution of the Committee." He adds that "the Committee was very carefully chosen, and is one to investigate matters purely for the information of the Secretary of State in the interests of the army." But the Central Medical War Committee, in the course of its long and arduous work to obtain the maximum of medical officers for the army with due consideration for civil needs and for the interests of doctors concerned, has been greatly troubled by views widely spread and freely expressed that economy in the use of men could reduce the number required. To ascertain if there were ground for this impression, and to consider how best civil and military medical organization could progress side by side and, where advisable, dovetail the one into the other: these were generally understood to be the objects of the inquiry. It was in this belief that the Central Medical War Committee hoped it might be consulted as to the personnel of the Committee of Inquiry; and not from any want of satisfaction with those actually appointed to serve did it suggest an additional member, but from a strong conviction that something more was required—the representation of other elements of professional opinion. This, it considered, its chairman would furnish, and that, from his experience of professional organization and acquaintance with practitioners in all kinds of practice, he would help materially in the work.

E. B. TURNER,

Chairman of Representative Body, British Medical Association; Vice-Chairman Central Medical War Committee.

Shortage of Rubber Operating Gloves.

In the JOURNAL of August 18th and in the SUPPLEMENT of September 1st we referred to the threatened shortage of rubber operating gloves and to the steps taken by the British Medical Association in order to secure adequate supplies for the needs of the civil community. We have now to record that the Deputy Controller of the Department of Import Restrictions of the Board of Trade has informed the Association that the concession which is

being arranged in regard to manufactures of rubber will include rubber gloves, and that the matter is being dealt with on behalf of importers in this country by the American Chamber of Commerce. Communication was therefore opened up with the American Chamber of Commerce, which was informed of the position, so far as this is known to the Association, and invited to furnish information. It appears that the Board of Trade has decided to restrict the importation of all manufactured rubber goods for 1917 on the basis of 15 per cent. of last year's imports. The secretary of the Chamber makes two suggestions to meet the urgent need for rubber operating gloves: all importers of manufactured rubber articles might confine their imports to surgical gloves; or as an alternative, general importers of manufactured rubber goods might allow the firms who are actual importers of surgical gloves a part or the whole of their 15 per cent. ration of the 1916 imports. It would seem, therefore, that the situation is now in the hands of the firms which import rubber articles within the terms of the concession granted by the Board of Trade. We hope they will appreciate the need for securing a sufficient supply of surgical gloves for civilian purposes and will at once make arrangements among themselves to this end.

Meetings of Branches and Divisions.

SOUTHERN BRANCH.

THE annual meeting of the Branch was held at the South-Western Hotel, Southampton, on July 12th, when Dr. A. E. BODINGTON (Winchester) was in the chair, and twelve other members were present.

Election of Officers.—No nominations having been received other than those of the Branch Council these became valid.

Balance Sheet.—The balance sheet and annual report were presented and adopted.

Quorum.—The CHAIRMAN moved a resolution, which was unanimously carried, that the future quorum of the Branch Council consist of five members.

Branch President.—Dr. BODINGTON, in his valedictory address, strongly advocated the claims of the Association on the support of the profession, and pointed out how adequately it met the needs of the members. He then introduced Dr. H. J. May, of Southampton, as the president for the ensuing year. Dr. MAY thanked the members for their cordial reception, and promised to do his best to justify their confidence; he moved a vote of thanks to Dr. Bodington, which was carried by acclamation. There was no luncheon on account of the war and no golf competition. By the kindness of the President tea was served at the close of the meeting. A collection for Epsom College realised £2 10s. 6d.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 15TH, 1917.

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British Medical Association.

CURRENT NOTES.

Discharged Disabled Sailors and Soldiers: Regulations for Medical Treatment.

THE National Health Insurance Commissioners have now issued new regulations making special arrangements for the medical treatment by general practitioners of all sailors and soldiers invalided from the Forces. These regulations are in fulfilment of the arrangement entered into between the Commissioners and the British Medical Association, and reported in the Supplementary Report of Council as well as in a document issued to all Panel Committees. In an explanatory note it is pointed out that the new system has been instituted as an emergency measure "to meet representations made to the Commissioners on behalf of the medical profession that the normal system of remuneration would be inequitable as applied to invalided sailors and soldiers under the present abnormal conditions of war." The arrangements set forth in these regulations are experimental, and subject to reconsideration at any time. In a circular sent on September 1st to Local Medical and Panel Committees, and to Divisions and Branches of the British Medical Association, announcing the issue of the new regulations, the Medical Secretary stated that the Insurance Acts Committee, in view of the fact that the regulations merely carry out the agreement entered into, advises that insurance practitioners in each area be recommended to accept the arrangement. The circular ends with a reminder that although the regulations do not refer to the undertaking by the Treasury to make good any excess of practitioners' accounts over the total of the pool formed by the 9s. per head at present available under the Insurance Acts, the proposals of the Commissioners to the Insurance Acts Committee (SUPPLEMENT, June 16th, 1917, p. 139) stated specifically that "if the total payments to be made are in excess of a sum calculated at the rate of 9s. per discharged disabled man the amount of the excess will be found by the Exchequer." Attention may be drawn here to the letter printed this week in the body of the JOURNAL (p. 373), from the Chairman of the Insurance Acts Committee, dealing with recent criticisms of the action taken by the Association.

Cost of Petrol.

In consequence of numerous complaints from medical practitioners in all parts of the country respecting the recent very great advance in the price of petrol, the British

Medical Association has made representations to the Petrol Control Department, pointing out that if the present charges are continued medical attendance on the civil community will be seriously curtailed, and it will be impossible for practitioners to carry on much of the work which they are doing on behalf of absent colleagues and at military and auxiliary hospitals. The Department has been urged, in view of the serious position that now exists, to intervene in the matter, and if necessary to provide that medical practitioners be supplied with petrol for their professional work at Government rates.

SHORTAGE OF MEDICAL STUDENTS.

MEMORANDUM BY THE COMMITTEE OF REFERENCE.

At the meeting of the Central Medical War Committee on September 12th a communication was received from the Secretary of the Committee of Reference reporting that the following memorandum, dated August 30th, 1917, had been adopted and forwarded to the Prime Minister, the Secretary of State for War, the Minister of National Service, the Adjutant-General, and Sir Alfred Keogh:

1. The Committee of Reference feel it their duty to call the serious attention of His Majesty's Government to the certainty that, owing to the enlistment of medical students as combatants in the years 1914 and 1915, the numbers of doctors to become qualified in the near future must fall short of the requirements of the nation, unless immediate steps are taken to meet the situation.

2. From the returns which have been supplied to the General Medical Council, it was shown that at the beginning of the year 1916 there were in the medical schools the following students:

Entered as Students in	Therefore in 1916	Men.	Women.	Total.	Eligible to Qualify in
1915	1st year	1422	636	2058	1921
1914	2nd year	783	295	1078	1920
1913	3rd year	519	163	682	1919
1912	4th year	1078	145	1223	1918
1911	5th year	922	140	1062	1917

3. Since the Government has decided that fourth and fifth years' students who can possibly qualify in two years may continue or resume their medical studies, the supply of doctors for 1917 and for 1918 may be considered as fairly assured, so far as to fill the gaps in the profession caused by the usual losses by death and retirement, but it cannot be said that the losses brought about by casualties in the field will be made good, nor does it provide for any increase that may be required for the R.A.M.C.

4. From the figures given in the above return the students of both sexes in their second and third years, who should qualify in 1919 and 1920, are considerably less than those who should qualify in 1917 and 1918. They are 1,302 males as against 2,000; males and females together 1,760 against 2,285.

5. So far as males are concerned, these figures represent a number considerably in excess of those who can possibly qualify in 1919 and 1920, for a large proportion of them have either voluntarily joined, or have been called up under the Military Service Act into the combatant ranks.

6. The large number in the first year, that is, those who should qualify in 1921, is entirely misleading, because a large proportion of these male students are under 18 years of age, and are therefore called up to join the army as soon as they reach the age of military service.

7. Whilst there is likely to be an increase in the number of qualified women doctors in the near future, it should be pointed out that they are not suitable for all hospital appointments, nor for all forms of general practice, and of course are not available for the navy and army. It must, therefore, not be assumed that an increase of women doctors can compensate for a serious shortage of male doctors.

8. The only conclusion that can be drawn from the above is that the outlook for the maintenance of the numbers of qualified doctors after the year 1918 is extremely serious, for the needs of the civil population as well as of the navy and of the army.

9. The Committee of Reference would draw the attention of His Majesty's Government to the hardships inflicted by the present arrangement on the medical student who enlisted or took a commission before the Military Service Act, compared with his fellow student who did not enlist, and is therefore a fourth or fifth years' student. The former has had to defer, in many instances by three years, the earliest date of his qualification, whereas the latter has been allowed to continue his medical studies until qualified. The Committee would therefore suggest that it is only fair to those whose patriotism led them to enlist in the early days of the war, that they should be allowed to return to their medical studies.

10. The Committee of Reference, in consequence of these facts, earnestly desire to impress upon His Majesty's Government the necessity of taking immediate steps to meet this shortage, and they recommend:

(a) That medical students now serving in the army, whether as officers or privates, who have already passed the examination in anatomy and physiology for a medical qualification, should be demobilized and returned to their medical schools to complete their studies.

(b) That medical students, now serving in the army, whether as officers or privates, who have not passed the examination in anatomy and physiology, should be seconded to their medical schools for a reasonable period to enable them to pass that examination, and that if successful they should be demobilized to complete their studies.

11. It is, in the opinion of the Committee, highly desirable that effect should be given to these recommendations as soon as possible.

August 30th, 1917.

FREDERICK TAYLOR, M.D.,
Chairman.

The Central Medical War Committee, after consideration of the above memorandum, passed the following resolutions:

1. That, in the opinion of this Committee, it is desirable that all medical students who are registered as such in the books of the General Medical Council, or, in case of doubt, present a certificate from the dean of their medical school, now serving with the navy or army as officers or privates, should be demobilized to continue their studies.
2. That, in the opinion of this Committee, the calling up of more medical students who are registered as such in the books of the General Medical Council, or, in case of doubt, present a certificate from the dean of their medical school, and who have completed their first year of study, should cease.

It was decided that these recommendations, together with a covering letter pointing out that the deficiency in the numbers of first, second, and third year students is much greater than appears from the table given above, should be forwarded to the Prime Minister, the Minister of National Service, the Adjutant-General, the Director-General of the Army Medical Department, and the President of the Board of Education.

Meetings of Branches and Divisions.

KENT BRANCH: BROMLEY DIVISION.

The following officers have been elected for 1917-18:

Chairman: Dr. Bailey. Vice-Chairman: Dr. Crombie.
Joint Honorary Secretaries: Drs. A. Tennyson Smith and W. H. Chesters.
Representative for Representative Meetings: Dr. A. Tennyson Smith. Deputy Representative: Dr. G. R. Stilwell.
Representative on Branch Council: Dr. Lewis.

Executive Committee: Drs. H. W. Henshaw, J. F. Douse, C. E. M. Lewis, C. E. Michael, T. D. Miller, E. G. Pringle, G. R. Stilwell, W. F. Umney, J. H. Yolland.

NORTHERN COUNTIES OF SCOTLAND BRANCH: ROSS AND CROMARTY DIVISION.

At a meeting of the Ross and Cromarty Division, held in the Ross Memorial Hospital, Dingwall, on August 13th, the following officers were elected for 1917-1918:

Chairman: Dr. John Broadfoot (Dingwall). Vice-Chairman: Dr. John Cameron (Forriose).

Honorary Secretary: Dr. E. K. Mackenzie (Tain).

Representative for Representative Meeting: Dr. J. Monro Moir (Inverness).

Representative on Branch Council: Dr. J. Pender Smith (Dingwall).

Executive Committee: Drs. John Cameron, W. W. N. Knox, D. Johnston, Hugh Ross, J. P. Smith, J. A. Somerville.

The following resolutions were adopted:

1. Fees for Attendance upon Private Patients.—For patients living within one mile of the doctor's surgery fees should be increased by 25 per cent., while for patients living outside this area fees for attendance should be increased by 35 per cent.

2. Treatment of Widows and Families of Soldiers and Sailors.—No medical man practising within the area of the Division should enter into any contract with any public body for attendance upon or treatment of the widows and families of soldiers and sailors without first consulting the members of the Division at a meeting of which due notice had been given to each member.

NORTH OF ENGLAND BRANCH.

The annual meeting of the North of England Branch was held at Newcastle-upon-Tyne on September 7th, with the retiring President, Mr. A. E. MORRISON, in the chair.

Most of the business was of a routine nature, yet there was a large attendance, which undoubtedly would have been larger still but for the strenuous times in which medical men are now living. Since the beginning of the war the delivery of a Presidential Address by the incoming President has been suspended, but it is hoped that the practice will be revived when more normal circumstances prevail.

Election of Officers.—The following officers were elected for the ensuing year:

President: Dr. J. W. Smith (Ryton).

President-elect: Dr. R. E. Howell (Middlesbrough).

Vice-Presidents: Drs. J. Charles (Stanley), J. Hudson (Newcastle-upon-Tyne).

Honorary Secretary and Treasurer: Dr. J. Don (Newcastle).

Honorary Scientific Secretary: Dr. R. J. Willan (Newcastle).

NORTH OF ENGLAND BRANCH: SOUTH SHIELDS DIVISION.

The following officers have been elected for 1917-18:

Chairman: Dr. G. W. Weir. Vice-Chairman: Dr. M. D. Mathieson.

Honorary Secretaries: Drs. T. O'Callaghan and J. Macdonald.

Representative for Representative Meetings: Dr. A. Martin (North Shields). Deputy Representative: Dr. G. R. Harland (South Shields).

Representatives on Branch Council: Drs. Harland and Mathieson.

Executive Committee: Drs. J. L. Crisp, Gibbon, Harland, Marks, Ord, Overill, Sinclair, Turner, and Whyte.

SOUTH WALES AND MONMOUTHSHIRE BRANCH: SOUTH-WEST WALES DIVISION.

At the last annual meeting of this Division (comprising the counties of Cardigan, Carmarthen, and Pembroke) the following officers were elected:

Chairman: Dr. Lewis Williams (Ferryside). Vice-Chairman:

Dr. C. D. Mathias (on active service), re-elected.

Secretary and Treasurer: Dr. D. R. Price, re-elected.

Representative: Dr. Richard Hopkin. Deputy Representative:

Dr. J. E. P. Davies.

The committees were all re-elected, Dr. Samuel Williams taking the place of the late Dr. Harry Roberts on the Executive and Branch Council. A unanimous vote of thanks was given to Dr. Joshua Powell for the able manner in which he carried out the duties of the chair during his year of office.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

BIRMINGHAM.

At a meeting of the Birmingham Panel Committee on September 4th a scheme suggested by the Insurance Committee for the scrutiny of prescriptions was agreed to, and it was decided to ask that a copy of the latest tariff be sent to all practitioners on the panel as soon as convenient.

It was decided to recommend panel practitioners in the area to accept the new regulations with regard to the treatment of discharged disabled soldiers and sailors.

After consideration of a letter from the Chairman of the Gloucester Panel Committee on the same subject, it was decided that the Government terms were quite fair and worthy of a trial, and better than those suggested by the Gloucester Panel Committee.

It was decided to inform the London Panel Committee that the advice of the British Medical Association would be followed with regard to the circular issued by the London Panel Committee suggesting the formation of an Association of Panel Committees.

NOTTINGHAMSHIRE.

At a meeting of the Notts Local Medical and Panel Committees on August 31st a complaint against a practitioner on the panel for charging a fee to an insured patient for taking out a thorn from and cauterizing his eye was considered. It was resolved to report that no evidence had been submitted that any treatment given was beyond the scope of work which could consistently with the best interests of the patient be properly undertaken by a general practitioner of ordinary competence and skill.

On consideration of a letter from the pricing bureau stating that errors were likely to occur in the pricing by reason of there being several different local formularies in use, it was agreed that instructions should be given that when short titles were used they should be held to refer only to those of the B.P., the B.P.C., and the official Notts formulary.

WEST RIDING OF YORKSHIRE.

At a meeting of the West Riding Local Medical and Panel Committees on July 6th it was reported that the Commissioners had extended the term of office of the Committee for one year from July 14th, 1917.

It was decided to allow the interim report on Insurance Acts Reconstruction of the York Local Medical and Panel Committee to lie on the table.

A letter was read from the Insurance Committee stating that it was prepared to accept the suggestion of the Panel Committee that the scheme for the supply of dressings and appliances should come into operation as and from April 1st, 1917.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—Temporary Surgeons: J. Hollings to the *Penbrooke*, additional, for Chatham Hospital; W. M. Fairlee, M.D., to Gibraltar Hospital; W. G. Bigger, M.B., to the *Victory*; C. J. A. McKillop, M.B., and W. S. Kidd, M.B., to Haslar Hospital; J. Morrison, M.B., to the *Bacchante*; R. J. Monahan, M.D., to the *King Alfred*; E. F. Fisher, M.B., F.R.C.S., to Queensferry Hospital; H. E. Cockcroft to Plymouth Hospital; A. G. Brett to the *Albion*.

ROYAL NAVAL VOLUNTEER RESERVE.

To be Surgeon Probationers: E. R. Jagers, H. V. Phelon, L. C. Verity, E. N. D. Reppe, J. D. Kinsman.

ARMY MEDICAL SERVICE.

Colonel (temporary Surgeon-General) G. D. Hunter, C.B., C.M.G., D.S.O., is retained on the active list and to be supernumerary. Colonel H. A. Thompson, C.M.G., D.S.O., M.B., to be temporary Surgeon-General whilst employed as Director of Medical Services. Lieutenant-Colonel and Brevet Colonel S. L. Cummins, C.M.G., M.D., to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division. Lieutenant-Colonel S. P. St. D. Green, M.D., to be temporary Colonel whilst employed as Assistant Director of Medical Services of a base.

ROYAL ARMY MEDICAL CORPS.

The surname of temporary Captain T. C. Harte is as now described, and not "Harke," as in the *London Gazette* of December 23rd, 1915.

Temporary Lieutenant H. R. Marsh relinquishes his commission.

The name of temporary Captain W. G. L. Wambeck is as now described, and not as in the *London Gazette* of July 10th, 1915, and July 4th, 1916.

The name of temporary Lieutenant N. B. Stewart, M.B., is as now described, and not as in the *London Gazette* of March 10th. Lieutenant-Colonel A. J. Coxis, M.D., Cyclist Battalion T.F., to be temporary Lieutenant-Colonel.

C. T. Parsons, M.D., to be temporary Lieutenant-Colonel whilst employed at the Fulham War Hospital, July 16th, 1917 (substituted for notification in the *London Gazette* of August 3rd, 1917).

To be acting Lieut.-Colonels: Major W. L. Baker and Captain O. C. P. Cooke whilst in command of a casualty clearing station: Major W. F. Ellis and Captains H. W. Carson, M.B., and E. C. Lambkin, M.B., whilst in command of a field ambulance.

The undermentioned are granted temporary rank as stated (substituted for notification in the *London Gazette* of August 8th, 1917): As Lieut.-Colonel: Lieut.-Colonel J. Godding, London Regiment T.F.; as Major: Major W. E. M. Corbett, Devon Regiment T.F.

Temporary Major R. S. Rodger, M.B., relinquishes his commission, and is granted the honorary rank of Major.

Temporary Major J. McC. Martin, D.S.O., relinquishes his commission.

Temporary Captain O. Challis to be temporary Major.

T. E. K. Stansfield, M.B., to be temporary honorary Major.

Captain C. Helm, M.C., relinquishes the acting rank of Lieut.-Colonel on reposting.

The following relinquish their commissions on account of ill health: Temporary Captains R. J. Cane, C. G. Galpin, M.B., M. C. Bridgman, M.D., J. G. Dick, M.B., J. H. N. F. Sary, M.B. Temporary Lieutenants W. T. Warwick, L. E. Fannin.

Temporary Captains relinquish their commissions: W. J. M. Marcy, R. W. Young, M.B., A. T. Bond, M.B., P. Verdon, C. A. Verge, M.B., V. D. Desrosiers, M.D., P. Quesnal, M.D., C. E. Tucker, M.B., A. W. Pretherton, M.B., W. W. Patton, M.D., N. Tattersall, M.B., H. L. Dixon, M.D., W. Elwood, M.B., S. J. Staples, M.D., F. H. Allfrey, M.B., W. Russell, M.C., M.B., L. S. Shoosmith, G. Redpath, M.B., W. B. Honey, M.D., E. Sheffield, M.D., P. A. Sullivan, S. A. Kany, M.B., G. P. Wilson, H. H. Scott, T. C. Reeves, J. F. Gill, M.B., L. Horsley, J. T. Murphy, M.B., A. C. Keay, M.B., M. Krolik, M.D., W. N. Child, W. G. Scott, C. A. E. Ring, F.R.C.S.E., D. J. Dauth, M.B., C. Kidd, M.B., W. Sansom, M.D., W. H. F. F. Godwin, T. J. W. Swinburn, W. S. Sprent, M.D., G. G. Lytle, M.B., A. F. Millar, T. H. Pettit, M.B., A. H. Jacob, L. Lazarus, S. T. Lewis, R. K. Sutherland, M.B., C. A. Drouin, M.D.

To be temporary Captains: J. J. Boyd, M.D., P. D. Magowan, E. V. Frederick, M.B., A. D. Howard, M.D., F. C. Dobie, R. Warren, M.D., F.R.C.S., F. S. Kidd, M.B., F.R.C.S., G. M. de Vine, M.B., H. A. Gillespie, M.B.

Temporary Lieutenants to be temporary Captains: R. H. C. Fryn, D. E. Scott, M.D., R. W. Davies, M.B., M. E. Delefield, M.B., H. L. Messenger, A. Dingwall, M.D., J. W. Applegate, R. H. S. Marshall, P. Rose, A. L. Husband, M.D., H. K. Graham-Hodgson, M.B., E. G. B. Carpenter, F.R.C.S., D. S. Pracy, B. H. Swift, M.B., D. L. Spence, H. B. Scargill, M.B., E. R. Holborow, M.B., R. H. Hadfield, D. J. Foley, M.B., C. J. Brookes, M.B., F.R.C.S., H. I. Pinches, M.B., H. H. Butcher, H. F. Bellamy, M.D., H. B. McCaskie, M.D., R. F. Moore, F.R.C.S., J. Wright, M.B., M. Colt, J. C. Clayton, M. L. Hine, M.D., F.R.C.S., G. Ramford, M.B., J. H. Banks, J. Finnegan, M.D., F. G. Hack, M.B., T. Whitehead, M.B., T. Coogan, M.B., G. L. Irwin, H. P. Aubrey, J. M. Anderson, M.B., H. E. H. Mitchell, M.B., A. P. Adams, I. M. Edis, H. S. Knight, M.B., R. E. Collins, M.B., F.R.C.S., C. M. Young, M.B., S. C. H. Bent, M.D., W. B. Thomson, M.D., A. C. Murray, M.B., F. E. L. Phillips, F. M. Gardner-Medwyn, G. E. E. Nicholls, M.B., V. T. C. Bent, W. C. Swete-Evans, M.D., E. H. B. Oram, M.B., F.R.C.S., A. B. Ross, M.D., E. P. Dewar, G. Viner, M.D., F.R.C.S., J. P. P. Inglis, M.B., F. W. Stuart, M.D., W. Warnock, M.B., W. Gault, M.B., F. W. Perry, P. J. Carroll, M.B., O. R. Belcher, A. Reeves, W. A. Reynolds, W. T. Dobson, J. C. Scott, M.D., F. A. Juler, M.B., F.R.C.S., H. G. Broom, M.D., W. C. Lodwidge, E. A. S. Shaw, F. M. P. Rice, F. Corner, A. S. Dawson, G. H. Baird, M.D., A. Jervis, M.D., J. Dalberg, M.D., R. Haslam, M.B., W. Craik, M.B., J. Lindsay, M.D., D. C. Druitt, H. Greenwood, A. G. Morris, J. W. Gill, M.D., R. M. Coalbank, W. E. Morgan, T. S. Forrest, M.B., S. Godding, M.D., A. D. Campbell, M.B., R. N. West, M.B., F. H. W. Brewer, R. A. Shekleton, M.D., C. A. Harrison, E. E. Lightwood, M. J. Horgan, M.B., W. C. Lattey, R. C. Smith, M.B., R. S. Woods, M.D., W. G. McConnell, A. J. Bado, E. H. Denny, M.B., H. L. de Caux, A. H. Mantfield, W. H. O'Heffernan, J. F. Powell, R. C. Macpherson, M.B., G. T. Symons, H. J. H. Symons, H. H. Castle, W. H. Rayner, M. A. Spotswood, G. D. Gripper, A. C. Dixon, C. R. Howard, M.D., G. A. Lamont, M.B., G. J. C. Ferrier, R. W. Miller, M.B., D. A. Farquharson, M.B., R. G. Michelmore, E. N. Glover, C. J. Todd, H. H. O'Heffernan, C. F. Davey, M.B., R. L. Sinclair, M.B., F. J. McCarthy, V. Lloyd-Evans, M.B., F.R.C.S., A. Grant, M.B., D. R. Adams, M.D., S. J. Brennan, R. D. Brennan, M.B., C. A. Holburn, F. C. Ormerod, G. P. B. Buddy, J. H. D. Webster, M.D., R. M. Gardon, M.B., A. F. W. Denning, M.B., E. D. S. Heyliger, M.B., N. Kennedy, M.B., A. Wilkin, G. J. R. Carruthers, M.B., K. D. Melville, M.D., E. Burstal, M.B., T. W. E. Ross, M.D., F.R.C.S., W. J. Crow, M.B., T. McL. Galloway, F.R.C.S.E., W. S. McLaren, M.B., F. R. Eatock, M.B., W. H. Peacock, M.B., N. S. Carmichael, M.B., F.R.C.P.E., J. McMurphy, E. C. White, M.B., N. E. Kendall, K. G. Haig, J. W. B. Hanington, H. M. Churchill, J. Macfadyen, M.B., E. O. Marks, M.B., T. Stordy, F. G. M. Simpson.

The following temporary Lieutenants relinquish their commissions: D. J. Drake, A. S. Ransome, M.B., H. S. Burns, M.B., A. R. Macdonald, M.B., V. P. G. Pedrick, A. J. S. Pichin, M.D., J. E. Murray, M.D., C. Murray, M.D., G. Dougan, M.D., A. E. Carve, M.D., W. H. Robinson, M.B., J. N. McTurk, M.D., A. E. Whitehead, G. M. Cameron, K. P. Duncan, M.B., A. H. Bloxsome, D. H. Hutchinson, M.D., H. G. Browning, M.B., S. J. Haylock, R. S. Park, M.B., A. G. Reid, M.C., E. Trotter, M.B., F.R.C.S.E., W. R. D. Daglish, M.B., J. W. O. van Millingen, M.B., J. V. Rees, M.B., T. Peebles, M.B., J. G. Jack, M.B., H. Blakemore, J. C. Ellis, P. S. Clarke, W. Dickey, M.B., H. P. Miles, L. Laurie, M.D., F. E. Wate, E. B. Appleby, M.B., E. Evans, A. H. Muir, M.B., M. M. Woods, W. R. Harris, W. McQuibban, M.B., J. J. Gilmore, M.B., P. C. V. Bent, W. T. Melling, M.B., D. I. Connolly, M.B., G. P. Page, T. Dunlop, M.B., M. C. Naylor, J. A. Ure, M.B., J. Maclean, M.B., J. J. Ryan, R. W. Davies, M.B., H. R. Marsh, G. W. Renton.

To be temporary Lieutenants: R. Stanton Woods, M.D., H. D. Matthews, M.B., C. W. Freeman, E. D'A. McCrea, M.B., G. T. Drummond, M.B., I. Ridge-Jones, G. F. N. Taylor, W. L. Locke, M.B., H. W. Crowe, M.D., P. McFadyen, M.B., J. Muckart, M.B., J. R. C. Gordon, J. E. Measham, M.B., G. S. Hett, M.B., F.R.C.S., L. H. D. Thornton, N. Navarria, O. Barton, M.B., J. Masill, M.B., W. A. Dewhurst, M.B., D. G. Pearson, M.B., W. C. Frangoso, M.B., R. B. Johnston, F.R.C.S., G. M. Grundy, M.D., J. A. O'Regan, M.D.,

W. E. Peck, M.B., J. C. Auchencloss, M.B., A. Simpson, M.B., F.R.C.S., D. J. Smith, M.B., R. S. Harper, C. A. Hughes, M.B., J. Wyper, M.B., S. Southall, M.D., J. J. Bekeun, O. C. Gruner, M.D., S. Barron, S. G. Gordon, J. P. S. Dunn, M.B., J. Cullen, M.B., F. G. Sargeant, M.D., W. G. Masefield, A. W. Soper, P. K. Muspratt, M.B., P. Howe, W. H. Edgar, M.B., J. T. B. Hall, M.B., R. G. Meyer, M.B., A. M. M. Roberts, M.B., M. F. Huston, M.B., J. H. Dove, M.B., P. Liston, R. G. Ball, M.B., A. Vost, M.B., T. R. Wilschaw, Second Lieutenant R. D. Passer, M.B., from Gordon Highlanders, Special Reserve.

W. A. Pride, M.B., to be temporary honorary Lieutenant whilst serving with the Crookston War Hospital.

To be temporary honorary Lieutenants: B. McB. Richardson, M.B., J. F. Cooper, M.D., E. A. Cayo, P. D. Spohn, A. H. Good, L. B. Farrior, J. R. Tippins, C. F. Larson.

To be temporary Quartermasters with the honorary rank of Lieutenants: J. T. Thomas, A. H. Owens, J. Currie, J. W. Elvins, L. A. M. Hodson, H. S. Burden, J. Wells, F. F. Grayson.

Temporary Quartermaster and honorary Lieutenant H. Howell relinquishes his commission.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL SERVICE.

Assistant Director of Medical Services: Temporary Lieut.-Colonel C. E. Doherty, C.A.M.C., June 20th, 1915 (substituted for notification in the *London Gazette* of August 10th, 1917).

Deputy Assistant Director of Medical Services: Temporary Major F. S. Burke, C.A.M.C.

CANADIAN ARMY MEDICAL CORPS.

Temporary Captain J. R. Goodall to be acting Major while specially employed.

To be temporary Captains: T. Campbell, J. D. Jones, M. Krollk. Quartermaster-Sergeant G. S. Cook to be temporary Quartermaster with the honorary rank of Lieutenant.

SOUTH AFRICAN MEDICAL CORPS.

To be temporary Lieutenants: C. F. Beyers, J. T. McAuslin, M.B., G. R. Cowie.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Captain W. H. L. McCarthy, M.C., M.D., relinquishes the acting rank of Lieut.-Colonel on reposting.

Second Lieutenant H. B. Dykes, M.B., from Unattached List T.F. to be Lieutenant (substituted for notification in the *London Gazette* of August 22nd).

To be Lieutenants: L. K. Ledger, O. C. Carter, H. B. Dodwell, W. U. Longford, and F. E. Bendix, from University of London Contingent O.T.C.; D. McEachran, M.B., J. C. Burda, M.B., S. L. Smith, M.B., J. O. P. Smith, L. Walker, M.B., J. McI. H. Smellie, M.B., R. Mailer, M.B., W. A. Weatherhead, M.B., C. B. B. Reid, M.B., J. S. Bow, M.B., D. W. McLean, M.B., R. Andrew, M.B., J. H. R. Smith, M.B., J. B. Kirk, M.B., J. F. Campbell, J. H. Brown, N. P. R. Galloway, M.B., W. W. Brown, M.B., and F. M. H. Sanderson, from Edinburgh University Contingent O.T.C.; B. W. Jones, M.B., A. Y. Milne, M.B., and C. Reid, M.B., from Aberdeen University Contingent O.T.C.; R. J. L. Fraser, M.B., T. Forrest, M.B., A. B. Austin, M.B., A. B. McA. Lang, M.B., F. W. Sandeman, M.B., D. S. Mitchell, M.B., D. J. MacKinnon, M.B., and J. Joels, M.B., from Glasgow University Contingent O.T.C.; H. Taylor, M.B., from Manchester University Contingent O.T.C.; N. H. S. Maelzer, A. McL. Pickup, J. W. H. Grice, J. J. Conybeare, M.B., J. G. Allan, M.B., H. D. Apergis, C. Wood, M.B., J. M. Savage, M.B.

Lieutenant (on probation) D. J. Steele is confirmed in his rank.

Temporary Captain W. H. F. F. Godwin relinquishes his commission.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Captain (temporary Major) D. E. Evans, M.B., relinquishes his temporary rank on ceasing to command a field ambulance.

Captain W. Marley-Cass relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain (substituted for announcement in the *London Gazette* of April 11th, 1916).

Captain (temporary Major) W. J. Hoyten, M.D., relinquishes his temporary rank.

Captain G. R. Wilson, M.B., to be Major.

Captain R. E. Humphrey is now seconded for duty with a general hospital.

Captain C. P. C. Sargent, from T.F. Reserve, to be Captain.

Lieutenant E. R. Marle to be Captain.

The notification which appeared in the *London Gazette* of June 2nd, 1917, regarding Captain J. W. Heslop is cancelled.

Acting Sergeant-Major J. E. Pritchard to be temporary Quartermaster with the honorary rank of Lieutenant.

Acting Sergeant-Major W. Orr to be Quartermaster with the honorary rank of Lieutenant.

Staff Sergeant R. W. Brearey to be Lieutenant.

Vacancies and Appointments.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

APPLECROSS PARISH.—Medical Officer and Public Vaccinator for Torrion District. Emoluments, £350 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House-Surgeon. Salary, £175.

BIRMINGHAM: LITTLE BROMWICH FEVER HOSPITAL.—Lady Assistant Medical Officer. Salary, £300, rising to £350 per annum.

BOLTON INFIRMARY.—Lady Locumtenent as Assistant Surgeon.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BRIXTON DISPENSARY, S.W.—Resident Medical Officer. Salary, £200 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

CITY OF LONDON MENTAL HOSPITAL, Dartford, Kent.—Temporary Assistant Medical Officer. Salary, £77s. per week.

DERBYSHIRE ROYAL INFIRMARY, Derby.—House-Physician and Casualty Officer. Salary, £200 per annum.

DEVON COUNTY EDUCATION COMMITTEE.—Temporary Oculist. Salary, £8 8s. per week.

GLAMORGAN COUNTY ASYLUM, Bridgend.—Temporary Assistant Medical Officer. Salary, £5 6s. per week.

GLOUCERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House-Surgeon. Salary, £150 per annum.

GUEST HOSPITAL, Dudley.—(1) Senior Resident Medical Officer. Salary, £150 per annum. (2) Assistant House-Surgeon. Salary, £120 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House-Physician, for six months. Honorarium, 30 guineas.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End Road, N.W.3.—Male Resident Officer. Salary, £250 per annum.

HULL: VICTORIA HOSPITAL FOR SICK CHILDREN.—House-Surgeon.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earls Court, S.W.5.—Resident Medical Officer.

KIRKWALL: PARISH OF EDAY.—Medical Officer.

LEEDS PUBLIC DISPENSARY.—Resident Medical Officer. Salary, £200.

NORWICH: JENNY LIND HOSPITAL FOR SICK CHILDREN.—Lady Resident Medical Officer. Salary, £150 per annum.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Ophthalmic House-Surgeon.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham.—Anaesthetist.—Honorarium, £20 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, Bethnal Green, E.2.—(1) House-Physician. Salary, £100 per annum. (2) Assistant Physician. Honorarium, £25 per annum.

ROTHERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

ROYAL ALBERT EDWARD INFIRMARY, Wigan.—Junior House-Surgeon. Salary, £200 per annum.

ROYAL INFIRMARY, SUNDERLAND.—Lady House-Surgeon. Salary, £200 per annum.

ROYAL PORTSMOUTH HOSPITAL, Portsmouth.—House-Surgeon. Salary, £250 per annum.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House-Physician.

SHEFFIELD ROYAL INFIRMARY.—Two House-Surgeons. Salary, £120 per annum each.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.4.—House-Physician and House-Surgeon. Salaries, £100 per annum.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford.—House-Surgeon. Salary, £300 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House-Surgeon. Salary, £160.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointment: Long Eaton (Derby).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

KIRKMAN, A. H. B., F.R.C.S. Edin., District Medical Officer of the Axminster Union.

KELLY, B. C., M.B., C.M., District Medical Officer of the Crediton Union.

LEICESTER, M. E., L.R.C.P., L.R.C.S. Edin., District Medical Officer of the Leamington Union.

MCCARTHER, D., M.D. Durh., District Medical Officer of the Sudbury Union.

WHITEFIELD, D. W., M.R.C.S. Eng., District Medical Officer of the Uttoxeter Union.

ROSS, H. C., L.R.C.P., M.R.C.S., Assistant Medical Officer of the Fulham Road Infirmary, Westminster Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

VICKERS.—On August 14th, at 34, Albert Road, Regent's Park, N.W., to Ida, wife of Captain Harold Vickers, R.A.M.C.(T.), the gift of a son (Harold Edgar).

DEATH.

BEAUMONT.—On September 5th, at 4, Gay Street, Bath, Fanny Elizabeth, wife of W. M. Beaumont and daughter of the late Rev. F. P. Voules, M.A., Rector of Middle Chinnock, Somerset.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 22ND, 1917.

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British Medical Association.

CURRENT NOTES.

Discharged Disabled Soldiers and Sailors.

THE letters upon the above subject which appear in the body of the JOURNAL this week have been shown to the Chairman of the Insurance Acts Committee, who asks us to insert the following draft of an explanatory statement which it is proposed to issue to all panel practitioners in the next quarterly circular. Dr. Brackenbury hopes shortly to deal with the various points raised in the letters.

As some misunderstanding appears to exist as to the exact nature of the bargain made for attendance on discharged men, the following remarks may be useful. It seemed obvious to members of the profession that discharged disabled men must necessarily require a greater amount of attendance than ordinary insured persons, but this was by no means accepted as axiomatic by the Commissioners and the Treasury. They indeed suggested that in view of the provision that was being made for special attendance on these men it was possible that they might, as a class, require even less attendance than insured persons generally. Having at last succeeded in convincing the authorities that this was a subject on which insurance practitioners were determined to have satisfaction, the next step was to find out what payment would be adequate. The Insurance Acts Committee was unable to suggest a capitation rate that could be proved to meet the case, as no data were available, and it was finally decided to adopt a plan on the basis of payment per attendance for an experimental period, as that would not only provide a payment for every attendance given, however many, but would prove exactly what relation discharged men bear to the ordinary insured persons as regards the amount of attendance required.

As it cannot be contended that the quality of the attendance required will be higher for the general practitioner treatment of discharged men than for other insured persons it follows logically that the amount per attendance should be a calculated "insurance fee," as in the case of temporary residents. The system in that case was devised to ascertain as accurately as possible the fee per item of attendance which was equivalent to the capitation rate. The temporary resident system for the past three years has worked out at over 95 per cent. of the nominal schedule of fees—that is, at a rate per visit (without medicine) of about 2s. 4½d., and corresponding rates for the other items. There is no reason to suppose that this "insurance fee" will be altered, for it will continue to depend on the same factors that have prevailed from the commencement of National Insurance. Whatever fee results from the operation of the temporary resident scheme will be taken as the unit in paying the accounts rendered for discharged men. There is no fixed pool for the payment of the discharged men's accounts, and every attendance will be paid for at the calculated rate. Thus, if the temporary resident dividend continues to work out at 95 per cent. and a doctor pays fifty visits to discharged men in a quarter he will receive 2s. 4½d. x 50 = £5 18s. 9d. It remains

for practitioners to give adequate attendance to these disabled men and to keep such accounts as will enable them to be paid quarter by quarter such sums as may correspond to the increased call upon their time.

As at one time it seemed improbable that the demand of the profession for the adequate recognition of this increased call upon its services would be recognized by the Treasury, the Insurance Acts Committee considers that the present position is a very satisfactory result of the unanimous expression of feeling of the 1916 Conference of Local Medical and Panel Committees and the action that followed thereon.

Cost of Petrol.

As reported in last week's SUPPLEMENT, p. 57, representations were recently made to the Petrol Control Department drawing attention to the very great advance in the price of petrol, and urging the department to intervene in the matter, and, if necessary, to provide that medical practitioners be supplied with petrol for their professional work at Government rates. A reply has been received from the Deputy Controller of the Petrol Control Department stating that this is not a matter in which the department has any authority to intervene. The letter concludes as follows: "I may add that it is somewhat difficult to see why an increase of 8½d. per gallon in the price of petrol should cause, as your Association appears to anticipate, a serious curtailment of the medical attendance on the civil community. The maximum quantity of petrol allotted to a medical practitioner is 50 gallons a month, or 2 gallons a day, and therefore the additional expenditure incurred by him in consequence of the increased price of petrol can be only 1s. 5d. a day."

CONFERENCE OF REPRESENTATIVES OF
LOCAL MEDICAL AND PANEL
COMMITTEES.

As announced briefly in the JOURNAL last week, a conference of representatives of Local Medical and Panel Committees throughout the country will be held under the auspices of the British Medical Association, at the Crown Room, Connaught Rooms, Great Queen Street, London, W.C., on Thursday, October 18th, at 10 a.m., and following day if necessary. Dr. J. A. Macdonald will act as chairman. The Association will pay all the central expenses of the conference, but it is expected that the Local Medical and Panel Committees will pay the expenses of their representatives. In view of the opinion expressed by the 1916 conference that the larger committees might be allowed more than one representative, Local Medical and Panel Committees of each insurance area are asked jointly to appoint one representative for every 400, or

portion of 400, practitioners upon the medical list of the area for January 1st, 1917. Committees are at liberty to appoint any medical practitioner they like as their representative, whether a member of the Association or not. The members of the Insurance Acts Committee of the Association will, as before, attend the conference and take part in its deliberations, but they will not vote unless they are also elected to the conference as representatives of some Local Medical or Panel Committee. The provisional agenda sheet was issued on September 12th. Motions received not later than the first post on October 8th, at the offices of the Association, will be inserted in the final agenda of the conference. The Insurance Acts Committee will issue this day (September 22nd) an important document with regard to the future of the organization of insurance practitioners, and the position of the Committee as the central negotiating body for Local Medical and Panel Committees throughout the country. It is hoped that all Committees will call meetings to consider this document and the other matters standing on the agenda, and will appoint representatives to attend the conference on October 18th.

Meetings of Branches and Divisions.

LANCASHIRE AND CHESHIRE BRANCH: ROCHDALE DIVISION.
A MEETING of the Rochdale Division was held at Rochdale on September 13th, when Dr. G. GEDDES was in the chair.

Annual Representative Meeting.—Dr. S. T. LORD gave his report of the last Representative Meeting. He drew attention to the fact that money was being spent by the Association in connexion with war emergency work which ought to be found by the country. He considered also that the Association had put an end to too many men being removed from civil practice and taken into the army, and that the Association ought to be boomed and non-members persuaded to join it. Concerted action between different Panel Committees in the country was desirable. Dr. Lord also referred to the proposed Ministry of Health. The following motion was carried:

In view of the loss of interest in, and membership of, the British Medical Association we ask the Association what has become of the arrangement of an Organizing Secretary who was appointed to tour the country to speak to the Divisions on the general policy and action of the Association, in our opinion a very imperative duty.

Dr. Lord was thanked for his attendance at the Representative Meeting.

SOUTH-EASTERN OF IRELAND BRANCH.

AN ordinary meeting of the South-Eastern of Ireland Branch was held in Waterford on September 5th, when Dr. DENIS WALSH was in the chair.

Vote of Sympathy.—A resolution was unanimously passed tendering sympathy to Mrs. Mackesy and family in the loss they have sustained through the death of Dr. G. I. Mackesy, who was one of the oldest and most valued members of the Branch, and a former president.

SOUTH MIDLAND BRANCH: BEDFORD DIVISION.

THE following officers have been elected for 1917-18:

Chairman: Dr. J. Waugh. *Vice-Chairman:* Dr. J. Rollings.
Secretary and Treasurer: Dr. E. R. Fasnacht.
Representative for Representative Meetings: Dr. J. W. Bone.
Deputy Representative: Dr. Kilham Roberts.
Representatives on Branch Council: Drs. A. Chillingworth, G. F. Dixon, K. Roberts, and G. F. Street.
Executive Committee: Drs. G. Butters, Henry Goldsmith, S. J. Ross, and H. Sworder.

Association Notices.

CHANGES OF BOUNDARIES.

Adjustment of Areas of South Staffordshire and Dudley Divisions and Staffordshire and Birmingham Branches.

THE following change has been made in accordance with the Articles and By-laws, and takes effect from the date of publication of this notice:

That Kinver Parish be transferred from the area of the South Staffordshire Division of the Staffordshire Branch to that of the Dudley Division of the Birmingham Branch.

Representation in Representative Body.—Unaffected.

THE LIBRARY OF THE BRITISH MEDICAL ASSOCIATION.

A LIST of periodical publications, official reports, and Blue Books in the Library of the British Medical Association available for issue to members on loan has been printed, and copies can be obtained free on application to the Librarian at the house of the Association, 429, Strand, W.C. The regulations governing the loan of these publications are stated in the introduction to the list. The Library is open for consultation from 10 a.m. till 5 p.m. (on Saturdays till 2 p.m.).

SHORTAGE OF MEDICAL STUDENTS.

MEMORANDUM BY THE CENTRAL MEDICAL WAR COMMITTEE.

IN the SUPPLEMENT last week was printed a memorandum on the shortage of medical students, submitted to the Government and the heads of the departments concerned by the Committee of Reference of the Royal College of Physicians, London, and the Royal College of Surgeons of England, together with two resolutions on the same subject passed by the Central Medical War Committee on September 12th. In supporting the memorandum of the Committee of Reference, in a letter dated September 18th to the Secretary of State for War, the Central Medical War Committee states that it desires to make certain additional remarks. These are contained in a memorandum forwarded also to the Prime Minister, the Minister of National Service, the Adjutant-General, the Director-General Army Medical Service, the Medical Director-General R.N., and the President of the Board of Education. This memorandum, which we print below, embodies the two resolutions published last week:

Shortage of Medical Students.

1. The annual average wastage of doctors in normal pre-war times owing to death, retirement from practice, or permanent incapacity is about 900.

2. The average number of medical men added to the *Medical Register* annually is about 1,100 in pre-war times.

3. There is now a large abnormal wastage in qualified medical men arising directly out of the war.

4. The supply of medical men to meet the needs of the civil population has now been reduced to the lowest number consistent with safety, and there is practically no reserve to make good the normal annual wastage from deaths or incapacity.

5. All new additions to the ranks of the medical profession by the qualification of students are at once requisitioned by His Majesty's Forces, and are not available, therefore, to make good the normal average wastage of doctors required for the civil population.

6. The number of fifth year men students due to qualify in 1917 (922) is only barely sufficient to make good the normal wastage in the profession for that year.

7. The number of fourth year men students due to qualify during 1918 is stated in the returns of the General Medical Council to be 1,078. This number has in fact been reduced since these statistics were obtained, by some of the men having accepted commissions as probationary surgeons in the navy, and the number who will actually qualify in 1918 is probably only just sufficient to meet the normal annual wastage, that is, about 900.

8. The number of third year men students due to qualify during 1919 is only 519, and if the greater number of these qualify in due course they will little more than meet half the normal wastage.

9. According to the returns of the General Medical Council (quoted in paragraph 2 of the Memo. of the Committee of Reference) there are 783 second year men students due to qualify in 1920, and 1,432 first year men students due to qualify in 1921. Since these figures were compiled the situation has undergone considerable alteration because:

(a) On February 27th, 1917, a new A.C.I., No. 341, was issued in which previous A.C.I. No. 2,290 of 1916, regarding medical students in any year of their study who were not passed fit for general service (Category A), was altered by the calling up of medical students classified B 1.

(b) A number of medical students of the first and second year of study, who had previously been rejected for military service or classified "C," have been re-examined under the Military Exceptions Act, placed in higher categories, and called up.

(c) First year men as they reach 18 have been called up.

10. Owing to these circumstances the number of first year men students due to qualify in 1921 is probably at the present time not more than half the figure given in the return from the General Medical Council, and the number of second year students is less though probably not to quite the same extent.

11. The average number of medical students registered with the General Medical Council in pre-war times is about 1,500 per annum, but registration with the General Medical Council

is, in cases of students of the University of London and students under the Conjoint Board in England, not now compulsory, so that the actual number of medical students in any one year of study is considerably higher than recorded in the books of the General Medical Council, and probably reaches 1,800 or more, but the figures in paragraph 2 of the Committee of Reference Memorandum include all medical students.

12. The actual shortage, therefore, of first, second, and third year students, as compared with normal pre-war times, is a reduction by about two-thirds.

13. In regard to probationer surgeons in the navy it is important that these (who for the most part are fourth or fifth year men) should be demobilized after six months of service, for otherwise their qualification is being indefinitely postponed. In order to enable this to be done it is necessary that a supply of junior students as they pass their second medical examination should be available, and some of these could become surgeon probationers, and thus make it possible to demobilize those who have served six months.

14. The Central Medical War Committee therefore strongly recommends that medical students who are registered as such in the books of the General Medical Council (or have been accepted as medical students by universities or the Conjoint Board, or, in case of doubt, present a certificate from the dean of their medical school), now serving in the navy or army as officers or privates, should be demobilized to continue their studies.

15. Further, in the opinion of the Central Medical War Committee, the calling up of more medical students, who are registered as such, or who are identified as such, as mentioned in the preceding paragraph, and who have completed their first year of study, should cease.

16. As the medical schools begin their new session in October, it is very important that an early decision on this question should be made by the authorities concerned, so that if it be determined to return enlisted students to their medical studies they may be placed at no disadvantage as compared with others.

INSURANCE.

SCOTTISH INSURANCE ACTS SUBCOMMITTEE.

The Panel Committees of Scotland have recently held an election to decide who should be their representatives on the Insurance Acts Subcommittee (Scotland). The voting was taken by the transferable vote method, and has resulted as follows:

Elected by County Panel Committees.—Dr. Wm. Blair (Jedburgh); Dr. James Hill (Renfrew); Dr. G. C. Anderson (Methil, Fife); Dr. W. R. Martine (Haddington).

Elected by Burgh Panel Committees.—Dr. Michael Dewar (Edinburgh); Dr. Cuthbert Nairn (Greenock); Dr. James Andrew (Coatbridge); Dr. John Gordon (Aberdeen).

LOCAL MEDICAL AND PANEL COMMITTEES.

MIDDLESEX.

At a meeting of the Local Medical and Panel Committees on September 13th Drs. Brackenbury and Burton were chosen as representatives of the Panel Committee at the approaching Conference of Local Medical and Panel Committees.

It was resolved to place the following motion upon the Agenda of the Conference:

That the working out of the settlement for 1916 is so unsatisfactory that the Conference should ask the Insurance Acts Committee to press at as early a date as possible for the increase of remuneration to 10s. per head of insured persons, as suggested in the interim report for the reasons therein given.

NON-PANEL DOCTORS AND NATIONAL INSURANCE CERTIFICATES.

In order to minimize as much as possible the inconveniences caused to doctors who attend insured persons in their private capacity, the Association has published books of certificates which, it is believed, will meet the requirements of approved societies, so far as is practicable in the case of certificates not given under the obligations of the official medical certification rules. The form of certificate is sufficiently like the official form to remove many of the difficulties which insured persons who have been attended by private doctors have had in satisfying the requirements of their approved societies, but is sufficiently distinct from the official form to show at once that it is being used by a doctor who is attending the patient in a private capacity—that is to say, either by a doctor who is not on a panel, or by a panel doctor other than the one on whose list the insured person is.

The Association has shown the certificates to the Insurance Commissions for England, Scotland, and Wales, and they raise no objection to the issue of them by the Association to medical practitioners for use when attending

insured persons not being their panel patients, and not being persons whom they are attending as medical officers of institutions under Section 15 (4), or in virtue of "own arrangements" under Section 15 (3).

The books are being issued at cost price. They contain 50 certificate forms, and may be obtained from the Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2, price 6d. each, post free.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following notifications are announced by the Admiralty:—Fleet Surgeons R. W. G. Stewart, M.B., lent to the Medical Department, Admiralty; A. Woolcombe, and J. L. Pringle, M.B., to the Pembroke. Staff Surgeons C. H. Dawe to the *Sirius*, W. T. Haydon to the *Minerva*, W. L. Hawkins to the *Venus*, J. D. Keir to the *President*, F. C. Robinson to the *Forward*, S. Bradbury to the *Amethyst*, G. D. Walsh to the *Dartmouth*, F. Cock to the *Diligence*. Surgeons W. C. Carson granted the acting rank of Staff Surgeon; G. J. Carr, M.B., to the *Pembroke*, additional, for disposal; A. R. Price to the *Caesar*, R. F. P. Cory to Gibraltar Hospital. Temporary Surgeons: M. Vlasto, M.B., F.R.C.S., to Malta Hospital; F. H. L. Cunningham, M.C., to the *Impregnable*; W. Templeton to Chatham Hospital, A. M. McIlhenny, M.B., to the *Minotaur*; A. F. McIntosh, M.B., to the *Factory*; J. Aydon to the *Temeraire*, R. A. W. Ford to Bermuda Hospital, J. H. B. Hog to the *Pembroke*, H. W. Hales to the *Ajax*, A. G. Bee to the *Hyacinth*, H. W. Addison to the *Thesens*, C. E. S. Harris, M.B., to the *Endeavour*; A. G. McKee to Shotley Sick Quarters, E. F. S. Gordon to the *Dartmouth*. To be temporary Surgeons: W. S. Kidd, M.B., H. E. Cockcroft, J. H. M. Sandison, M.B., E. J. G. Sargent.

ROYAL NAVAL VOLUNTEER RESERVE.

To be Surgeon Probationers: A. L. Brough, P. A. Faichney, H. R. J. Thomas, R. Williamson, J. J. N. Daniels, A. Q. Wells, G. F. Abercrombie, J. I. Moir, C. Joiner, J. G. Reed, R. H. J. M. Corbet.

ARMY MEDICAL SERVICE.

Colonel S. C. Philson is retained on the active list under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

Colonel J. C. Morgan, from half-pay list, retires on retired pay on account of ill health.

Lieut.-Colonel H. A. Bray, C.M.G., to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division.

ROYAL ARMY MEDICAL CORPS.

Major B. H. V. Dunbar, D.S.O., M.D., to be acting Lieut.-Colonel whilst holding a special appointment.

The undermentioned are granted temporary rank as stated: As Lieut.-Colonel: Lieut.-Colonel E. J. Moore, C.B., M.P. As Major: Major C. E. M. Lowe, M.B., R.G.A. (T.F.), Major C. J. Caddick, M.B., F.R.C.S.E., R.F.A. (T.F.). As Captain: Captain E. P. W. Wedd, Yeomanry (T.F.), Captain P. T. S. Phillips, M.B., R.F.A.

Temporary Major E. F. Eliot, F.R.C.S.E., relinquishes the acting rank of Lieut.-Colonel on reposting.

Temporary Captain Sir Vincent Nash to be temporary Major.

The surname of temporary Captain David Macquorn-Rankine Crichton, M.B., is as now described, and not as in the *London Gazette* of September 11th, 1915, and October 11th, 1916.

W. C. Stevenson, M.D., Home Hospitals Reserve, to be temporary Captain, August 6th, 1914. (Substituted for notification in the *London Gazette* of October 2nd, 1914.)

The undermentioned having ceased to be employed with No. 1 British Red Cross Hospital relinquish their commissions: Temporary honorary Captains F. Fraser, F.R.C.S., and K. M. Walker, F.R.C.S., M.B.; temporary honorary Lieutenants J. K. Dick, M.B., and F. F. Young, M.D.

The following officers relinquish their commissions: Temporary Captains: F. W. Campbell, E. R. Grieson, M.B., and G. W. Anderson, M.B., J. A. R. Lee, A. W. Owen, M.D., T. G. Williams, M.B., J. Chassels, M.B., temporary Lieutenant E. W. Squire, M.B.

Temporary Lieutenants to be temporary Captains: F. G. Chandler, M.B., T. A. Jones, C. T. Galbraith, M.C., M.B.

Temporary Lieutenants relinquish their commissions on account of ill health: J. Harper, M.B., E. W. Squire, M.B., C. T. Darwent, J. C. Auchincloss.

To be temporary honorary Lieutenants: C. C. Allen and J. H. Dorman.

Quartermaster and honorary Lieutenant A. Harwood to be honorary Captain.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Major H. G. Smeeth, M.D., to be acting Lieutenant-Colonel whilst in command of a field ambulance.

To be Lieutenants: H. G. Morris-Jones from Manchester University Contingent O.T.C.; H. B. Renton, M.B., G. L. Malcolm-Smith, M.B., F. Jones, from Edinburgh University Contingent O.T.C.; J. L. Rowlands, M.B., from Glasgow University Contingent O.T.C.; M. Edwards from University of London Contingent O.T.C.; M. J. Hilton, M.B., from Durham University Contingent O.T.C.

INDIAN MEDICAL SERVICE.

Surgeon-General W. R. Edwards, C.B., C.M.G., Surgeon-General with the Government of Bengal, was appointed an Honorary Physician to His Majesty the King, with effect from February 18th, 1917, to fill an existing vacancy.

Colonel P. Behr, C.B., C.M.G., has been retained in the service as a supernumerary for the period of the war, after completion of his tour of service on March 25th, 1917.

Lieut.-Colonel A. W. Dawson has been permitted to retire from the service in consequence of ill health, with effect from July 19th, 1917.

Lieut. Colonel H. E. Drake-Brockman, on return from foreign service, has been posted as Residency Surgeon and ex-officio Assistant to the Resident in Nepal, with effect from April 22nd.

Major G. F. I. Harkness has been permitted to retire from the service on account of ill health, with effect from May 19th.

Captain A. M. Dickson, M.D., has been awarded the Military Cross for distinguished service in the field.

Captain E. W. O'G. Kirwan, M.B., was temporarily appointed to the Bacteriological Department to act as Assistant-Director, Central Research Institute, Kasauli, from April 19th to May 26th, 1917.

Captains to be Majors, with effect from March 1st, 1917: C. H. Reinhold, F.R.C.S.E., W. D. Wright, M.B., V. N. Whitmore, W. J. F.

The services of temporary Lieutenant Alexander Dias were dispensed with, with effect from July 23rd, 1917.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL CORPS.

Temporary Major N. Gunn to be acting Lieut.-Colonel while commanding a Canadian Field Ambulance.

Temporary Captain G. M. Davis to be temporary Major (substituted for *London Gazette* notification August 27th, 1917, incorrectly inserting clause "while so employed").

Temporary Major W. T. M. MacKinnon to be temporary Lieut.-Colonel, and to command a hospital.

F. Lessore to be temporary honorary Major without pay and allowances.

Temporary Captain L. A. Soley resigns his temporary commission. Temporary Lieutenants to be temporary Captains: G. H. Stobie, A. Levesque, C. K. Church.

Temporary honorary Lieutenant J. H. Thomson to be temporary Quartermaster with the honorary rank of Captain.

Sergeant-Major H. A. Marshall to be temporary Quartermaster with the honorary rank of Lieutenant.

SOUTH AFRICAN MEDICAL CORPS.

To be temporary Captains: R. D. Kidd, H. Symonds, M.D., W. Smith, M.B.

BRITISH WEST INDIAN REGIMENT.

Surgeon Captain C. A. Moseley, M.D., relinquishes his commission.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Captain (acting Lieut.-Colonel) J. S. Mansford, M.B., relinquishes his acting rank on ceasing to command a field ambulance.

Captain H. B. Low, M.C., M.D., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain G. P. Chappel, M.D., to be Major, January 6th, 1915 (substituted for notification in the *London Gazette* of January 5th, 1915).

Captain A. Baxter, M.D., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain (acting Lieut.-Colonel) L. A. Dingley, M.D., relinquishes his acting rank on ceasing to command a field ambulance.

Major (temporary Lieut.-Colonel) M. Dunning, M.B., is restored to the establishment, and retains his temporary rank on vacating an appointment as Assistant Director of Medical Services.

Captain W. G. Mitchell, M.D., to be Major.

Major (acting Lieut.-Colonel) A. D. Ducat, M.B., to be Major, and to retain the acting rank of Lieut.-Colonel.

Captain J. S. Arthur, from Unattached List, to be Captain.

Captain G. H. Cowen, M.B., F.R.C.S., is seconded for duty with war hospital.

Captain F. A. J. Mayes relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank Captain.

Lieutenant W. E. Smith to be Captain.

To be Lieutenants: Private T. H. Savory, from Norfolk Regiment; Sergeant G. N. F. Reddan; Staff Sergeant C. H. Gibb.

TERRITORIAL FORCE RESERVE.

Major T. D. Laird, M.B., to be Major.

VOLUNTEER FORCE.

Herts Medical Volunteer Corps.—T. P. G. Wells to be temporary Major. W. C. B. Giddins to be temporary honorary Lieutenant and Quartermaster.

East Riding Medical Volunteer Corps.—K. Waterhouse to be temporary honorary Lieutenant and Quartermaster.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House-Surgeon. Salary, £175.

BIRMINGHAM: GENERAL HOSPITAL.—Resident Medical Officer. Salary, £155 per annum and additional £21 for acting as Medical Registrar.

BRIGHTON: ROYAL ALEXANDRA HOSPITAL.—House-Surgeon. Salary, £200 per annum.

BRISTOL: ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

DERBYSHIRE ROYAL INFIRMARY, Derby.—House-Physician and Casualty Officer. Salary, £200 per annum.

GENERAL LYING-IN HOSPITAL, York Road, Lambeth.—Resident Medical Officer. Salary at the rate of £100 per annum.

GLAMORGAN COUNTY ASYLUM, Bridgend.—Temporary Assistant Medical Officer. Salary, £65s. per week.

GUEST HOSPITAL, Dudley.—(1) Senior Resident Medical Officer. Salary, £150 per annum. (2) Assistant House-Surgeon. Salary, £120 per annum.

IPSWICH: AUXILIARY HOSPITAL FOR WOUNDED, Lattice Barn.—House-Physician.

KIRKWALL: PARISH OF EDAY.—Medical Officer.

LEDS PUBLIC DISPENSARY.—Resident Medical Officer. Salary, £200.

LINCOLNSHIRE: COUNTY OF THE PARTS OF LINDSEY.—Assistant Medical Officer. Salary, £350 per annum.

LONDON THROAT HOSPITAL, Great Portland Street, W.—House-Surgeon. Honorarium, £75 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer (female). Salary, £300 per annum, rising to £450.

MINISTRY OF PENSIONS.—Medical practitioners in Westmorland, Lancashire, and Cheshire, to serve on Medical Boards. Fees, £3 3s. per diem.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Lady House-Surgeon. Salary, £200 to £250 according to experience.

POOLE: CORNELIA HOSPITAL.—Medical Officer for Out-patients' Department.

PORTSMOUTH: ROYAL PORTSMOUTH HOSPITAL.—House-Surgeon. Salary at the rate of £250 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Anaesthetist. Honorarium, £20 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, Bethnal Green, E.2.—(1) House-Physician. Salary, £100 per annum. (2) Assistant Physician. Honorarium, £25 per annum.

ROMSLEY HILL SANATORIUM.—Medical Superintendent (temporary). Salary, £450 per annum.

ROTHERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

ROYAL INFIRMARY, Sunderland.—Lady House-Surgeon. Salary, £200 per annum.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House-Physician.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

SHEFFIELD ROYAL INFIRMARY.—Two House-Surgeons. Salary £120 per annum each.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.4.—(1) House-Physician; (2) House-Surgeon (females). Salary, £100 per annum. (3) Anaesthetists, honorarium, 10s. 6d. per attendance.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford.—House Surgeon. Salary, £300 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House-Surgeon. Salary, £160.

WEYMOUTH: PRINCESS CHRISTIAN HOSPITAL.—House Surgeon. Salary, £250 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

COOKE, E. H., M.B., B.C.Camb., Certifying Factory Surgeon for the Hendon District, co. Middlesex.

GILL, D. V., L.R.C.P. and S. Edin., D.P.H.Lond., D.O.Oxon, Ophthalmic Surgeon to the Eastbourne Eye Infirmary.

KENNEDY, J., M.R.C.S., L.R.C.P., District Medical Officer of the Southwark Union.

MCINNES, A., M.B., Ch.B.Glasg., District Medical Officer and Medical Officer of the Children's Home of the Thrapston Union.

OGLE, J. G., L.M.S.S.A., District Medical Officer of the Madeley Union.

OWEN, C. W., M.B., C.M.Edin., District Medical Officer of the Bangor and Beaumaris Union.

SOMERS, C. D., M.B., B.C.Camb., District Medical Officer of the Plomesgate Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTHS.

GOFFE.—On September 15th, at a nursing home in London, the wife (née Edna Mary Powell, M.B., B.S.Lond.) of E. G. Leopold Goffe, M.D., B.S.Lond., of a son.

GUTHRIE.—On September 13th, at Greta, Heswall, Cheshire, the wife of Thomas Guthrie, M.B., F.R.C.S., of 78, Rodney Street, Liverpool, of a son.

MAY.—On September 15th, at Livingstone, Northern Rhodesia, to Dr. and Mrs. Aylmer May, a daughter.

TAYLER.—On September 13th, at Trowbridge, Wilts, the wife of F. E. Tayler, M.R.C.S., of a son.

DEATH.

FRANKLING.—On September 14th, at 19, York Road, Harrogate, Florence (née Ashmall), wife of Herbert Frankling. Was interred at Harlow Cemetery, Wednesday, September 19th.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
OCTOBER.	
1 Mon.	London: Naval and Military Committee.
2 Tues.	London: Public Health Poor Law Medical Officers' Subcommittee, 2.30 p.m. London: Public Health Medical Officers of Health Subcommittee, 5 p.m. London: Public Health Committee, 3.30 p.m.
3 Wed.	London: Medico-Political Committee, 2.30 p.m.
5 Fri.	London: Central Ethical Committee, 2.30 p.m.
6 Sat.	London: Science Committee, 11 a.m.
9 Tues.	London: Hospitals Committee.
11 Thurs.	London: Organization Committee.
18 Thurs.	London: Conference of Representatives of Local Medical and Panel Committees.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 29TH, 1917.

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British Medical Association.

CURRENT NOTES.

American Medical Officers in England.

At the meeting of the Central Medical War Committee on September 26th the substitution of American doctors for civil medical practitioners in military hospitals¹ was considered in connexion with a memorandum submitted by the Chairman of the Committee. The situation having been thus explained to the Committee and debated by them, it was decided that a representation should be made to the Director-General of the Army Medical Service asking that the Committee should be consulted on all matters affecting civilian medical men previous to action being taken. The statements in the lay press that the process of substitution, as far as it has gone, was in accordance with the expressed wishes or views of the Central Medical War Committee were entirely erroneous.

Cost of Petrol.

We have received a number of communications upon this subject. Dr. George L. Lefevre, honorary secretary of the Staffordshire Panel Committee, writes:

I trust that the Medico-Political Committee will not take the answer of the Deputy Controller of the Petrol Control Department as final. He is either ignorant of the facts or chooses to appear so. The net price of petrol to medical practitioners was 1s. 4d. just before the war; it is now 4s. On 50 gallons of petrol per month this represents an increase of £80 per annum. Whatever this works out at per day, it is an increase that very few practitioners can afford, and so long as Government Departments ask for the services of practitioners at pre-war rates they should ensure that the working expenses of the practitioners are kept as far as possible at the former cost.

Dr. A. J. Campbell, honorary secretary of the Berwickshire Panel Committee, forwards a copy of a letter addressed by his committee to the Chancellor of the Exchequer, the National Health Insurance Commission, Scotland, and the Scottish War Emergency Committee, from which we take the following extracts:

At the beginning of 1913, when the medical benefit part of the National Health Insurance Act came into force, petrol cost 1s. 7d. per gallon. It now costs 4s. 6d. per gallon. From the former price doctors were allowed a rebate of 1½d., from the latter a rebate of 6d. per gallon. The difference in actual cost is thus 2s. 6½d. per gallon. Doctors using cars in this district are not likely to get more than eighteen miles per gallon from their petrol. . . . The difference in the price of petrol has added 1s. 7d. to the running cost of every mile we drive. . . . We cannot make all of this good by raising our fees. Much of our private work is done among people to whom the war has brought no increase of income. We have found that, although during the war we have lost many healthy men from our lists, yet a greater proportion of our work is National Health Insurance work than before, since a large number whom we formerly treated as private patients have come on our insured lists. Even if it were not so, it would not be fair to ask our private patients alone to adjust the disturbed balance. The recent rise of 10d. per gallon in the price of petrol has prompted us to voice our grievance now. But there are many other ways in which our working expenses have been increased.

The Berwickshire Panel Committee ask that the hardship may be relieved by an increased capitation fee or mileage grant, or, alternatively, by an additional rebate on petrol taxation.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

The following communication was addressed to the Insurance Commission by the chairman of a Panel Committee on September 24th, 1917:

The Panel Committee for this district meets on Friday, 28th instant, to discuss the new regulation *re* sailors and soldiers discharged and disabled. It will greatly aid us if you will state briefly if my impression of the conditions existing are correct.

The amount paid in on cards for the first half of the year yields the number of 9s. (or less) to be credited to the Central Medical Benefit Fund. No disabled person stamps cards; therefore they are attended for the duration of their disablement for nothing. No discharged disabled sailor or soldier will pay anything to that fund; therefore, so far as the expenditure of 9s. per head of such sailors or soldiers is concerned, it will come out of the Central Medical Benefit Fund to which they have not contributed. A non-panel doctor attending sailors, etc. (as above), would also be paid out of the fund to which no payment has been contributed.

Thus the panel doctors are to be paid out of their earnings from other panel patients and the non-panel doctors are to plunder the scanty funds which should rightly belong to those medical men who have taken up service under the National Health Insurance Commissioners.

I shall be grateful for a reply in time to put before my committee; in the event of none forthcoming we shall conclude that the surmises are correct.

The reply of the Commissioners to this communication was as follows:

September 25th, 1917.

I am directed by the National Health Insurance Commission (England) to acknowledge the receipt of your letter of yesterday's date, and to state that the assumptions set out in your letter are quite contrary to the facts.

The Commissioners have stated in paragraph 43 of Memorandum 229 I.C. that they fully recognize their responsibility for the proper constitution of the central medical pool, and that they have no other purpose in view than to arrive, as accurately as is humanly possible, at the sum of money due to the doctors.

If you will refer to paragraph 28 of that memorandum you will find that the number on which the 9s. per head is calculated is not only the number of stamped contribution cards surrendered by societies in respect of the first half of the year (as stated in your letter), but that this number is supplemented by—

- (1) The number of members aged 70 years and upwards,
- (2) The number of deposit contributors and exempt persons, and
- (3) The number of members of the Navy and Army Fund entitled to medical benefit.

In this last connexion it should be borne in mind that all discharged disabled soldiers who are not members of societies become automatically members of the Navy and Army Fund entitled to medical benefit.

In paragraphs 29 to 31 of the memorandum it is explained that, normally, insured persons who are permanently incapacitated are a set-off in a central pool against excess credits in respect of other classes of insured persons. But in paragraph 39 the special procedure adopted in the 1915 Medical Benefit Settlement is set out, and this course was again adopted at the instance of the medical profession in 1916. It is expressly stated in this paragraph that the total charges for 1915 against societies in respect of medical benefit were calculated on the basis of the charges for 1914, adjustments being made, *inter alia*, in respect of the number of insured persons discharged from the navy and army; these adjustments have the effect of adding the proper credits to the central pool in respect of these discharged persons.

Insurance calculations affecting several millions of insured persons are of necessity complicated, but it should be apparent from the extracts from Memorandum 229 I.C., to which reference has been made, that the original formula, in accordance with

¹ BRITISH MEDICAL JOURNAL, September 22nd, 1917, pp. 395 and 400.

which the central medical pool is calculated, has not been followed blindly, but has, in fact, been the subject of adjustment to meet the conditions created by the return of disabled soldiers and sailors to insurance entitling them to medical benefit, and that it will, in accordance with the general undertaking given by the Commissioners in paragraph 42 of the Memorandum, continue to be adjusted either in that respect or in any other in which revision is called for, in order that the doctors may in fact receive what is due to them.

Nabal and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following notifications are announced by the Admiralty:—Staff Surgeon P. L. Crosbie, F.R.C.S.I., has been promoted to the rank of Fleet Surgeon. Surgeon J. G. Boal, M.B., to the *Skirmisher*. Temporary Surgeons: A. McMillan to the *Dominion*; J. H. M. Sandison, M.B., to Chatham Hospital; J. E. McGibbon to the *Vivid*; H. A. L. Guthrie, W. Forsyth, J. P. Fleming, and K. B. A. Aikman, to the *Penelope*; P. G. S. Davis to the *Shipack*; G. A. Clarke, M.B., to the *Circe*; W. A. Mein to the *Victory*; A. W. North to the *Cormorant*; H. R. Bickerton to the *Liverpool*. To be temporary Surgeon: B. Maclean.

ARMY MEDICAL SERVICE.

Surgeon-General R. W. Ford, K.C.M.G., M.B., D.S.O., and Colonel E. A. Burnside are retained on the active list under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

Temporary Lieut.-Colonel A. S. Woodward, M.D., to be Deputy Assistant Director-General (Temporary).

ROYAL ARMY MEDICAL CORPS.

Temporary Major F. E. Crew, Devon Regiment (T.F.), to be temporary Major.

Temporary Lieutenants to be temporary Captains: L. J. Hood, M.B., W. Lumsden, M.B., F. Jubb, N. Leonard, M.D.

To be temporary Captains: E. C. A. Smith, F. W. Hird, M.B., F. E. Daunt, M.B., G. R. C. Wilson, S. G. MacDonald, S. Jacob, W. Russell, M.C., M.D., H. D. Gasten, W. Bannerman, M.B., S. Oliver, R. E. Walker, M.B., F.R.C.S.E.

Second Lieutenant (temporary Captain) F. E. Reynolds, Yeomanry (T.F.), to be temporary Captain.

The notification in the *London Gazette* of August 8th, 1917, regarding Captain C. W. Milner is cancelled.

To be temporary Lieutenants: E. F. Wills, M.B., F. M. Auld, M.D., H. Goodman, M.B., T. A. Ross, M.D., J. R. McGregor, M.B., L. W. Forsyth, H. W. James, T. J. Little, M.B., R. T. Stoney, E. A. Bernard, W. D. Sammon, O. G. Evans, A. C. Strain, M.D., T. J. Lyons, B. R. Billings, E. S. Ellis, J. R. Liddell, E. L. Clay, M.B., J. C. Drysdale, M.B., C. L. Birmingham, M.D., H. B. Ellison, M.B., H. Galloway, F. W. Emery, M.D., J. Brown, M.B., J. N. G. W. McMorris, N. Garrard, G. G. MacDonald, M.D., G. S. Banks, M.B., J. P. F. Waters, M.B., A. B. S. Todd, M.B., C. M. Pennefather, M.B., S. A. Day, A. Dixon, J. R. Prytherch, M.B., D. A. Tompsett, M.D., J. E. Lucas, W. C. Fowler, M.D., T. R. Evans, M.D., F. O'B. Ellison, M.D., J. M. S. Wood, M.B., J. T. Hill, C. Peacock, M.B., J. H. Fenn, A. S. Wilson, M.B., J. C. Mead, M.B., F.R.C.S., A. S. Griffith, M.D., T. F. Pugh, M.B., A. C. Sharp, M.B., J. Lascelles, M.B., C. J. A. Woodside, M.B., H. Widdas, M.B., W. B. Wilson, J. Brierley, M.D., N. V. Mitton, M.B., A. S. Morley, F.R.C.S., W. R. Bayne, M.B., L. G. Allan, M.B., R. B. Kinloch, M.B., C. P. Strong, M.B., A. E. A. Carver, M.D., A. Mills, M.D., E. Macmillan, M.B., A. Lowndes, R. Montgomery, M.D., I. H. Lipetz, M.B., T. C. D. Cathcart, W. P. Lowe, M.B., C. H. Rippmann, M.D., E. L. Holland, M.D., F.R.C.S.

The name of John Peter Carroll is as now described, and not as in the *London Gazette* of August 25th, 1916, and September 5th, 1917.

To be temporary honorary Lieutenants: J. W. Hawthorne, O. H. Stansfield, T. J. Blacksheer, jun., A. O. Raymond, W. H. Braddock, M.D.

R. Gellatly, M.B., to be temporary honorary Lieutenant whilst serving at the Huddersfield War Hospital.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BARNSELY: BECKETT HOSPITAL.—Second Lady House-Surgeon. Salary, £225 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House-Surgeon. Salary, £175.

BIRMINGHAM: ROMSLEY HILL SANATORIUM.—(1) Medical Superintendent (temporary). (2) Assistant Medical Superintendent. Salary, £500 and £300 per annum respectively.

BLACKPOOL: VICTORIA HOSPITAL.—Lady House-Surgeon. Salary, £250 per annum.

BOLTON INFIRMARY.—Lady Locumtenant to act as Assistant House-Surgeon.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician. (2) House-Surgeon. Salary, £120 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—(1) House-Surgeon, (2) House-Physician. Salary, £300 per annum.

COLMONELL PARISH, Ayrshire.—District Medical Officer. Salary, £70 per annum, and vaccination salary £2.

LEMS PUBLIC DISPENSARY.—Resident Medical Officer. Salary, £200.

LIVERPOOL: BROWNLOW HILL POOR LAW HOSPITAL.—Resident Assistant Medical Officers. Salary, £300 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer (female). Salary, £300 per annum, rising to £350.

NORTHERN SANATORIUM AND CONVALESCENT FEVER HOSPITAL, Winchmore Hill, N.—Temporary Assistant Medical Officer. Remuneration, £7 7s. per week.

NORWICH: JENNY LIND HOSPITAL FOR SICK CHILDREN.—Lady Resident Medical Officer. Salary, £250 per annum.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Lady House-Surgeon. Salary, £200-£250 per annum.

NOTTINGHAM GENERAL HOSPITAL.—House-Surgeon (female). Salary, £250 per annum.

OXFORD EYE HOSPITAL.—Resident House-Surgeon.

POOLE: CORNELIA HOSPITAL.—Medical Officer for Out-patients' Department.

READING: ROYAL BERKSHIRE HOSPITAL.—(1) Senior Resident Medical Officer for Venereal Diseases Department. (2) House-Surgeon. (3) Second House-Surgeon. Salary for (1), £350; (2), £250; and (3), £200 if qualified and £150 if unqualified.

SALISBURY GENERAL HOSPITAL.—House-Surgeon. Salary, £150 per annum.

SHEFFIELD: THE ROYAL INFIRMARY.—Casualty Officer. Salary, £150 per annum.

SOUTHAMPTON: FREE EYE HOSPITAL.—House-Surgeon. Salary, £100 per annum.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician.

SUNDERLAND: ROYAL INFIRMARY.—Lady House-Surgeon. Salary, £200 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House-Surgeon. Salary, £160.

WEST HAM UNION.—Temporary Assistant Medical Officer at the Whipp's Cross Infirmary. Salary, £300 per annum.

WINCHESTER: ROYAL HAMPSHIRE COUNTY HOSPITAL.—Junior Resident Medical Officer. Salary, £150 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer. Salary, £150 per annum.

CERTIFYING FACTORY SURGEON.—The Chief Inspector of Factories announces the following vacant appointment: Barry (Glamorgan).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

HERKLOTS, G. A., M.R.C.S., L.R.C.P., Resident Assistant Medical Officer to the Portsmouth Workhouse and Infirmary.

MITCHELL, T. C., M.R.C.S., L.R.C.P., District Medical Officer of the Ripon Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

SCOTT.—On September 19th, at The Birches, Bourne End, the wife of S. Gilbert Scott, M.R.C.S., L.R.C.P., of 6, Bentinck Street, London, W.—a son.

MARRIAGE.

HILTON JONES—DAVIES BRYAN.—On September 25th, at Engedi C.M. Chapel, Carnarvon, by the Rev. R. D. Rowlands (Anthropos) and the Rev. John Owen, M.A., Captain R. Orthin Hilton Jones, M.C., R.A.M.C., youngest son of Dr. R. T. Jones, J.P., and Mrs. Jones, Harlech, to Olwen, only child of Mr. and Mrs. Edward Davies Bryan, Cairo, Egypt, and Carnarvon.

DIARY FOR THE WEEK.

WEDNESDAY.

HUNTERIAN SOCIETY, 1, Wimpole Street, W.—9 p.m., First Hunterian Lecture, by Lieut.-Colonel Sir Alfred Pearce Gould, K.C.V.O., on Modern Antiseptics.

FRIDAY.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith, W.—8.30 p.m., Presidential address: Medical Men as Portrayed in English Literature.

POST-GRADUATE COURSES AND LECTURES.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
OCTOBER.	
1 Mon.	London: Naval and Military Committee, 2 p.m.
2 Tues.	London: Public Health Poor Law Medical Officers Subcommittee, 2.30 p.m. London: Public Health Medical Officers of Health Subcommittee, 3 p.m. London: Public Health Committee, 3.30 p.m.
3 Wed.	London: Journal Committee, 2.30 p.m. London: Medico-Political Committee.
5 Fri.	London: Central Ethical Committee, 2.30 p.m.
6 Sat.	London: Science Committee, 11 a.m.
9 Tues.	London: Hospitals Committee.
11 Thurs.	London: Organization Committee, 12.30 p.m.
17 Wed.	London: Finance Committee.
18 Thurs.	London: Conference of Representatives of Local Medical and Panel Committees.
24 Wed.	London: Council Meeting.

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INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

COUNTY OF LONDON.

Co-operation with other Panel Committees.—At the meeting of the London Panel Committee on September 25th a motion was brought forward endorsing the policy of forming an independent association of a directly representative character to co-ordinate the work of Local Medical and Panel Committees and nominating a member to attend a conference in this connexion arranged for October 2nd. Dr. H. B. BRACKENBURY moved an amendment that any decision as to joining a new association be postponed until after the conference convened by the British Medical Association on October 18th. He thought that certain possibilities of accommodation and arrangement in this matter had not been fully explored, and a hurried decision might have regrettable consequences. Dr. J. V. C. DENNING seconded and Dr. J. A. ANGUS opposed the amendment. Dr. H. G. COWIE, the chairman of the subcommittee which had brought forward the recommendation, said that he was quite prepared to assure Dr. Brackenbury that nothing very definite would be done and no special lines of policy taken up until there had been an opportunity of considering and discussing all the questions that might arise on the general situation. Dr. BRACKENBURY accepted this assurance and withdrew his amendment, though he was not prepared to vote for the original proposition, which was carried. A further recommendation electing four delegates to the conference of October 18th was agreed to.

Final Settlement for 1916.—The final settlement for 1916 showed that the amount of money available in the drug fund for that year, after deducting the amounts due to chemists and to practitioners under Article 5, left a balance of just over £11,000 available for transfer to the practitioners' fund for inclusion in the final settlement. This sum represents approximately 2d. out of the "floating sixpence," and is regarded as the result of the committee's campaign for the economical use of the drug tariff. It is the first time this transference has been effected, and the amount more than covers the whole of the administrative expenses of the committee to date.

Complaints against Panel Practitioners Absent on Service.—The Committee agreed that a protest be made to the Commissioners against any complaint lodged by an insured person against a practitioner on the panel being heard during the practitioner's absence on military service.

WEST RIDING OF YORKSHIRE.

At a meeting of the Local Medical and Panel Committee, on September 14th, Dr. Fry (Sowerby Bridge) and Dr. Castle (Dartfield) were appointed to represent the committee at the forthcoming conference of representatives of Local Medical and Panel Committees. The draft scheme for the constitution of the Association of Local Medical and Panel Committees was allowed to lie on the table.

INSURANCE COMMITTEES.

COUNTY OF LONDON.

Medical Benefit for Invalided Sailors and Soldiers.—The London Insurance Committee on September 27th considered the provisional regulations issued by the Commissioners by which medical and sanatorium benefits are

extended to all invalided sailors and soldiers whose total income does not exceed £160 per annum. The new arrangements were accepted, but a resolution was passed regretting that the Committee had not been afforded an opportunity for consultation with the Panel Committee upon the modification of agreements, and a deputation was appointed to discuss the subject in its financial bearings with the Commissioners in view of the additional work thrown on the Committee's staff.

With reference to the administration of sickness, disablement, and maternity benefits to members of the Navy and Army Insurance Fund it was decided also to make representations to the Commissioners on the unsatisfactory position arising out of the present dual control, the indefiniteness of the duties and responsibilities of committees, and the inadequacy of the sums payable towards expenses of administration.

Sanatorium Benefit.—The Committee extended until March 31st, 1919, the agreements already entered into with metropolitan borough councils in respect of dispensary services. A deputation which recently interviewed the President of the Local Government Board on the general treatment of tuberculous persons reported that Mr. Hayes Fisher had expressed the opinion that the whole subject of the treatment of tuberculous persons ought to be reviewed, but if this were not possible at the present time, he felt that at any rate the tuberculosis service in London should be investigated. He did not believe, so far as treatment was concerned, in the division of tuberculous persons into two classes, insured and non-insured, and expressed the opinion that the London County Council might very well review its attitude towards the question and do what Liverpool and other county boroughs and counties had done.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following notifications are announced by the Admiralty:—Fleet Surgeon M. J. Smith, M.D., to the *Conqueror*. Staff Surgeons G. E. Hamilton, M.B., to the *Doris*; T. E. Blunt to the *Woodwich*. Temporary Surgeons O. H. Gotch, M.B., H. G. Anderson, and P. M. Keane to the *President*; E. E. Llewellyn to the *Hindustan*; A. H. Moore, M.B., W. F. Harvey, M.B., and J. Hale to Haslar Hospital; H. J. R. Surridge to Chatham Hospital; R. Sta. Heathcote, M.B., to the *Pembroke*, additional, for Chatham Hospital. To be temporary Surgeon: J. Kirker.

ROYAL NAVAL VOLUNTEER RESERVE.

To be Surgeon probationers: A. W. D. McGee, W. G. McCormack.

ARMY MEDICAL SERVICE.

Temporary Colonel F. M. Caird, M.B., F.R.C.S.E. (Lieut.-Colonel R.A.M.C.T.F.), relinquishes his temporary rank on reposting. Temporary Lieut.-Colonels to be temporary Colonels: Sir T. Myles, C.B., Sir W. Arbuthnot Lane, Bt., C.B., J. Swain, C.B., Sir Berkeley G. A. Moynihan, C.B., W. Taylor, A. Carless, Sir Arthur Chance, A. W. Mayo Robson, C.V.O., C.B., Charters J. Symonds, C.B., T. H. Openshaw, C.B., W. Hunter, C.B., W. Aldren Turner, C.B., H. M. Davy, C.B. Temporary honorary Lieut.-Colonels to be temporary honorary Colonels: J. Lynn Thomas, C.B., C.M.G., J. F. O'Carroll.

ROYAL ARMY MEDICAL CORPS.

Temporary Captains W. Barks, M.D., F. W. Lyle and M. A. B. McCarthy, F.R.C.S.E., relinquish their commissions and are granted the honorary rank of Captain.

Officers relinquish their commissions: Temporary Major J. Neilson, M.D. Temporary Captains G. C. Anglin, M.B., J. Brunton, N. Grace, S. G. Vinter, O. H. Brookes, J. S. S. Perkins, A. H. H. Sinclair, W. J. Hicks, W. J. Gow, C. D. Pile, F. C. Drew, A. S. Anderson, A. G. Watson.

Major A. N. Fraser, D.S.O., to be temporary Lieut.-Colonel whilst commanding a training centre. Major (Brevet Lieut.-Colonel) C. R. S. Bradley relinquishes the rank

of temporary Lieut.-Colonel on ceasing to command a training centre.

Temporary Major R. Davies-Colley, F.R.C.S., to be temporary Lieut.-Colonel whilst specially employed.

Major (Brevet Lieut.-Colonel) H. J. Crossley relinquishes the acting rank of Lieut.-Colonel on reposting.

Temporary Captain E. P. G. Causton to be temporary Major.

P. A. Sullivan and H. H. K. Sparrow, late temporary Captains, to be honorary Captains.

Temporary Captain H. de C. Dillon relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.

Officers relinquish their commissions on account of ill health: Temporary Major W. D. Knochner, M.D., temporary Captains R. Maclean, D. A. Birrell, E. J. Tyrrell, M.B., temporary Lieutenant P. E. Howie, M.B., temporary Quartermaster and honorary Lieutenant W. Lorraine.

Temporary Lieutenant J. M. Coplans relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Lieutenant, July 26th (substituted for notification in the *London Gazette* of July 25th).

To be temporary honorary Lieutenants: B. E. Hawke, C. H. Evans.

Temporary Lieutenants to be temporary Captains: G. H. Fraser, J. M. Johnstone, J. J. Moriarty, T. T. B. Watson, T. H. Jackson, J. A. Noble, J. H. Sharpe, W. E. Hodgkins, A. S. Carter, T. Jones, A. H. Davies, R. H. Stoddard, E. P. T. Nuthall, F. P. Wigfield, F. Stevenson, J. McN. Murray, V. E. Somersel, E. C. M. Bailey, R. K. G. Graves, F. Newey, N. N. Hayson, E. G. Howell, C. H. Comerford, R. J. MacKessack, P. Pollard, J. A. Renshaw, A. H. H. Howard, D. G. S. Gartshore, L. C. Blackstone, C. S. U. Rippon, H. D. Stewart, A. Fothergill, H. V. Taylor, J. G. Johnstone, M. C. Stark, C. D. Day, J. W. Steel, R. W. Anisson, K. H. Stokes, W. A. Simpson, J. Warnock, J. E. P. Shera, N. C. Lake, C. F. Graves, A. S. Holden, A. H. Burnett, C. C. Morgan, N. Davidson, A. C. Craighead, T. L. Henderson, A. Kerr, W. C. Fraser, K. McLeay, W. W. Johns, W. S. Angus, H. G. E. Williams, J. B. Whitfield, J. M. Jarvie, F. W. Murray, R. J. Wilson, J. D. Judson, W. R. Wiseman, D. G. C. Tasker, G. E. A. Petrie, H. P. Woods, A. Duguid, R. S. Barker, W. L. Johnson, F. W. Grant, C. Tylor, P. Henderson, G. A. Lyons, T. D. H. Holmes, T. Jackson, H. S. Banks, F. G. Bergin, H. McLean, R. A. Campbell, R. A. MacNeill.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

To be Lieutenants: R. R. Evans, M.B., from Manchester University Contingent O.T.C.; J. Marshall, M.B., P. A. O'Brien, J. J. Robertson, M.B., R. P. Crawford, W. F. Kivlichan, M.B., from Glasgow University Contingent; D. C. Buchanan, M.B., late Lieutenant, Reserve of Officers; J. M. Savage, M.B. (substituted for notification in the *London Gazette* of September 1st). Second Lieutenant S. Riddiough from unattached list T.F.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Surgeon-Major W. M. Taylor, M.D., to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Majors (temporary Lieut.-Colonels) A. Milne-Thomson, M.B., and E. H. Cox, M.B., relinquish their temporary rank on ceasing to command a field ambulance.

Major (temporary Lieut.-Colonel) E. W. Barnes relinquishes the temporary rank on alteration in posting.

Captain (temporary Major) E. Alderson, M.D., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain (acting Lieut.-Colonel) A. C. H. McCullagh, M.B., reverts to the temporary rank of Major on ceasing to command a field ambulance, with the precedence as from January 28th, 1915.

Captain A. H. Horsfall, D.S.O., M.B., to be temporary Major, and is seconded for service overseas.

Captain A. B. Prosser, M.B., relinquishes his commission on account of ill health and is granted the honorary rank of Captain.

Captain A. E. Woodhead, from the unattached list, to be Captain.

Captain C. E. Silvester, M.B., to be Major.

The seconding of Major B. M. H. Rogers, M.D., announced in the *London Gazette* of May 16th, 1916, is cancelled.

Captain E. H. E. Stack, M.D., F.R.C.S., is restored to the establishment.

Captain (temporary Major) W. B. Secretan, M.B., F.R.C.S., relinquishes his temporary rank on alteration in posting and is restored to the establishment.

Captains seconded for duty with a general hospital: H. N. Fletcher, F.R.C.S., F. A. S. Hutchinson, M.D.

Captains J. D. Holmes, M.B., and T. M. Jamieson are restored to the establishment.

Quartermasters and honorary Lieutenants to be honorary Captains: W. Ramsay, C. Mayes, H. H. Ross, H. Dugdale, T. Gibbs, and G. R. Mansfield.

To be Lieutenants: Second Lieutenant C. P. Matthews, from East Surrey Regiment; Sergeants J. Dall and A. Sykes; Corporal R. T. F. Barnett from R.E.

TERRITORIAL FORCE RESERVE.

Major J. S. Swain, R.A.M.C. (T.F.), to be Major.

To be Captains: Captains W. Bain, M.B., F. W. Squair, W. J. Hoyten, M.D., and E. B. C. Mayrs, M.B.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BETHNAL GREEN BOROUGH.—Lady Assistant Medical Officer of Health. Salary, £400 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House-Surgeon. Salary, £175.

BOLINGBROKE HOSPITAL. Wandsworth Common, S.W.—(1) Resident Medical Officer. (2) House-Surgeon. Salary, £200 and £150 per annum respectively.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician. (2) House-Surgeon. Salary, £120 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—(1) House-Surgeon. (2) House-Physician. Salary, £300 per annum.

CHARING CROSS HOSPITAL.—Medical Registrar. Salary, £60 per annum.

COLMONELL PARISH, Ayrshire.—District Medical Officer. Salary, £70 per annum, and vaccination salary £2.

DERBYSHIRE ROYAL INFIRMARY.—Resident Surgical Officer.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Resident Medical Officer.

KENSINGTON BOARD OF GUARDIANS.—Medical Officer for the Institutions in Marles Road. Salary, £650 per annum.

LIVERPOOL INFIRMARY FOR CHILDREN.—Two Resident House-Physicians. Salary, £90 per annum.

NEW HOSPITAL FOR WOMEN, Euston Road, N.W.—Medical Officer at the House of Recovery, New Barnet. Salary, £60 per annum.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Lady House-Surgeon. Salary, £200 to £250 per annum.

OLDHAM ROYAL INFIRMARY.—Third House-Surgeon. Salary, £225 per annum.

OXFORD EYE HOSPITAL.—Resident House-Surgeon.

PORTSMOUTH BOROUGH MENTAL HOSPITAL.—Locumtenent Assistant Medical Officer. Salary, 7 guineas a week.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham.—Senior House-Surgeon. Salary, £175 per week.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—(1) House Physician. (2) Casualty House-Surgeon. (3) House-Surgeon. Salary, £100 per annum.

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, Great Portland Street, W.—Resident House-Surgeon. Salary, £100 per annum.

SHEFFIELD: THE ROYAL INFIRMARY.—Casualty Officer. Salary, £150 per annum.

SOUTHAMPTON: FREE EYE HOSPITAL.—House-Surgeon. Salary, £100 per annum.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House-Physician.

WALSALL AND DISTRICT HOSPITAL.—Assistant House-Surgeon and Anaesthetist. Salary, £175 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House-Surgeon. Salary, £160.

WHITEHAVEN TOWN COUNCIL AND RURAL DISTRICT COUNCIL.—Medical Officer of Health. Salary, £500 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

ALLAWAY, E. E., M.B., Ch.B., Aberd., Certifying Factory Surgeon for the Radcliffe District, co. Nottingham.

EVANS, J. D., L.R.C.P. Edin., M.R.C.S., Certifying Factory Surgeon for the Ebbw Vale District, co. Monmouth.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

MARRIAGES.

ARMOUR—JOHNSTON.—On September 27th, at St. Luke's Church, Liverpool, by the Rev. J. E. Woodward, assisted by the Rev. J. R. Darbyshire, Theodore R. W. Armour, M.B., F.R.C.S. Edin., Captain R.A.M.C. (T.F.), son of the late R. W. Armour, Esq., J.P., of Edinburgh, to Margaret Johnston, daughter of the late S. Higson Johnston, Esq., and granddaughter of the late Dr. Edward Batty.

PARKINSON—LE BROcq.—On September 29th, at St. Michael's Church, Southampton, John Parkinson, M.D., M.R.C.P., Temporary Captain R.A.M.C., to Clara Elvina Le Brocq, late Sister Q.A.I.M.N.S.R.

DEATHS.

DENISON.—September 27th, 1917, in his 51st year, Edmund Denison, L.R.C.S., L.R.C.P., of Brough, East Yorkshire, youngest son of the late Henry Dean Denison, of Leeds. Was interred at Ellough-ton Church, October 1st, 1917.

DIARY FOR THE WEEK.

MONDAY.

MEDICAL SOCIETY OF LONDON. 11, Chandos Street, W.—8 p.m., Annual General Meeting. 8.30 p.m., Sir St. Clair Thomson will deliver his Presidential Address on The Founder and the Foundation of the Medical Society, to be followed by a discussion on War Bread and its Effects on Health, to be introduced by Dr. Robert Hutchison and Dr. E. I. Spriggs.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
OCTOBER.	
9 Tues.	London: Hospitals Committee, 11.30. London: Special Subcommittee of Chairmen's Committee, 2.30.
11 Thurs.	London: Organization Committee, 12.30 p.m.
17 Wed.	London: Finance Committee.
18 Thurs.	London: Conference of Representatives of Local Medical and Panel Committees.
24 Wed.	London: Council Meeting.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, OCTOBER 13TH, 1917.

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British Medical Association.

CURRENT NOTES.

Journal Committee.

THE usual quarterly meeting of the Journal Committee was held on October 3rd, when Major Albert Lucas was re-elected chairman. Dr. Hawthorne and Sir James Barr were elected representatives of the committee on the Finance Committee, of which the Chairman is already a member. The Committee had before it several questions with regard to certain advertisements, upon which it reported to the Council. It adopted without alteration the report of the Subcommittee on the suitability of the JOURNAL and SUPPLEMENT to the present needs of the Association. The findings of this Subcommittee were published in the SUPPLEMENT of June 9th. The opinions expressed were that the present form of the JOURNAL on the whole is suitable, and meets the present needs of the Association, but that members would welcome an increase in the number of contributions on clinical subjects. A recommendation that the column of Current Notes in the SUPPLEMENT should be further developed, and should include reports on the work of committees and sub-committees, it was noted, had already been carried out.

Notification Fees.

The British Medical Association recently brought to the notice of the Local Government Board the fact that certain local authorities were requiring from a medical practitioner a detailed statement of names and addresses of patients, and amount due, before paying for medical certificates under the Notification of Diseases Act. The Medical Secretary pointed out that the demand for such details, already presumably in the possession of the local authority, as a condition of payment, obviously placed on medical practitioners an amount of work out of all proportion to the fee of one shilling. The Local Government Board has replied that the Infectious Disease (Notification) Act of 1889 requires the local authority to pay "for each certificate," and that the Board is not aware of any legal obligation resting upon medical practitioners to send to the authority a statement of fees apart from the certificates themselves. This should dispose of any similar attempt on the part of local authorities to make vexatious stipulations *ultra vires*.

A Ministry of Health.

A meeting of the special subcommittee appointed by the Council to watch this subject in the interests of the medical profession was held on October 9th. It was decided that an invitation should be sent to the Medico-Psychological Association of Great Britain and Ireland to attend the next meeting; and that the Society of Medical Officers of Health and the Society of County Medical Officers should be invited to participate in a conference. The subcommittee had before it the memorandum and bill for the establishment of a Ministry of Health in accordance with the scheme of the National Insurance organizations of the country. It was generally felt that the organizations supporting this bill were in earnest in their intention to press it upon Parliament without delay, and that they had considerable voting power behind them. In view of this it was decided to make a preliminary critical

examination of the text of the bill in order to see how far its various provisions should receive approval or disapproval. Invitations to take part in the discussion upon Major Waldorf Astor's paper on a Ministry of Health, to be read at a meeting on October 31st promoted by the Royal Institute of Public Health, have been accepted on behalf of the Association by Sir Clifford Allbutt, Mr. E. B. Turner, Dr. J. A. Macdonald, Dr. H. B. Brackenbury, and Dr. Cox. The chair will be taken by Mr. H. A. L. Fisher, M.P., Minister of Education. On October 29th a conference of sanitary authorities will be held at the Mansion House, London, to discuss the proposed Ministry of Health and the best means of safeguarding the welfare of motherhood and infancy.

Association Notices.

MEETING OF COUNCIL.

THE next Meeting of Council will be held on Wednesday, October 24th, in the Council Room, 429, Strand, London, W.C.2, at 10 a.m.—By order,

GUY ELLISTON,

Financial Secretary and Business Manager.

October 11th, 1917.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are made by the Admiralty:—Fleet Surgeon P. W. Bassett-Smith, C.B., granted rank of Deputy Surgeon-General. Fleet Surgeons P. T. Nicholls to the *Agamemnon*, R. J. MacKeown, M.B., to the *Edmont*; G. Ley to the *Victory* additional for disposal. Staff Surgeon A. V. J. Richardson, M.B., to the *Fivild* additional for disposal. Surgeons G. J. Carr, M.B., to the *Attentive* additional; K. McFadyen to the *King Alfred*, A. Williams-Walker to the *Brilliant*. Temporary Surgeons B. Plack to the *Loyal Arthur*, J. Kirker and G. H. Ward to the *Victory* for Haslar Hospital, W. A. Mills, M.B., to the *Agamemnon*; J. H. Bennett to the *Dutus*, N. S. Hewitt to the *Marlborough*, F. W. Leech, M.B., to the *Por*; S. L. Higgs and P. E. F. Frossard to the *Fivild* additional for disposal, J. McS. Nichol, M.B., to the *Bellerophon*; P. C. S. Broome to the *Victory* additional for disposal, J. C. Baggs to the *Pembroke* additional for disposal, S. S. Barton to the *Dwarf*, E. J. G. Sargent, B. Thomas, and C. E. Jenkins to the *Fivild* additional for Plymouth Hospital.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationers H. W. Y. Taylor to the *Victory*, and J. G. Reed to the *Victory* for course at Haslar Hospital. To be Surgeon Probationers: C. G. A. Whiteley, F. Whiteley.

ARMY MEDICAL SERVICE.

Colonel C. H. Burtchall, C.B., C.M.G., M.B., to be temporary Surgeon-General.

ROYAL ARMY MEDICAL CORPS.

Major P. S. Lelean, C.B., F.R.C.S., relinquishes the rank of temporary Lieut.-Colonel on reposting.

The undermentioned relinquish the acting rank of Lieut.-Colonel on reposting: Majors H. W. Russell, M.D., G. H. Richard, and E. H. M. Moore.

To be acting Lieut.-Colonels:—Whilst in command of a convalescent depot: Majors T. B. Moriarty, J. H. Campbell, D.S.O., M.B., C. D. Myles, M.B., and R. V. Cowey, D.S.O.; Captains A. C. Elliott, M.B., and A. P. Heaton (Reserve of Officers); and temporary Major G. Dalrymple. Whilst in command of a field ambulance: Major R. G. Meredith, M.B.; Captains C. Seale, M.D., and R. E. U. Newman, M.B. To be temporary Captains: A. E. Watson, M.B., P. G. A. Bott, M.B., F.R.C.S.E., late Captain Field Ambulance, R.A.M.C.; F. A. Cooke, M.D.; temporary Lieutenants A. A. Martin, M.D., R. W. S. Christinas, and H. A. Lane.

To be temporary Lieutenants: T. Drysdale, M.B., H. G. P. Arncliffe, J. F. Allan, M.B., B. H. Peters, G. A. Wyon, M.B., C. J. Middleton, G. V. Allen, M.B., A. B. Waller, M.B., R. C. W. Spence, F. H. Whyte, M.B., G. Blair, M.B., F.R.C.S.E., J. T. Grierson, M.D., W. Fletcher-Barrett, W. M. Thomson, C. W. Alford, M.D., J. A. Stainsby, T. C. Hynd, M.B., F. D. Crew, M.B., H. G. G. Jeffreys, H. D. Wyatt, S. W. Green, W. Lock, G. Price, J. C. Ogilvie, M.B., D. A. Crow, M.B., F. C. Mason, P. McCool, M.B., J. Findlay, M.D., A. M. McCormick.

M.D., G. A. Crowley, M.D., W. P. Bonner, A. J. D. Cameron, M.B., L. E. C. Handson, M.B., W. F. Cornwall, M.B., R. H. Calvert, E. G. Hodgson, M.D., J. B. H. Beatty, S. K. Hutton, M.B., A. R. Moir, M.B., D. H. Trail, M.B., J. M. Johnston, M.B., F.R.C.S.

To be temporary honorary Lieutenants: O. C. Snyder, T. C. Bosh, D. A. Bartley, W. L. Hanson.

Temporary Lieutenants relinquish their commissions: A. T. Thurston, R. Lee, R. Jones, D. Pennan, G. Hoinan, J. Mellor, W. S. Kidd, H. W. Heasman, N. F. Stallard, W. H. Gray, J. R. Kerr, J. Loftus, A. F. Martin, M. Waldron, J. S. F. Weir, J. Findlay, R. S. Doran, C. H. Houghton, H. Nicol, R. H. Jamieson, T. H. Underhill, T. A. Matthews, J. M. Hall, E. J. Fitzgerald, H. G. Ramsbottom, W. E. Bramley-Moore, J. A. Fenton, S. J. Yeates, J. H. C. Thompson, S. J. Moore, W. S. McDougall, J. T. Bailey, W. McM. Millar, H. H. Hiley, E. G. Fernsides, T. G. Maitland, J. F. Richards, G. F. Longbotham, J. B. McCutcheon, J. D. S. Sinclair, W. Garstang, J. R. Frost, E. W. Atkinson, G. R. Hughes, J. R. Micallef, A. Kinsey-Morgan, F. Lilley, C. H. Bryan, A. Macrae, M.B.

C. F. Booth to be temporary Quartermaster with the honorary rank of Lieutenant.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Captain A. G. Hebblethwaite to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Major T. D. Greenlees relinquishes his commission on account of ill health.

Captain (temporary Major) A. Leggat, M.B., to be acting Lieutenant whilst commanding a field ambulance.

Captain R. Burgess, M.C., to be acting Lieutenant whilst commanding a field ambulance.

Captain K. W. Jones, D.S.O., is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Captain J. M. Fortescue-Brickdale is restored to the establishment. Captains L. L. Hanham and J. Murdoch, M.B., F.R.C.S., relinquish their commissions on account of ill health contracted on active service, and are granted the honorary rank of Captain.

Captain J. P. H. Davies, M.B., relinquishes his commission on account of ill health.

Captain G. H. Hart relinquishes his commission.

Captain (temporary Major) A. C. Alport, M.B., relinquishes his temporary rank on alteration in posting.

Captain W. H. P. Hey, M.B., F.R.C.S., is restored to the establishment.

The appointment of G. Joughin, M.B., to a lieutenancy, announced in the *London Gazette* of August 11th, 1915, is cancelled.

Quartermaster and honorary Lieutenant H. E. Sharp relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Lieutenant.

Quartermaster and honorary Lieutenants to be honorary Captains: C. F. Fraser, P. A. Conacher, A. B. Mount.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

ASHTON-UNDER-LYNE: DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House-Surgeon. Salary, £250 per annum.

BETHNAL GREEN BOROUGH.—Lady Assistant Medical Officer of Health. Salary, £400 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House-Surgeon. Salary, £175.

BIRMINGHAM: GENERAL HOSPITAL.—Second Resident Anaesthetist. Salary, £150 per annum.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—(1) Resident Medical Officer. (2) House-Surgeon. Salary, £200 and £150 per annum respectively.

BOLTON INFIRMARY AND DISPENSARY.—Senior House-Surgeon. Salary, £250 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician. (2) House-Surgeon. Salary, £120 per annum.

CARDIFF: KING EDWARD VII HOSPITAL.—Fourth Year Student Dresser. Salary, 52 guineas per annum.

CHESTER ROYAL INFIRMARY.—Honorary Radiographer.

DERBYSHIRE ROYAL INFIRMARY.—Resident Surgical Officer.

EDINBURGH PARISH COUNCIL.—Assistant Medical Officer for Craigholmhouse and Hospital. Salary, £250 per annum.

HAMPSHIRE COUNTY COUNCIL, Winchester.—Assistant County Medical Officer of Health. Salary, £400 per annum.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Resident Medical Officer.

LIVERPOOL INFIRMARY FOR CHILDREN.—Two Resident House-Physicians. Salary, £30 per annum.

NETLEY: WELSH HOSPITAL.—Medical Officer.

NEWCASTLE-UPON-TYNE: ROYAL VICTORIA INFIRMARY.—(1) Four House-Physicians; (2) Five House-Surgeons; (3) Two Accident Room House-Surgeons; (4) One House-Surgeon each to the following departments (a) Aural and Ophthalmic, (b) Gynaecological, (c) Skin and Venereal, (d) Out-patient Dressing.

NORWICH: JENNY LIND HOSPITAL FOR SICK CHILDREN.—Lady Resident Medical Officer. Salary, £250 per annum.

OLDHAM ROYAL INFIRMARY.—Third House-Surgeon. Salary, £225 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham.—Senior House-Surgeon. Salary, £7 7s. per week.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—(1) House-Physician. (2) Casualty House-Surgeon. (3) House-Surgeon. Salary, £100 per annum.

READING: ROYAL BERKSHIRE HOSPITAL.—House-Surgeon. Salary, £250 per annum.

RICHMOND: ROYAL HOSPITAL.—Qualified Refractionist. Honorarium, £25 per annum.

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, Great Portland Street, W.—Resident House-Surgeon. Salary, £100 per annum.

SHEFFIELD: THE ROYAL INFIRMARY.—House-Physician. Salary, £120 per annum.

SHREWSBURY: ROYAL SALOP INFIRMARY.—House-Physician. Salary, £200 per annum.

STOKE-ON-TRENT COUNTY BOROUGH.—Assistant Lady Medical Officer. Salary, £350 per annum.

TRURO: ROYAL CORNWALL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

WALSAIL AND DISTRICT HOSPITAL.—Assistant House-Surgeon and Anaesthetist. Salary, £175 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House-Surgeon. Salary, £160.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £150 per annum.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointments: Gunnislake (Cornwall), Muirkirk (Ayr).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

HOMER, C., L.R.C.P. and S. Edin., L.R.F.P.S. Glasg., District Medical Officer of the Nuneaton and Foleshill Unions.

SALT, A. P., M.R.C.S., L.R.C.P., Medical Officer of the Totnes Union Workhouse.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTHS.

BLAXLAND.—On October 4th, at the Surrey Street Nursing Home, the wife of Jasper Blaxland, M.S. (Captain R.A.M.C.T.F.), of a son.

CLARK.—On October 4th, at 20, South Avenue, Rochester, to the wife of Surgeon A. B. Clark, M.B., B.S. (of H.M.S. *Galatea*), the gift of a daughter.

MARRIAGES.

GRAY—FERGUSON.—On October 5th, at St. Mary Abbot's, Kensington, by the Rev. W. H. Ferguson, M.A., Warden of St. Edward's School, Oxford, uncle of the bride, Adam Gray, M.D. Aberd., Captain R.A.M.C., to Florence Joan, second daughter of R. Bruce Ferguson, M.A., M.D. Cantab., D.P.H., of New Southgate.

HARKER—DYSON.—On Wednesday, September 12th, at the Church of Emmanuel, Southport, by the Rev. F. W. Dwelly, Vicar, assisted by the Rev. W. V. Walmesley, Captain Thomas H. Harker, R.A.M.C., youngest son of Mr. and the late Mrs. John Harker, of Teddington, to Ethel Dean, only child of Mr. and Mrs. Edwin Dyson, of Southport.

HARTLEY—EVANS.—On the 5th inst., at Four Oaks Wesleyan Church, by the father of the bridegroom, Lieutenant G. Cleverdon Hartley, M.C., M.B., Ch.B., R.A.M.C., son of Rev. and Mrs. J. W. Hartley, of Chester Road, Birmingham, to A. Muriel Evans, M.B., Ch.B., daughter of Mr. and Mrs. J. Evans, of Streetly Lane, Sutton Coldfield.

TAYLOR—MOCKLER.—On October 6th, at St. Michael's Church, Blackrock, by the Very Rev. Canon P. Tracey Kilmurray, cousin of the bride, Charles Joseph Gordon Taylor, M.A., M.B. Oxon., Surgeon R.N.V.R., only son of Charles Louis and Marie Taylor, 54, Glenloch Road, Hampstead, N.W.3, to Annette Josephine, second daughter of Thomas and Caroline Mockler, of Ardeen, Blackrock, Cork.

DIARY FOR THE WEEK.

TUESDAY.

MEDICO-LEGAL SOCIETY, 11, Chandos Street, W., 8.30 p.m.—(1) Presidential Address. (2) Discussion on the Criminal Law Amendment Bill, 1917, to be introduced by Dr. F. J. Smith.

THURSDAY.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W., 4 p.m.—Harveian Oration by Dr. Robert Saundby.

FRIDAY.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos Street, W., 5.30 p.m.—Presidential Address by Sir David Bruce, C.B., F.R.S., on "Tetanus: Analysis of 1,000 Cases," with discussion.

ROYAL SOCIETY OF MEDICINE.—Section of the History of Medicine: Wednesday, 4.30 p.m., Exhibition of Books, Pictures, etc., 5 p.m., Notes by Sir William Osler, Professor F. C. Van Leeuwen (Amsterdam), Dr. Henry Barnes, and Lieut.-Colonel D'Arcy Power on Boerhaave. Section of Dermatology: Thursday, 4.30 p.m., Cases. Section of Electro-Therapeutics: Friday, 8.30 p.m., Address by the President, Dr. Harrison Orton.

DIARY OF THE ASSOCIATION.

Date. Meetings to be Held.

OCTOBER.

- 17 Wed. London: Finance Committee, 2.30.
- 18 Thurs. London: Conference of Representatives of Local Medical and Panel Committees, 10 a.m., at Connaught Rooms, Great Queen Street, W.C.2, Dr. J. A. Macdonald, LL.D., in the chair.
- 24 Wed. London: Council Meeting, 10 a.m.

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British Medical Association.

CURRENT NOTES.

Grievances of Territorial Medical Officers.

IN reply to inquiries as to the probable date of issue of the further report of the Departmental Committee on anomalies of promotion, etc., among officers of the Territorial Force and new armies, the British Medical Association has been informed that the further report is now being considered by the military authorities, but cannot be issued to the public until a decision with regard to the recommendations has been arrived at. It is hoped that the report will be issued shortly.

Non-Medical Officers of the R.A.M.C.(T.F.).

The attention of the Naval and Military Committee has been drawn to instances of laymen holding commissions in the R.A.M.C.(T.F.). The Committee realizes that this is a matter which must be taken up carefully in due course; but, in view of the fact that Regulations 73 and 74 of the Territorial Force Regulations, which were in operation prior to the present war, permit other than registered medical practitioners to hold commissions in sanitary companies, it has decided to postpone further consideration of the matter until a more suitable opportunity occurs.

Indian Practitioners and Combatant Service.

As reported under this heading in the SUPPLEMENT of June 30th, 1917, the Association made representations to the Secretary of State for India, urging that qualified medical practitioners in India deemed to be enrolled under the Defence Force Act, who are willing to accept, if offered, a commission in the R.A.M.C. or I.M.S., shall be exempted from combatant training or service. The Association has been informed, in reply, that orders have been issued in India to the military authorities that no qualified medical practitioners are to be required to do drills, pending consideration of the question of using their services in a professional capacity in connexion with the Indian Defence Force, and that as soon as a decision has been reached on this question a further communication will be addressed to the Association.

DISCHARGED DISABLED SOLDIERS AND SAILORS.

ON October 8th a letter was addressed by the Medical Secretary of the British Medical Association to the Insurance Commissioners with regard to the new regulations for the remuneration of practitioners treating discharged disabled soldiers and sailors, asking that a consecutive analysis of the actuarial situation might be furnished for the information of the conference of Local Medical and Panel Committees on October 18th. In compliance with this request the Insurance Commissioners forwarded a copy of the following memorandum on the sources, and the method of calculation, of the remuneration of doctors undertaking the general practitioner treatment of discharged disabled sailors and soldiers:

MEMORANDUM BY THE INSURANCE COMMISSION.

1. The return to civil life of sailors and soldiers discharged on account of injuries or ill health, mostly insured and nearly all entitled to general practitioner treatment under arrangements made by the Insurance Commissioners, has made it necessary to modify in certain respects the methods previously adopted for calculating the payment of doctors undertaking the treatment of insured persons.

2. In the first place, many of these discharged men will be unfit to enter employment, at all events for some time, and the bringing into reckoning of an abnormal number of persons who (through unemployment) do not surrender contribution cards and yet are entitled to treatment, has obviously introduced a disturbing element into the normal calculation of the number of units on which the amount of the central pool for the remuneration of doctors is based.

3. Secondly, it is believed by the medical profession generally that those persons will, as a class, require more attendances per head than would an equal number of persons drawn at random from the main insured population, and, therefore, that a sum per head per annum which might suffice for the latter class would be inadequate in respect of the former.

4. In order to meet the second of these points (so far as experience may show it to be sound) the Government have, through the recently issued Regulations concerning treatment of discharged disabled sailors and soldiers, instituted a new system of remuneration (based upon payment per attendance) to apply in the case of all sailors and soldiers discharged after a certain date, and in the case of those discharged before that date for whom the doctor desires to be paid under this new system. The doctors' bills under this system will be paid out of a special fund—the "Invalided Soldiers Medical Benefit Fund"—to which will be transferred from the General Medical Benefit Fund the full sum of 9s. per annum in respect of every discharged man who is being treated under the payment per attendance system, and in respect of whose treatment the General Medical Benefit Fund is liable. If the aggregate of these sums proves insufficient to meet the liability, the Exchequer has undertaken to make good the deficiency.

5. Concerning the first disturbing element, mentioned in paragraph 2 above, the modifications in the calculations thereby rendered necessary have naturally been in fact duly made in the ordinary course. It appears, however, that many members of the profession who had not perceived the need for such alterations until the issue of the new Regulations bearing directly on the second point have now become apprehensive as to whether any allowance, and, if any, a sufficient allowance, has been made for the purpose. To dispose of these apprehensions it is thought well that a statement should be issued, showing in a way as little technical as possible what are the sources from which the money is drawn that will be paid for the treatment of discharged disabled sailors and soldiers, and how the sums made available are arrived at.

6. The class of persons in question falls mainly* into three groups, namely:

(i) A very large number who either were members of approved societies before joining the forces and remain members or join approved societies on discharge;

(ii) A considerable number who, although insured, are not and cannot become members of approved

* There are also deposit contributors and exempt persons who are an insignificant minority.

societies, and the cost of whose treatment is therefore borne by the Navy and Army Insurance Fund, constituted under Section 46 (3) of the Insurance Act, 1911; and

(iii) A small number who are not insured under the Insurance Acts at the time of their discharge, but become entitled, if their income is under £160 a year, to medical benefit as though they were insured (though not to any cash benefits), in pursuance of the provisions of Section 4 of the National Insurance, Part I, Amendment Act, 1917.

7. The payment in respect of the first of these three groups is derived from the funds of approved societies and the Exchequer, in the same way as is that of insured persons generally who are members of approved societies. As the doubts and misunderstandings which this document is intended to remove have been experienced chiefly, it would appear, in reference to this class, it is convenient to dispose first of the other two groups, namely, the members of the Navy and Army Fund and the uninsured.

8. The Navy and Army Fund provides the ordinary benefits of the National Insurance Acts for all discharged sailors and soldiers whose state of health is such that they cannot obtain admission to an approved society. The sum of 9s. per head per annum for the medical benefit for these men, therefore, is paid from that fund to the General Medical Benefit Fund. The cost of the medical benefit of uninsured persons, whose income from all sources is less than £160 a year, will likewise be paid for out of the Navy and Army Fund. There is no difficulty in calculating the numbers concerned under either of these heads, as it is directly ascertainable from definite information in the hands of the Insurance Commissioners. It follows that, in respect of these two classes of persons, there can be no possibility of the money to pay for their treatment being taken from funds which ought to go to the doctors in respect of the treatment of other insured persons. Moreover, the solvency of the Navy and Army Insurance Fund being guaranteed from the Exchequer, there can be no doubt as to the sum of 9s. per head being available to pay for the treatment of all persons for whose treatment that fund is liable.

9. It is, therefore, in respect of those only who are members of approved societies that there are intricacies in the calculation which might afford a possible basis for doubt in the doctors' minds on the two points of whether the right amounts are being paid into the central pool for treatment of discharged men, and of whether the payments out of that pool in respect of such treatment operate in reduction of money that doctors ought to receive for treatment of other insured persons. To make clear how the calculation for this group is made, it is necessary to recapitulate the substance of the explanations given in Memo. 229/I.C. as to the normal method of calculation of the central pool for the payment for medical benefit—that is, the General Medical Benefit Fund.

10. As pointed out in Memorandum 229/I.C., the amount to be paid in respect of treatment of insured persons is one that cannot, for the following reasons, be calculated by direct observation of the number of persons entitled to treatment and the periods during which each is so entitled. The amount payable annually is 9s. per head of those entitled to treatment for the whole year. It is not 9s. for every person who is entitled to treatment for a period short of a year; still less could it be 9s. for every person who is at a particular moment entitled to treatment. For a man who is in benefit for (say) 1/6th of the calendar year, 1/6th of 9s. is payable. The number paid on is, in effect, an aggregate of "insured person days"—that is, days during which doctors were under liability to treat insured persons, or (to use the convenient term customary in dealing with all kinds of insurance) "at risk" in respect of insured persons. The unit is one day's risk in respect of one person, and for this there is to be paid into the national pool 1/365th part of 9s. This sum could only be calculated directly if it were possible to follow the movements of every insured person from day to day, and thus ascertain by direct observation for how many days each person separately had been entitled to treatment throughout the year.

11. It will be seen that the difficulties which make direct calculation impossible are of a kind which cannot be removed by any act of mere administration; they are inherent in the particular system of remuneration which the profession in 1911-12 made a condition of acceptance of service under the Insurance Acts, and can only be removed, therefore, if and when a simpler system can be agreed upon in some revision of the general bargain. In the meantime it is necessary to make use of relevant

known facts, becoming available in the ordinary course of insurance administration, from which by a process of reliable inference the true number required can be ascertained.

12. After careful investigation by the Government Actuary, it was found that the most suitable basis for the purpose is the number of stamped contribution cards surrendered by members of approved societies in respect of the first half of the year. In considering what alteration, if any, of this number is necessary in order to arrive at the number which is to be ascertained—namely, the number of persons respecting whom the doctors were in the aggregate at risk for a full year—the following points of divergence in opposite directions have to be taken into account.

13. On the one hand, the card number obviously errs by *excess* in comparison with the true number to be ascertained, because it treats as persons for whom doctors are at risk throughout the whole year very many persons for whom they are really at risk for part only of the year, for example, a person who was in insurance at the beginning of the year and dies in the course of it, or a person who only comes into insurance at some late date in the first six months. If a card be surrendered, as above stated, the man who dies (say) in January, after being employed for even one week only, and the man who does not enter into insurance until (say) June 1st, are treated in the card number calculation exactly as though medical benefit had to be provided for each of them for a *whole* year. In respect of these, therefore, to take the card number uncorrected would result in an overcharge against societies and an overpayment of doctors.

14. On the other hand, the card number errs by *defect*, since it takes no account of persons who do not come into insurance until the second part of the year, or of persons who (from permanent or temporary incapacity or other cause) are unemployed throughout the first half of the year. For these persons no cards are surrendered in respect of the first half-year, and as regards these, therefore, the adoption of the uncorrected card figure would lead to an underpayment of doctors, too small a charge being made on societies.

15. These two sets of differences, one set *plus* and one set *minus*, have to be balanced against one another to arrive at the true figure. The weighing of the relevant considerations as to the number of persons included in each of the balancing elements of the calculation is essentially an actuarial problem, and the Government Actuary has come to the conclusion that these two sets of differences are, *under ordinary working conditions*, practically equal—that is to say, that *under those conditions* the number ascertained by counting the stamped contribution cards surrendered in respect of the first half of the year may fairly be taken as equivalent to the number or units in respect of which the full annual charge should be made on approved societies and paid into the General Medical Benefit Fund.

16. The general conclusion stated in the preceding paragraph relates, as has been pointed out, to ordinary conditions. The validity of it in application to any particular year plainly depends, in part, on the fact that no one of the fluctuating items in the calculation (for example, the number of permanently disabled persons, or the number of persons who for any temporary cause surrender no card in respect of the first half of the year, but become entitled to benefit in the second half) can increase or diminish substantially, in reference to the others, without the existence of such a change becoming known to those responsible for the calculation, who will thus be enabled to make whatever correction may be necessary.

17. Now the war conditions have, in fact, as was pointed out in Paragraph 42 of Memorandum 229/I.C., introduced such disturbances. In the first place, war enlistments obviously have the effect that a much larger proportion than in ordinary times of those who surrender cards in respect of the first half-year (and who therefore under the normal conditions would be taken as units on which 9s. each must be paid) pass out of insurance in the course of the year, and thus the doctors are no longer at risk concerning them in the remainder of the year. Hence an overcharge on the societies and an overpayment of the doctors would result if no correction were made.

18. It was further pointed out in Paragraph 42 of Memorandum 229/I.C. that it must be expected that discharges of invalided men from the army would, in time, constitute a disturbing element in the opposite direction, for which an allowance should and would be made when the occasion arose. Discharged invalided men are, with few exceptions, persons in respect of whom the doctors become at risk from the time of their discharge; but contribution

cards will not come into the reckoning, except in respect of those members of approved societies who enter into employment in the first half of the year. Thus the effect of discharges is to increase abnormally the number of those for whom, though the doctors are at risk, no card is surrendered. Some addition must therefore be made to the card number in order that it may represent the true number; otherwise there would be an undercharge on societies and underpayment of doctors.

19. Thus, taking the net effect of war conditions on the calculation, at a time when both enlistments and discharges are operating as substantial disturbing causes, there must be both deductions in respect to the former and additions in respect of the latter. The calculation of these deductions and additions has been duly carried out (on the basis of particulars of enlistments and discharges furnished confidentially by the Admiralty and War Office to the Government Actuary) with the object of securing that the number of units on which the payments into the central pool are based shall be as closely as possible equivalent to the true number to be ascertained; and the Government Actuary has expressed his professional opinion that this object has in fact been attained, at all events within so close a measure of accuracy that the margin of error cannot in fact have exceeded a quite minute fraction, representing certainly less than a penny in the £ of the sum paid into the pool, and this (he says), if it has occurred at all, is practically as likely to have been too much as too little.

National Health Insurance Commission,
October, 1917.

Association Notices.

MEETING OF COUNCIL.

The next Meeting of Council will be held on Wednesday, October 24th, in the Council Room, 429, Strand, London, W.C.2, at 10 a.m.—By order,

GUY ELLISTON,

Financial Secretary and Business Manager.

October 11th, 1917.

ELECTION OF MEMBERS OF COUNCIL, 1918-19, BY BRANCHES OUTSIDE THE UNITED KINGDOM.

NOTICE is hereby given that, in accordance with By-law 49, nominations of candidates for election as members of Council by the grouped Branches outside the United Kingdom for a period not exceeding three years, as prescribed by By-law 52 (2), must be forwarded in writing so as to reach me on or before February 15th, 1918.

Nomination papers may be signed by not less than three members of any Branch comprised in the group, and must be in the form prescribed below or in a form to the like effect.

Election will be by voting papers, which will contain the names of all duly nominated candidates, and will be issued from the head office in London to each member of each Branch comprised in the group.

By order of the Council,

GUY ELLISTON,

Financial Secretary and Business Manager.

429, Strand, London, W.C. 2.

October 13th, 1917.

NOMINATION FORM.

BY NOT LESS THAN THREE MEMBERS OF THE GROUPED BRANCHES.

We, the undersigned, hereby nominate

.....
of.....

[Full name and address must be given]

as a candidate for election by the (here state the names of the Branches in the group) Branches as a member of the Council of the Association.

Names and addresses of nominators, and Branches to which they belong.

Signature and Address.

Branch.

Date..... 19..

This form should be forwarded to the Financial Secretary and Business Manager, 429, Strand, London, W.C. 2, so as to be received not later than February 15th, 1918.

Not later than the second week in June, 1918, a notice of the result of the election will be published in the JOURNAL.

GROUPING OF BRANCHES NOT IN THE UNITED KINGDOM FOR REPRESENTATION ON COUNCIL OF ASSOCIATION, 1918-19.

	No. to be elected.
South Australian, Tasmanian, Victorian, Western Australian	1
New South Wales, Queensland	1
New Zealand	1
Barbados, Bermuda, British Guiana, Grenada, Halifax (Nova Scotia), Jamaica, Leeward Islands, Montreal, St. John (New Brunswick), Saskatchewan, Toronto, Trinidad and Tobago	1
Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Punjab, South Indian and Madras	1
Hong Kong and China, Malaya	1
Border (South Africa), Cape of Good Hope (Eastern), Cape of Good Hope (Western), East Africa and Uganda, Egyptian, Gibraltar, Griqualand West, Malta and Mediterranean, Natal Coastal, Natal Inland, Orange Free State, Pretoria, Rhodesian, Witwatersrand	1

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—Staff Surgeons W. N. Blatchford to the *Penelope*, C. V. Griffiths to the *Weymouth*, R. Connell, M.B., to the *Penbrooke*, D. D. Turner to the *Fivid*, additional, Surgeon W. J. Stitt granted the acting rank of Staff Surgeon. Temporary Surgeons R. C. J. Meyer to the *Fivid*, H. Parry-Price to the *Lion*, P. Macarthur, M.B., to Haslar Hospital; W. E. Powell to Haslar Hospital; G. E. Burton, E. J. Tongue, and W. F. W. Betenson to the *Fivid*, additional. To be temporary Surgeon: S. Hutchinson.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationers: E. N. D. Reppey and H. N. Witham to the *Victory*, for course at Haslar Hospital; H. R. Bulmer to the *Broke*, D. B. Wilson to the *Atridi*. To be Surgeon Probationers: H. J. Horne, A. W. Hart, R. G. Anthony, F. H. Molliere, J. S. E. Manley, R. C. Williams, A. J. Constance, G. G. Graham.

ARMY MEDICAL SERVICE.

Surgeon-General R. H. S. Sawyer, C.M.G., M.B., F.R.C.S.I., is retained on the active list under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary. Lieut. Colonel H. Gilbert Barling, C.B., F.R.C.S., R.A.M.C.T.F., to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut. Colonel T. E. Sandall, M.B., Lincolnshire Regiment, T.F., to be temporary Lieut. Colonel.

The following relinquish the acting rank of Lieut. Colonel on reposting: Captain E. D. Caddell, M.C., M.B., Major B. H. V. Dunbar, D.S.O., M.D.

Temporary honorary Lieut. Colonel L. C. Parkes, M.D. (Major R.A.M.C.T.F.), relinquishes his temporary honorary rank.

Temporary Major A. A. Mussen, M.D. (Major R.A.M.C.(T.F.)), relinquishes his temporary commission on reposting.

Temporary honorary Major E. W. White, M.B., to be temporary honorary Lieut. Colonel.

The notifications regarding temporary Captains S. J. Staples, M.B., and A. F. Millar in the *London Gazette* of August 4th and September 7th respectively are cancelled.

Temporary Major (Captain R.A.M.C.T.F.) F. A. Hepworth, F.R.C.S., relinquishes his temporary rank on reposting.

Temporary Captain F. F. Middleweek to be temporary Major whilst commanding troops on a hospital ship.

Temporary Captain T. R. Davey relinquishes his commission on account of ill health.

H. H. Scott, late temporary Captain, is granted the honorary rank of Captain.

Temporary Captains W. Allan, M.B., and F. G. Martin relinquish their commissions, and are granted the honorary rank of Captain.

Temporary Captains relinquish their commissions: J. L. Gregory, M.B., A. Frew, M.D., H. S. Tait, M.D., I. Wilson, M.D., T. Campbell, M.B., G. A. Simmons, M.D., W. P. MacKasey, M.D., R. B. Lilly, J. A. Longley, M.B., F.R.C.S., K. B. Aikman, J. A. Cowan, M.B., C. Dickson, M.D., R. K. Sutherland, M.B., O. M. de Jong, M.B., N. A. Scott, J. S. Stewart, M.C., M.B., R. D. O'Leary, M.B., J. G. Greenfield, M.B., J. H. Ritchie, M.C., M.B., C. L. Dold, M.B., H. J. Burke, M.C., S. A. O. Mackenzie, F.R.C.S.E., G. W. Kendall, M.D., H. M. Hart-Smith, M.B., J. D. Jones, J. T. Mackenzie, M.C., G. L. K. Finlay, M.B., E. O'Connor, M.B., A. W. Bourne, M.B., F.R.C.S., R. M. Alcorn, J. C. T. Teggart, M.B., L. C. E. Murphy, H. Wales, M.B., C. R. Hoskin, M.D., F. J. Hathaway, M.D., W. J. D. Robertson, M.B., G. N. B. Sebastian, R. P. Graham, D. M. Gill, M.B., D. McKarl, M.D., J. Macarthur, M.B., T. Milling, M.B., G. F. Gill, T. H. James, J. Crowley, D. St. C. Creighton, M.D., R. J. Kee, M.B., J. W. Darling, M.C., M.B., P. M. Turnbull, M.C., M.B., D. McD. Wilson, M.C., M.B., T. Redmayne, M.B., F.R.C.S., R. H. L. O'Callaghan, M.D.

B. Lyons, M.B., to be temporary Captain.

Temporary Lieutenant Anthony S. Rose is dismissed the service by sentence of a general court-martial, September 28th.

Temporary Lieutenants to be temporary Captains: J. W. Wraye, M.C., A. S. Cook, M.B., A. J. M. Crighton, M.B., G. H. Sinclair, M.B., G. D. Compston, R. C. Allen, H. E. Scoones, C. T. I. Clarke, M.B., W. R. Wylie, M.B., R. W. Howell, M.B., F.R.C.S., W. I. Adams, F.R.C.S.I., C. B. Hutchinson, J. A. H. White, M.D., C. I. Stockley, M.B., R. H. Maingot, J. M. Adams, M.B., H. North, E. Williams, J. Maguire, H. Somerville, L. Kilroe, M.D., A. J. P. Nowell, M.B., H. Granger, W. L. Johnston, M.B., R. Cunliffe, M.B., J. E. Spence, M.B., J. W. Miller, M.B., E. D. Richardson, J. H. McAllum, S. C. Pritchard, M.D., H. Case, J. Forrest, M.B., S. F. Lusk, M.B., J. W. Elliott, H. Angel, M.B., R. T. Dobson, M.B., P. W. Leathart, M.B., P. Levick, M.B., A. H. Clarke, W. P. Pinder, F. L. Wood, M.D., L. Lindsay, A. J. Pirie, M.B., R. M. Fenn, M.B., P. Bowes, M.D., G. H. Wilkinson, T. Taylor, M.B., A. H. Wade, G. C. Belcher, M.B., J. H. Wilks, M.B., E. B. Hill, M.B., G. Hargreaves, M.D., W. Gibson, M.D.,

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CONFERENCE OF REPRESENTATIVES OF LOCAL MEDICAL AND PANEL COMMITTEES.

London, Thursday, October 18th, 1917.

A CONFERENCE of representatives of Local Medical and Panel Committees, called by the British Medical Association, was held at the Connaught Rooms, Great Queen Street, London, on October 18th. Dr. J. A. MACDONALD, LL.D., Chairman of Council of the Association, presided, and 137 representatives attended, representing 150 insurance areas, together with eight members of the Insurance Acts Committee who were not representatives. Of the 127 insurance areas in England, 114 were represented at the Conference, of the 56 Scottish insurance areas 25 were represented, and of the 17 Welsh areas 11 were represented.

Representatives appointed to attend the Conference by the following areas were unable to be present: Rutlandshire, Cumberland, Chester, Derby, South Shields, Kirkcaldy, and Monmouthshire. Eight Scottish areas and one English area which were not represented at the Conference wrote expressing their continued confidence in the Insurance Acts Committee as the central negotiating body.

DIRECT REPRESENTATIVES ON INSURANCE ACTS COMMITTEE.

After the standing orders had been adopted and the return of representatives received, the CHAIRMAN moved the reception of the scheme for nomination by grouped Local Medical and Panel Committees of fifteen practitioners for election to the Insurance Acts Committee.

Captain E. R. FOTHERGILL (Committee) drew attention to two motions on the agenda, one expressing renewed confidence in that Committee, the other expressing the reverse, and he urged that before the Conference proceeded to form and instruct the Committee for the future it was necessary to decide whether the Committee was to continue to be the central negotiating body or whether some totally new system was to be set up. If the Conference was going to be so foolish as to decide against the Association and its Committee, it was obvious that this matter of nominations would be considerably modified. Therefore, it seemed the most sensible course to proceed at once to discuss the motion of confidence.

The CHAIRMAN said that the motions with regard to the nominations were purely formal, and were brought forward at this stage to regulate the procedure for the day.

Furthermore, the work of the Committee in the past must be discussed before they came to the motions which decided what they should do in the future.

Dr. H. B. BRACKENBURY (Chairman of the Committee) then moved the approval of the scheme for nominations, and said that he understood that in Scotland there was some desire that the two members should be allocated, one to one part of the country and the second to another.

Dr. J. R. DREVER (Glasgow) said that the recently constituted Insurance Acts Subcommittee for Scotland had unanimously agreed to allocate one to industrial and the other to rural areas.

Dr. T. CUMING ASKIN (Suffolk, E.) objected to the election taking place on that day. The hurry of the Conference furnished not quite a suitable atmosphere for an important election. The proper course to adopt would be, after nominations by each Panel Committee, to have a postal vote, which would afford a means of deciding the merits of the candidates. He moved an amendment to that effect, which was seconded by Major D. F. TODD (Durham).

Dr. E. H. M. STANCOMB (Southampton) strongly supported this amendment. The increased representation would not indicate the real feelings of Panel Committees because these latter had had no fair opportunity of expressing their views as to the claims of the various candidates. The present scheme did not provide them with the direct representation which they had a right to expect and for which they asked at the last Conference.

The CHAIRMAN said that he was in sympathy with the suggestion contained in the amendment, but if it were adopted on the present occasion it would take some time to carry out, and meanwhile the Committee had to continue its work.

Dr. JAMES HOLMES (Bury) said that at that Conference they knew one another fairly well, and he thought that such a comparatively small body as theirs was in a better position to make nominations than the general body of committees all over the country.

Dr. BRACKENBURY said that theoretically he was on the side of the amendment. The more democratic they could be the better for all concerned; but this was purely a matter of convenience. Certain Panel Committees had already sent representatives to that Conference with

instructions to vote definitely for certain individuals, and if those instructions had to go by the board, other resolutions must go by the board as well. The proposal was, perhaps, a good one for future years, but its present effect would be considerable delay.

The amendment was lost, and the scheme of nomination approved.

THE WORK OF THE INSURANCE ACTS COMMITTEE.

The report as to action taken by the Committee since last Conference having been received,

Captain FOTHERGILL again urged that the motion of confidence should have precedence of the motion approving the report. The clear issue was raised by the former motion as to whether the Association or any new body was to voice the views of panel practitioners in the future. The question arose in 1914, before the war; it was discussed, and the Association was preferred, and had acted each year since. It was necessary, before approving in detail what the Association had done in the past or instructing it for the future, to settle this outstanding question. If it were decided that the Association was not to continue to receive their confidence, it would be for the Chairman to determine in what way the resolutions on the agenda could be dealt with subsequently.

Dr. Fothergill's amendment giving effect to his proposal, which was seconded by Dr. E. BURRELL (Brighton), was lost.

Dr. BRACKENBURY then proceeded to discuss the report of the Committee. He wished particularly to draw attention to the statement in the report—

In every case where direct instructions were given by the Conference that certain action was to be taken, such instructions have been carried out.

One portion of the report was incomplete—namely, that which dealt with munition areas. At the last Conference a good deal of discussion arose on this, and it was felt by some representatives of such areas that certain action ought to be taken. The difficulties were pointed out, and these difficulties had increased because, with every week, munition areas had become more numerous. After full consideration and consultation with the Commissioners, some eight or nine typical munition areas were selected, and the case was put to them and they were asked whether they desired the Committee to proceed with the matter or not. All replied except one, and only one of those replying wished them to go on with the matter at all. But as soon as the figures for 1916 were completed, certain munition areas felt that those figures disclosed such a case for them that the matter might well be reopened, and accordingly the Committee met certain representatives, received certain propositions, and promised to go to the Commissioners on their behalf. The Committee went to the Commissioners and put the case of these munition areas as strongly as possible. But no satisfactory solution was arrived at, and for these reasons: first, almost the whole country was at the present time a munition area, and it was recognized by everybody that the only possible solution of the matter was to take away money from those areas which were not munition areas and give it to those which were, and this created great difficulties; in the second place, many counties were not homogeneous munition areas, and the question would arise in a composite area such as a large county how the money should be distributed. Further, in munition areas there were practitioners whose whole panel might consist of domestic servants. How could one distinguish equitably between the man who was affected by the munition question and the man who, though living in the same area, was not? Candidly, there was no satisfactory solution of the problem. The speaker went on to give some figures relating to the diminution of money (and consequently of insured persons) in the year 1916 as compared with 1914. Taking the country as a whole, there had been a diminution of 12.2 per cent. in the number of insured persons, and correspondingly in the amount of money available, due to enlistments into the army being greater than the new influx of munition workers, and this diminution of 12.2 per cent. included, of course, munition areas. Taking seven typical munition areas, the alteration, as compared with the -12.2 per cent. for the country as a whole, was respectively -5.4, -6.4, -9, -6.5, -3.9, -7.9, -9.3 per cent. Therefore, the present

system was not entirely inequitable so far as munition areas were concerned, because the diminution was distinctly less in these typical areas than for the whole kingdom. One could take areas, such as Newcastle-on-Tyne, which did seem to present a case for special treatment; but this must be at the expense of other areas. It was not considered desirable by the Committee to pursue the matter further.

Turning to the question of discharged disabled sailors and soldiers, Dr. Brackenbury said that there had to be considered first of all the question of the policy underlying the agreement, then the character of the agreement itself, and finally the procedure by which the agreement was arrived at. The Insurance Acts Committee was not responsible for the policy underlying this agreement. It might or might not be a right policy, but it was laid down in the minutes of the last Conference, and the Committee considered itself bound by those resolutions. Personally he thought that anything which led to a complication of machinery was a mistake; anything which led to a departure from the capitation system was a mistake; but that was not the question before them. The Conference last year was so unanimous in its determination that it would not hear what he had to say on the subject. It was not open to anybody that day to condemn the Committee for not adopting a different policy. The resolutions of last year stood, representing, perhaps not the best policy, but at all events a definite, intelligible, and logical policy, which had to be followed by the Insurance Acts Committee. Those resolutions involved the separation of the treatment of discharged disabled sailors and soldiers from that of the ordinary classes of insured persons. They involved the setting aside of additional money for that separated class of men, the possibility of men not on the panel attending discharged men, and the arrangement of a scheme of payment to obtain these ends between the British Medical Association and the Commissioners and Treasury. Any criticisms based on the plea that the Committee ought to have acted on a different policy were not germane to the present discussion. With regard to the agreement itself, its essential part was this: that whatever the practitioner was paid for the ordinary insured person, adequate or inadequate, if he attended that insured person five times in the course of the year—as he probably did—and had to attend the discharged disabled man twenty times in the course of the year, he would receive four times for the discharged disabled man what he got for the ordinary insured person. He submitted that this was a most satisfactory state of affairs, given the policy underlying it. The deduction was made from the central pool of such amounts as would have gone into it—no others—in respect to these discharged disabled men; with reference to discharged disabled men for whom no contributions would have gone into the pool, proper allotments and calculations had been made so as to ensure the same amount going into the central pool for them, and if the central pool did not meet these bills in full, the extra amount of money would be given by the Treasury in order that they might be met. He submitted that this was a very satisfactory agreement if the policy of separating these men as a class were to be adopted at all. It was still possible to repudiate it. It was no advantage to the Insurance Commissioners or to the Treasury that that agreement should hold. The authorities were prepared to go back and let these men stand on the ordinary 9s. basis as they did before. But what in that case became of the panel practitioners' contention that these men would require more attendance than the average insured person, and that for such attendance they ought to receive more payment?

With regard to the procedure by which the regulations had been brought to the notice of Panel Committees, let him give just the salient dates. On June 8th a circular was sent out to every insurance practitioner telling him that negotiations on this point were in progress so that he might keep his eyes open for any pronouncement to be made sooner or later as to their nature. In the SUPPLEMENT of June 16th the detailed proposals which were emerging from those negotiations were published, and amongst other things it was stated that it had not been found possible to give data for definite calculations on a capitation basis and that therefore they would have to accept the attendance basis if they were to calculate any proper amount of extra remuneration for the additional attendance required. On

July 7th, through the same channel, the documents and results obtained up to that time were published and a detailed account was given of the stages of action which the Committee had taken. On August 4th the detailed result of the negotiations was sent to every Panel Committee. On September 1st a further letter was sent out stating that the regulations now being issued did, in the Committee's opinion, embody the agreement which had been entered into. Up to September 1st no objection from any Panel Committee or from any individual panel practitioner had been received at the offices of the Insurance Acts Committee. What was the Committee to do? Up to September 1st the only communications on the subject—and those in fair abundance—were from men and from committees who expressed no objection to the proposals for the new regulations but asked when they were to come in force. Imperfect as the procedure might have been, undesirable as it might be in the future to accept non-complaint as meaning absence of complaint, what could the Committee do other than that which they had done? Not the slightest indication was forthcoming that anybody objected. He thought that if a broad view of the matter were taken, it would be accepted that the Committee had done very well and had acted quite properly throughout. (Loud applause.)

Dr. J. RATCLIFF-GAYLARD (Committee) moved that, having heard the statement of the Chairman of the Insurance Acts Committee, the Conference proceed immediately to the resolution of confidence.

Dr. H. F. OLDHAM (Lancashire) seconded. Before criticizing the Committee let them decide who was to manage their affairs in the future.

Dr. H. J. CARDALE (London) objected that, if a fair decision were to be come to, not only Dr. Brackenbury must be heard, but also those who had any criticisms to make on the report.

Dr. Ratcliff-Gaylard's motion was lost, and the report was considered *seriatim*.

Representation at Future Conferences.

Dr. H. G. DAIN (Birmingham) moved that the representation of Panel Committees at future Conferences should bear relation to the number of insured persons in the area as well as the number of practitioners on the panel, and that in any formal division both these factors should be taken into account by giving the votes a proportionate value. At present one area might have twice or three times as many insured persons as another area and yet only have the same number of panel practitioners. Every vote at that Conference should have a value representing the insurance interest in the given area.

Dr. T. WOOD LOCKET (Wiltshire) expressed strong opposition to the proposal. It would mean that the proportional interest of rural practitioners would be swamped at once. He did not think that his colleagues in town areas realized the value of the rural vote. They would discover it if there were such a thing as a fight with the Government on any issue. In an urban area it might be possible for the Government to develop an alternative scheme of its own, but that would not be possible in the rural areas.

The rider was lost by a large majority.

Dr. J. GOFF (Lanark) had an amendment objecting to the procedure by which the fifteen direct representatives on the Insurance Acts Committee were only nominated by the Local Medical and Panel Committees, and claiming that they should be elected by the unvetted vote of those committees.

The CHAIRMAN said that this was purely a technical matter. There could never be any question of the veto of the nominations. The procedure of nomination as distinct from direct election was made in order to meet the by-laws of the British Medical Association.

The amendment was lost.

Rural Practitioners.

Dr. R. A. WELSH (Northumberland) moved:

That in future in any negotiations that may take place between the Insurance Acts Committee and the Insurance Commissioners (including the Ministry of Public Health), it is to be clearly understood that the status of the rural and agricultural practices shall be considered as distinct from the industrial or city practices, and that measures shall be devised and taken whereby on every official committee rural practices shall be proportionately and duly represented by rural practitioners.

He said that the rural practitioner was constantly outvoted at the Panel Committees, and that the standing representation which rural practitioners had now on the Insurance Acts Committee and its Subcommittee was only secured after much protest and was still inadequate. The Scottish Insurance Acts Subcommittee recognized the principle, and Wales had its rural representative. It was regrettable that no rural doctors would be on the Advisory Committee.

Dr. T. CUMING ASKIN (Suffolk, E.) said that a Rural Subcommittee of the Insurance Acts Committee was elected last year, but unfortunately the rest of them did not know, except from the references in the Interim Report on Insurance Practice, what that subcommittee had done.

Dr. BRACKENBURY believed that the Conference would desire to see an increased representation of rural practitioners on bodies which had to deal with matters affecting rural practice. But the amendment in its present form was impracticable; it was a question of machinery. He could assure the Conference that the Rural Subcommittee, so far as it went at present, was working very well; it had been asked to consider every rural interest which had come before the Insurance Acts Committee, and although it was not yet possible to set out the results, the work was bearing fruit, and would be very obvious by the time the Conference met again. With reference to the absence of a rural practitioner from the Advisory Committee, the Insurance Acts Committee felt that the action taken by Sir Edwin Cornwall was ill advised. Sir Edwin had himself asked them to select one member to represent the rural practices, but when the Committee was appointed neither of the two names they had suggested appeared upon it. The Insurance Acts Committee did not intend to sit down under that.

Dr. R. HARDING (Radnor and Brecon) and Dr. G. J. B. CANDLER-HOPE (Yorkshire, N.R.) gave illustrations of the special difficulties of rural practitioners, and the latter asked whether the Rural Subcommittee was ever consulted before the terms of the new regulations were accepted. One item of the regulations exclusively affected the rural practitioners—that relating to mileage.

Dr. BRACKENBURY said that the Rural Subcommittee was not specially consulted on the matter of discharged disabled sailors and soldiers.

Dr. WELSH, the mover of the amendment, said that the complaint was that rural practice differed so entirely from industrial and city practice that men engaged in the latter did not appreciate the position of the rural practitioner.

The amendment was carried, and the CHAIRMAN said it would become the duty of the Insurance Acts Committee to consider how it could be carried into effect.

DISCHARGED DISABLED SAILORS AND SOLDIERS.

Dr. G. G. GENGE (Croydon) moved:

That this Conference regrets that the Insurance Acts Committee consented to payment for disabled service men being made at a dividend rate, which is a dissatisfying and irritating method of payment. The Conference instructs the Insurance Acts Committee that panel practitioners will not readily accept this method of payment for any further extensions of insurance work.

He said that in agreeing to payment at a dividend rate for attendance on disabled service men the Insurance Acts Committee lost a golden opportunity of breaking with the evil precedents that bound them and striking a blow for freedom. The members of the Committee appeared to be ever anxious to find favour with the Commissioners, instead of always busying themselves in seeking a favourable ground for fighting. Where could be found a more favourable ground for fighting than this? Their worst enemies could not contend that half a crown a visit was an unreasonable fee for attendance on disabled men, yet this Committee, without consulting the Panel Committees, agreed to the unhappy dividend rate of payment by attendance. Granted that it might be 95 per cent., granted an Exchequer grant, these only strengthened the argument that they should have stood out for a fair and square and definite scale of payment, or, better still, for an increased capitation fee, threatening that if this were not granted for this special class the whole question of inadequate pay would at once be raised and fought to an issue. As for the Commissioners, it must be assumed that they were honest men; yet, even so, they should have taken care to be above suspicion. If he tried to do business

with his greengrocer after their manner, sending him a memorandum instead of payment in full, he would not only lose his greengrocer's respect, but would fail to get his vegetables. Instead of sitting in sackcloth and ashes in the face of all this, the inimitable Chairman of the Insurance Acts Committee came forth boasting of his prowess and success, and telling them, "It remains for practitioners to give adequate attendance to these disabled men and to keep such accounts as will enable them to be paid," etc. In truth, much more remained.

Dr. BRACKENBURY replied that the Insurance Acts Committee was not quite so simple as Croydon seemed to think. He admitted the impeachment that they did not enter into negotiations with the Commissioners with the main object of finding opportunity for a fight. They went presenting a case on behalf of panel practitioners and committees which they believed would bear investigation on its merits. On this particular matter the main thing they had to put forward was this—that whatever the insurance rate of payment might be, they would receive amounts proportional to the extra attention these men would require. Whatever the unit was, they would receive so many units for the extra attendance given. The unit was a calculable insurance fee which came so near to what was set out in the schedule that they actually did put it in so many words to the Commissioners and the Treasury, that instead of this insurance fee which calculated out accurately at a fraction over 2s. 4½d., they should take the schedule figure; but the Treasury did not see their way to depart from the logical position, and therefore the fee unit had to be accepted.

Dr. H. F. OLDHAM (Lancashire) said that it appeared to him that the question at issue was whether they should accept a dividend payment which would be free of criticism, or the full payment of 2s. 6d., in which case the Commissioners or some one else must put up a pricing bureau as had been done in the case of the chemists.

The amendment by Croydon was lost by a considerable majority.

Dr. E. BURCHELL (Brighton) then moved:

That this Conference of Local Medical and Panel Committees is of opinion that the regulations (benefits of invalided seamen and soldiers) and the documents relating thereto do not fully carry out the agreement made by the Commission with the Insurance Acts Committee—

- (a) That all accounts rendered shall be paid in full;
- (b) That the income limit of £160 shall apply to all disabled men;
- (c) That the disabled man shall be fully advised that his choice of doctor is in no way limited to a panel doctor.

That it be an instruction to the Insurance Acts Committee forthwith to approach the Insurance (Joint) Commission with a view to obtaining a satisfactory amendment of regulations and documents in the above direction.

With regard to (a), Dr. Burchell said that as the Conference appeared to be satisfied with the rate of payment upon the basis set out in the regulations, it would be waste of time to discuss the matter. The amendment in this particular was based upon a letter which Captain Fothergill had written to the press, and if Captain Fothergill, whose intelligence was keener than the average, had been misled by what had taken place before the Commissioners, it was evidence that the whole proceedings were nebulous. As to (b), his own Panel Committee was uncertain as to whether the point was definitely set out in the regulations; and as to (c), he had with him a card which told the insured person that he might choose any doctor he liked, and that the names of all doctors available would be found on a list at the post office; but the post office list did not contain the name of a single non panel doctor.

Captain FOTHERGILL said that the regulations distinctly stated that the pool for discharged disabled men should be formed by money from the Navy and Army Fund and also from the Medical Benefit Fund. But the discharged disabled man who was not in employment stamped no cards; no contribution was made to the pool on his behalf, and consequently, as there was no money paid into that fund, the chances of getting out any equitable fee for his attendance were diminished. In the case of the temporary residents, 50 per cent. of the doctors had never sent in their accounts, but in this new instance the practitioners would have to send in their accounts, and if they were going to be paid out of this pool, he had not the slightest hesitation in saying that they would not receive 50 per

cent. of their money. It was of no use for the Commissioners to say that the Treasury would pay the account in full. If one went to a court of law on any matter it availed nothing to argue about words which were used in the House of Commons when the legislation was passing; the only thing that mattered was the wording of the Act itself. The pool would only yield 50 per cent., and what real guarantee was there that the Treasury would pay the balance?

Dr. E. H. M. STANCOMBE (Southampton) said it was hopeless for most of them to master the memorandums of the Commissioners and all the complexities of the situation (to which the agenda that day bore witness), and they had no power whatever to instruct the Insurance Acts Committee on a definite course of action. Dr. Brackenbury had said that the Committee had carried out the instructions of the Conference with regard to the new regulations, but he (the speaker) was certain that if the previous Conference did approve of getting more money for this increased work, it did not understand itself to be committed to an arrangement which was governed by a dividend rate, by inflation, and by one thing and another. They might take it that instead of the 2s. 6d. a visit which the *Times* and the *Daily Chronicle* had hailed as the fee paid by a benevolent Government to the poor practitioners, it would be reduced under the first diminution to 2s. 4½d., then to 1s. 9d., and at the present value of money practitioners would be asked to attend patients at what would be virtually less than one shilling a visit. They certainly were not prepared for such a *dénouement* as that when they gave the vote on the previous occasion, and they could not accept Dr. Brackenbury's very naive apology. The speaker admitted that, within its limitations, the Insurance Acts Committee had done the best it could. His contention was not to impute blame to the Committee but to blame panel practitioners because they had not properly organized their own opinions nor had the will to see that those opinions were carried out.

Dr. G. AINSLIE JOHNSTON (Westmorland) said that Captain Fothergill was in error in declaring that the full 9s. was not paid into the general medical pool for every discharged disabled sailor and soldier who was a member of an approved society and was unemployed. It was wrong to say that no payment was made in such cases.

Dr. A. FOSTER (Leicester) asked whether the Insurance Acts Committee, in its interviews with the Commissioners on this matter, entered into any understanding that the sums to be paid at the end of every quarter were to be paid on account. The clerk of his own Insurance Committee had stated that he had instructions to pay 90 per cent. at the end of the quarter.

Dr. JAMES GARDNER (Burnley) said that many of them went away from the last Conference under the impression that the Government intended to found a special fund to pay for the attendance upon these sailors and soldiers, and that the money should not be paid out of the ordinary insurance fund. It appeared to him quite easy for the Treasury, when it discovered what an exceptional amount had to be paid, to call the attention of the Panel Committees to any doctors' accounts which were considered to be excessive. Thus a wide loophole existed whereby their remuneration might be considerably reduced.

Dr. H. W. JACKSON (Middlesbrough) said that they were instructed that prescriptions for sailors and soldiers were not to be marked in any special way, from which it would be gathered that these would be paid for out of the drug fund.

Dr. T. CAMPBELL (Lancashire) thought that the dividend rate was simply put in for the protection of the Commissioners against the possible abuse of the attendance method of payment by reason of unnecessary visits.

Dr. F. COKE (Kent) asked if the meeting was open for a discussion of the working of the central pool.

Dr. BRACKENBURY pointed out that the amendment declared that the regulations did not carry out in certain respects the agreement entered into with the Insurance Acts Committee. But he could assure them that Captain Fothergill was mistaken in this particular instance. The regulations as published were not understandable by the ordinary man without an undue amount of attention to the wording. He doubted whether it was worth the while of any one of them to try and follow the exact wording of the regulations, but those

whose duty it was to make up their minds as to whether or not the agreement into which they entered was in fact embodied in these regulations had come to the conclusion that it was so embodied. It required expert knowledge to make a decision on this point, but as far as the Insurance Acts Committee on the one hand and the Commissioners on the other were concerned, they were convinced that the regulations as issued did in fact carry out *in toto* the agreement, proper or improper, which was entered into by the Insurance Acts Committee. As to the points which, the amendment alleged, were not embodied, the assurance from the Treasury that it would meet the extra payment could not be embodied in regulations issued by the Insurance Commissioners, but the whole Treasury guarantee, he was told, was implicit in these regulations, and, of course, they had the definite letter stating that the Treasury would be responsible for that extra payment. He agreed that there was an ambiguity about the words "paid in full"; the question was at what rate they would be paid in full (laughter). But a given unit of payment would be made for every attendance, however many. That was the interpretation; that was what they asked for when they said that the accounts should be paid in full. If a practitioner attended a disabled soldier every day in the year, the principle held good all the 365 times. There would be no discounting at the end of the year because there was not enough money in the pool to meet the accounts in full. The insurance rates, whatever they were, would be the rates at which their attendances would be paid for, and would be paid in full. The £160 limit for uninsured persons was embodied in the regulations; and as to the third point in the amendment, the name of every non-panel practitioner who wished to take part in the attendance on discharged disabled men had to be put upon a public list which could be seen by any insured person. Therefore, so far as this amendment was concerned, the agreement on the points laid down was embodied in the regulations.

Dr. T. WOOD LOCKET (Wiltshire) pointed out that if some later amendments pressing for an increased and inclusive capitation grant were carried, it would mean the repeal of their acceptance of these regulations.

Dr. GENGE (Croydon) could not see that it was certain they would be paid in full, for the Insurance Commissioners had no power to bind the Treasury.

Dr. G. J. B. CANDLER-HOPE (Yorkshire, N.R.) said that his Committee, while not objecting to the non-panel practitioner coming in, protested against the terms on which he entered being less fettering than those on which the panel practitioner had to work.

Dr. W. J. YOUNG (Cambridgeshire) thought it only right to point out that there were some present who did not share either in the criticism or the abuse which had been levelled at the Insurance Acts Committee.

Dr. BURCHELL, replying to the discussion, assured Dr. Brackenbury that a considerable proportion of them, when they came to read the exact wording, shared Captain Fothergill's misapprehension. He asked how much of the general drug fund was to be paid for out of this special fund into which the sums of 9s. were to be paid.

Dr. BRACKENBURY replied that the drug question was fully discussed between the Commissioners and the Committee. The question was, having made up the pool, how much was to be taken out in payment for medicines? They had to a certain extent to trust the Commissioners in this matter, and the Commissioners had put it into their regulations that not more than a certain fraction and not less than another certain fraction should be taken out of that fund to pay for drugs. Those maximum and minimum amounts were so arranged that they should in no case exceed the ordinary proportions by which the drugs as compared with the medical attendance came out of the Medical Benefit Fund.

The Brighton amendment was lost.

Dr. G. J. B. CANDLER-HOPE (Yorkshire, N.R.) had a further amendment protesting against the terms of payment as inadequate, particularly from the point of view of rural practitioners. He believed there was little chance of the Treasury grant. The Treasury would do its best to get outside this agreement. The injustice to the rural practitioners was specially severe in view of the question of mileage. With the cost of mileage at 6d. a mile, they were asked under this new scheme to go up to three miles without any payment at all.

Dr. HARDING TOMKINS (Essex) urged that the position of rural practitioners required a good deal more consideration than it had had in the past. He referred the Insurance Acts Committee to the army payment for mileage, whereby the practitioner was treated much better than under the proposed schedule. Army Form O 1667 laid down the following payments:

	Day.	Night.
Under one mile	2s. 6d. ...	3s. 6d.
Over one mile and under two miles ...	3s. 0d. ...	4s. 6d.
Over two miles and under three ...	4s. 0d. ...	6s. 6d.
Over three miles and under four ...	5s. 0d. ...	8s. 6d.
Over four miles and under five ...	6s. 0d. ...	10s. 6d.

For greater distances the payment was 1s. for each mile over five in the daytime, and 2s. at night.

An amendment from Essex asking the Committee to take steps to have the arrangements for mileage improved under the scheme was accepted by Dr. Brackenbury and carried; part of Dr. Candler-Hope's amendment went with this, and the other part was withdrawn.

Dr. J. P. WILLIAMS-FREEMAN (Hampshire), in moving another strong amendment refusing acceptance of the mileage allowance, said that he was appalled to hear Dr. Brackenbury admit that the whole of these regulations were settled without consultation with the Rural Practitioners Subcommittee. It must be remembered that the proportion of visits to attendances was much higher in the country than in town, for an invalided man could often walk a short way to the surgery, but not the long distance necessary in country districts. In sparsely populated areas the doctor could not easily work in two or three visits in one round like the urban practitioner. The time of the rural practitioner was as valuable as that of his colleagues in the towns, yet far more of it was consumed in travelling, and the mileage allowance was simply to cover the out-of-pocket expenses. The time spent in transit might be spent in earning fees. The time, therefore, must be paid for in any equitable system of mileage. He found that his actual expenses on motoring his rounds amounted to £253 a year. He travelled 11,000 miles a year, or 30 miles a day, and this worked out at an expense of 5½d. a mile. Petrol was now 3s. 9d. a gallon, an increase of 2s. 3d., and that represented another 1½d. added to the mileage cost. Even if the cost were taken at 6d. a mile, a journey of 5½ miles out and 5½ miles back meant an expenditure of 5s. 6d. On a three years' average he found that he had to travel 4.54 miles for each visit; the cost of this was 2s. 3d., and his time also had to be reckoned in assessing the proper fee. He wondered why the three mile limit was ever adopted by the Insurance Commissioners; it had not been the custom of the profession. The other Government departments had treated the matter more fairly. He reminded the Conference of Sir Rickman Godlee's recent statement that "medical men ought not to be expected to give their services as a charity to persons for whom the State is responsible."

Dr. T. CUMING ASKIN said that his area of East Suffolk strongly disapproved of the mileage fee.

Dr. BRACKENBURY agreed that the mileage allowance for rural practitioners was on a bad basis, and that there must be a radical change in the mileage system. But the Hampshire amendment stated virtually that the regulations could not be accepted without that alteration. Suppose it were carried, and they failed to secure the acquiescence of the Treasury, what would be the position? (A voice: "Fight.") A fight on any question of this kind was a big thing, and the answer to a fight might be the suspension of medical benefit by the Government. That would mean, in the first place, the stoppage of all their insurance incomes as from a given date, and in the next place, it would mean giving the approved societies a free hand to exploit the profession as they chose. It might be wiser to give the negotiating body a little freer hand. Let that body go to the Government with any proposition which could be discussed on its merits, but the members of the Conference should be sure of their stand.

Dr. WILLIAMS-FREEMAN said that he did not wish to commit the profession to a fight on a point which purely affected rural practitioners, but there could hardly be a stronger case of injustice than this. He agreed to delete the words "cannot accept" and "demand," and in its revised form the amendment was carried as follows:

That we strongly object to the mileage allowance offered for attendance on discharged disabled sailors and soldiers, and

press for the same scale of payment as that allowed for attendance on serving soldiers.

Dr. H. J. CARDALE (London) moved an amendment expressing disapproval of the new regulations, and continuing:

And that the Insurance Commissioners be approached in order to obtain the immediate withdrawal of these regulations, and, further, that the panel practitioners be advised to agree to the reinstatement of discharged sailors and soldiers on their lists, and to render all necessary medical attention and treatment at the present capitation rate, pending negotiations with the Insurance Commissioners for a more equitable scheme.

The mover said that they had been told that the arrangements were subject to reconsideration at any time. He hoped to persuade the meeting that there was no time like the present. Criticizing first the method of introduction, he said that his Committee could not admit that the resolutions of the last Conference gave any justification for the action taken by the Insurance Acts Committee. The principle of payment by attendance was introduced, and this was quite contrary to the express desire of the profession. Every Panel Committee in the kingdom, save perhaps two, had accepted the capitation system. The only resolution of the last Conference which bore on that point was one which stated that payment for medical attendance should be on a scale agreed upon between the British Medical Association and the Government. It laid no burden on the Committee's shoulders, and it was most unfortunate that there had been no consultation of the Panel Committees throughout the country prior to the issue of these regulations. A statement made on June 8th that negotiations were in progress was not very enlightening. It was not until August 4th that Panel Committees were communicated with. All panel men did not belong to the British Medical Association, and to those who were not members an announcement made in the *JOURNAL* would not appeal. He understood also that the regulations themselves when completed were accepted on behalf of Panel and Local Medical Committees by the Chairman of the Insurance Acts Committee. That interfered vitally with the statutory rights of Panel Committees, and it gave a colourable excuse to the Commissioners for neglecting to bring Panel Committees into consultation. With regard to the regulations themselves, these were open to criticism on the ground of complicated finance and on the ground of the principle of payment for attendance. Little had yet been said as to the duties thrown upon panel practitioners of checking these attendances. Dr. Cardale also referred to the evident intention of the authorities to make use of the out-patient departments for the treatment of discharged disabled sailors and soldiers. The Army Council had issued to the competent authority instructions in which it was stated that, as a general rule, the cases to which the intended treatment would apply would be those suitable for the out-patient departments of hospitals; not a word was said about the general practitioner. He submitted his amendment with some confidence as a reassertion of the statutory privileges of Panel Committees which had been infringed by the Commissioners.

Dr. BRACKENBURY reiterated that on June 16th certain announcements were made in the *BRITISH MEDICAL JOURNAL*, among them the statement that the only way to secure extra payment seemed inevitably to be by an arrangement on the attendance basis. Yet from June 16th to September 1st the London Panel Committee never said a word. To spring this amendment upon the Conference in this emphatic way was not quite fair towards those who were negotiating these matters. In such affairs they could not have it both ways; they could not have collective bargaining and separate bargaining going on together. If they trusted their central negotiating body to negotiate for them, they could not at the same time claim for themselves complete freedom to negotiate. But if any individual practitioner now said that he did not accept these new regulations as legally binding because he had not been given the requisite notice for altering his agreement, the Commissioners could certainly say to him, "We give you notice from this day that on such a date in the future these regulations will come into force, and if you do not accept them you are at liberty to resign from the panel." The individual insurance practitioner could stand upon his individual legal rights if he cared to do so, but not so the Panel Committee. As a profession,

however, they wanted to be as united as they could, and having found the body which best united them, they should be prepared, whether as individual practitioners or as Panel Committees, to waive their rights as separate negotiators. With regard to Dr. Cardale's last point, it was possible, under the arrangements being made by the Ministry of Pensions, that some of these discharged disabled sailors and soldiers would be diverted into the out-patient departments of hospitals. He did not think it would be a good thing for the nation, but if anybody was to be blamed it must be the staffs of the hospitals.

Dr. LAURISTON SHAW (London) regretted that the mover of the amendment had laid such stress upon the method of introducing the regulations. It was true that there might be a good deal of difference of opinion as to whether the most skilful method was adopted so as to ensure the willing acquiescence of all panel practitioners. Whatever might have been done and done amiss, they were united in a genuine appreciation of the work the Insurance Acts Committee had had to do. He thought the diplomatic method would be for them now to go to the Commissioners and say that, having looked into the regulations, which they were assured were experimental and temporary, they found that some of their views of a year ago were not as well formed as they should have been, and that there were many reasons why it should be possible to reopen this question and come to some more equitable arrangement, both in town and country, which would secure as good treatment for the discharged disabled sailor and soldier as the present system. The present arrangements contravened the principle for which he had been fighting for many years in the British Medical Association. He was convinced that the capitation system was the ideal one, because it established the principle that every patient had a general practitioner to look after him. But what happened under a scheme of payment for attendance? It became a question of economy; general practitioner treatment began to be subordinated to some other form of treatment which was held to be cheaper, and institutional treatment offered itself. But if these people were drafted to the institutions the general practitioner did not obtain his fees. He believed that 90 per cent. of the panel practitioners were in favour of the capitation basis, and it seemed reasonable that they should go back to the Government and say that in their mature judgement the attendance system could not be satisfactory, and that the present situation supported an unanswerable claim to an increased capitation grant all round.

Dr. E. H. M. STANCOMB (Southampton) supported the amendment, which, he said, provided for an interim period during which the men could obtain all necessary attention and treatment while negotiations were still proceeding. He and those for whom he spoke wanted some little delay in order that they might mature the opinion of the Conference in favour of, perhaps, a uniform capitation fee of 10s.

Dr. J. RATCLIFF-GAYLARD (Committee) said that twelve months ago the profession approached the Commissioners on this subject, and pointed out the additional work which would be necessary, and the desirability of something better than the existing capitation payment. The Commissioners said, in reply, that they did not admit that the additional work would be so great as the profession thought. The profession insisted on a basis of payment by attendance as the only way of testing this question, and the Insurance Acts Committee, in their negotiations, carried out the mandate of the Conference. Now, almost immediately the new regulations were in force the profession declared that they had made a bad bargain and that they would rather go back to capitation payment. If they made a bad bargain they did it with their eyes open. Let them have the courage to stand by it, and see after twelve or eighteen months how it was working out. They could reserve to themselves the right then to go back to the capitation basis if desired.

Captain E. R. FOTHERGILL (Committee) said that not a single suggestion had been put forward for a more equitable scheme. The profession should be willing to produce data honestly prepared on which they could base the claim for just payment. If they said that they would take the capitation basis at 9s. or 10s., a new economic basis might arise, and where would their successors be? They were going to tie their successors to payment of

which they knew nothing, for services of which they knew less. If they accepted a low rate, work badly paid meant work badly done.

Dr. P. V. FRY (Yorkshire, W.R.) thought the scheme ought to be allowed to go forward as an experiment for twelve months.

Dr. CARDALE, replying to the discussion, said he rather gathered that Dr. Brackenbury considered the carrying out of collective bargaining by the Insurance Acts Committee to be a justification for taking away the statutory rights of the Panel Committees. That was a contention they could not accept at all. (Dr. BRACKENBURY: "Hear, hear"). When Dr. Ratcliff-Gaylard said that they had made a bargain, he did not know whether he referred to the Insurance Acts Committee; he could hardly have referred to Panel Committees.

Dr. RATCLIFF-GAYLARD: The profession as a whole.

Dr. CARDALE: Including the Panel Committees?

Dr. RATCLIFF-GAYLARD: The profession as a whole.

Continuing, Dr. CARDALE said that Captain Fothergill had urged that there was no better scheme. But the whole question of a scheme was to be discussed later. He did not propose to touch upon the subject of the data that could be produced from the records of practitioners, but it was obvious that with the alteration in the value of money they had data on that ground alone to justify them in asking for a very large increase in remuneration.

Twenty-one members supported Dr. Cardale in asking for a division, which resulted as follows:

For the London amendment	...	...	20
Against	...	...	133
Not voting	...	...	1

(The figures represent constituencies; several members voting in the majority represented two or more constituencies. Members of the Insurance Acts Committee, unless also representatives, did not vote.)

The further consideration of the Committee's report was then postponed to admit of motions on the co-ordination and central representation of Panel Committees.

CENTRAL REPRESENTATION.

Dr. BRACKENBURY moved:

That this Conference renews its expression of confidence in the Insurance Acts Committee of the British Medical Association as the central negotiating body of the Local Medical and Panel Committees of the country, and authorizes the Insurance Acts Committee to continue to represent their views, in consultation with the Local Medical and Panel Committees, in all negotiations with the Commissioners and other Government and public bodies.

He pointed out that there were certain disabilities about central negotiations in any case, whoever was the central negotiating body. The Insurance Acts Committee as a central negotiating body was in process of evolution, and they had not yet said the final word about its composition and procedure in relation to Panel Committees and their representation. At one time there was no direct representation of Panel Committees upon the Insurance Acts Committee. For the last two years there had been six direct representatives, and last year it was agreed that there should be fifteen—that is, half the elected members; half the members who were not *ex officio*. Only that day they were electing those fifteen members, and yet before the thing which was asked for last year had had a chance of proving itself at all, they were asked to "scrap" the whole body. Next year they might have some improved and enlarged representation of Panel Committees on the Insurance Acts Committee. Let them proceed along those lines of evolution, step by step, so that they could carry the united profession with them, and let them not give up a good thing when they had it, even though it might not be perfect at the best. The Committee contained twenty-nine members, out of its total of thirty-three, who were actually on the panel and doing insurance work, though it was true that some of those were elected by panel practitioners in spite of the fact that they were not actually panel practitioners themselves. It was true that it was a committee of the British Medical Association, but there were advantages in belonging to a body which had a comparatively large amount of money at its disposal and an established organization. Any other body would have to establish its position and also to pay its way. Was it worth while

putting up another body whose financial basis was at present unknown? In asking for renewed confidence in the Insurance Acts Committee, he threw out the suggestion that that Conference might appoint a certain number of representatives, chosen impartially and from all sections, to meet a similar number appointed by the Council of the British Medical Association, and these combined representatives might report to the Representative Body on the one hand, and to the next Panel Conference on the other, as to changes in the composition and procedure of the Insurance Acts Committee which were desirable and possible.

Dr. H. G. COWIE (London) moved as an amendment:

That this Conference, whilst expressing its full appreciation of the efforts of the Insurance Acts Committee on behalf of the profession in the past, is of opinion that the time has now arrived when negotiations affecting the panel service should be carried on with direct representatives of the Panel Committees.

The London Panel Committee, he said, brought forward this amendment in no spirit of hostility to the Insurance Acts Committee, but submitted it with the object of clearing the ground in an attempt to settle the question which had been seriously agitating the panel profession for some time. The question was, How were the special interests of panel practitioners to be best safeguarded and represented? The Insurance Acts Committee was the special machinery ready set up for that object, but they suggested that it was defective, and from its constitution could not efficiently serve the purpose in view. The fact that it had required considerable readjustment from time to time was presumptive evidence that something was wrong, and the further fact that this readjustment was always in one direction gave a strong clue as to the nature of the defective principle in its constitution. That it had seriously broken down in respect to the new regulations must be frankly accepted as a fact ("No"). No apologies would alter that fact (laughter). While recognizing that there had been no lack of good intentions, yet they safely affirmed that with the very best intentions in the world no machinery could be effective unless it was built on a sound principle, and that principle in this case was direct representation. No committee of an outside organization could ever be directly representative of panel interests, for the moment it became completely and directly representative and responsible only to its panel constituents it ceased to be a committee of the organization. The acceptance of the principle of direct representation was all that was asked for in this amendment, but he might be permitted to indicate the lines on which such a principle would work. A Panel Committee was directly representative of the panel interests of its area, and it followed that a body composed of direct representatives of Panel Committees must be the ideal body to represent the special and common interests of the panel profession. Just as Panel Committees were independent, so this new organization must be independent of all others. The Panel Committee of London was fully alive to the fact that panel practitioners had other interests than panel ones, and recognized the need for the closest co-operation with other organizations of the profession, and especially the necessity of using to the full the power and influence of the British Medical Association. Many panel practitioners thought that everything should be done by and through the British Medical Association, but this appeared a somewhat restricted view; and it might be necessary to have a wider outlook when it was realized that insurance work had become a very important factor in the profession, and that an entirely new situation had been created which might of necessity require new organization.

Dr. E. H. M. STANCOCK (Southampton) said that several times during the day he had tried to prepare his colleagues for this proposal by calling attention to the fact that, in spite of what had been said by Dr. Brackenbury, the whole time of the Conference had been spent in discussing disagreements with the British Medical Association. The number of amendments expressing dissatisfaction was really fatal to the contention that the Insurance Acts Committee had the genuine moral support of panel practitioners. The speaker had had considerable experience, ranging from Southampton to Manchester, and he had not yet met a Panel Committee that had any confidence in the British Medical Association—loud cries of "Oh!" and "133 to 20"—as representative of panel interests. He had himself the

utmost confidence in the British Medical Association for the work it had done in the past. It was no question of scrapping the Association and its Insurance Acts Committee. But when one came down to bedrock, and asked, "Are you satisfied with the new regulations?" very many were bound to say that they were not. Much of what had passed that day was mere sentiment. Anything more kindly and fatherly than Dr. Brackenbury he could not imagine. Dr. Brackenbury spoke to his heart and told him what he ought to believe. That attitude of Dr. Brackenbury was the incarnation of the British Medical Association. But those whom the speaker represented wanted a direct opinion in the first place from the Panel Committees, and then the giving of some advice to the British Medical Association.

Dr. F. COKE (Kent) said that in Kent they distrusted the Insurance Acts Committee, and feared if they gave the Committee a new lease of life the marked failure of the past would recur. When the 1917 regulations were discussed with the Commissioners, the birthright of panel practitioners was given away. The Conference, when it met a year ago, put in some mild ideas with regard to alterations, and these were in course of time brought before the Commissioners, but throughout all these negotiations the Committee was apt to be too autocratic, so far as its relation with Panel Committees was concerned.

Dr. A. FOSTER (Leicester) said that it was obvious that the Insurance Acts Committee had done good hard work, and though it might have erred in some respects, it had done its best. It seemed to him that in any combination of Panel Committees they must have something in the nature of an executive, and for practical purposes the Insurance Acts Committee was their executive. He reminded them of Euclid's maxim, that the whole is greater than the part. The panel practitioners were simply a part of the whole, and even individually the panel work of a practitioner was only a part of his practice, and surely the panel interests ought not to be detached from the interests of the whole profession. An Association of Panel Committees was a fascinating idea, but still his Committee, on looking into the matter, felt that it was better to continue under the wing of the British Medical Association. The Association had a fair progeny, and if, like the old woman of the nursery rhyme, she had so many children she didn't know what to do, the panel service was the youngest of her children, and perhaps might find favour on that account.

Dr. G. G. GENGE (Croydon) said that his Committee felt that, however much the Insurance Acts Committee was open to criticism, it was to be supported and voted for as a negotiating body.

Dr. H. G. DAIN (Birmingham) said that his Committee emphatically supported the Insurance Acts Committee. He pointed out the danger of splitting at the present time. To have two separate bodies during the period of reconstruction which would follow the end of the war would simply give the practitioners over hand and foot to the enemy, who would be able to impose its own terms.

Dr. G. AINSLIE JOHNSTON (Westmorland) and Dr. J. L. SPEIRS (Gateshead) said that their Committees supported the resolution of confidence, the latter declaring, in answer to a statement made previously, that Panel Committees did not know their own minds, that the Gateshead Committee had given him definite instructions on this one point alone, on which it was unanimous.

Dr. J. P. WILLIAMS-FREEMAN (Hampshire) said that his Committee did not know its own mind. It did not approve of the action or inaction of the Insurance Acts Committee over the mileage question, but it was not prepared at the present moment to take the panel representation out of the Committee's hands. He would suggest, however, that there was ample room for this Association of Panel Committees to help the Insurance Acts Committee by collecting material and having local meetings and generally preparing the ground for greater co-operation. He pleaded also for more communication between the Insurance Acts Committee and Panel Committees before the former committed itself to any definite action.

Dr. H. J. CARDALE (London) said that there was no desire to set up any rival body to the British Medical Association. The Association consisted of a number of individual members whose interests it looked after. The proposed Association of Panel Committees was merely a co-ordination of the existing statutory Panel Committees

throughout the country, which he believed would be of the greatest assistance to the British Medical Association in its work on behalf of the profession. He understood from a statement in the *BRITISH MEDICAL JOURNAL* that about ten thousand panel practitioners belonged to the British Medical Association. Why, then, did any fear arise with regard to this co-ordination? for it was obvious that these ten thousand members of the Association would be the controlling force on their respective committees, and could send representatives to carry out their views. But it was hopeless to govern without the consent of the governed, and a considerable number of men did not belong to the Association, while a certain number were hostile. These men always gave trouble in all negotiations. An Association of Panel Committees would stand on a different footing because its membership would be, not individual, but representative of committees. There would not be that residue of non-panel interests which arose in the case of the British Medical Association.

Major D. F. TODD (Durham) referred to the model scheme for the federation of Local Medical and Panel Committees, which was framed before the war as a result of a conference held in that room. Unfortunately the war had suspended the project, but to-day, while that scheme for federation was still in existence, one of the measures which they strongly favoured three or four years ago was in course of adoption—namely, the selection by that Conference of a number of direct representatives on the Committee. Having advanced at that rate it was not impossible that the future would see the whole of the Insurance Acts Committee elected from that Conference with the exception of the *ex officio* members of the British Medical Association. The weakness of the British Medical Association was in its constitution. The constitution was on very democratic lines, but the democracy in this connexion was a pitfall, for the Conference was governed by the Representative Meeting, and there was also the Council. The suggestion thrown out by Dr. Brackenbury that some form of conference between a few representatives of the present meeting and a few representatives of the Association was of great value. Unless they were prepared to close up their ranks and become a solid body they were in for a bad time.

Dr. W. R. HADWEN (Gloucester) said that his Committee was most anxious that there should be nothing like antagonism to the Insurance Acts Committee on the part of the new association, and in his view this latter body did not set up to monopolize the position of the Insurance Acts Committee in the matter of negotiations with the Commissioners.

Dr. BRACKENBURY said that the position of the Insurance Acts Committee was not exactly what had been described by Major Todd. It was a more or less independent committee of the British Medical Association. It had power under its terms of reference to deal with all matters which arose in connexion with the profession under the Insurance Acts. It reported through the Council to the Representative Body.

Major TODD: Could not the Council repudiate the action of the Insurance Acts Committee?

Dr. BRACKENBURY replied that the Council could say that it disagreed with the action of the Committee. What the Council could do, if dissatisfied, would be to turn out its representatives. In the case of the Insurance Acts Committee there was not quite so much difficulty in getting things done quickly as was sometimes said to be the case with other committees of the British Medical Association. If, however, a new Association of Panel Committees were formed and it became, as one of its supporters had stated, and as a literal reading of the amendment implied, one of the duties of the Insurance Acts Committee to negotiate *with* that body, the machinery was being complicated and not simplified.

Dr. COWIE said that the meaning of the amendment was that negotiations should be carried on *by* direct representatives, not *with* them.

Dr. BRACKENBURY said that, such being the case, the Conference had to choose between a division of forces or a reform of the existing Committee. Whatever other association was put up, it would result in a division of forces.

The CHAIRMAN, appealed to by Major TODD, said that, whatever the strict letter of the by-laws, he did not see

that the Council could really interfere with any action that the Insurance Acts Committee decided upon.

Captain FOTHERGILL said that as the years had gone on the Insurance Acts Committee, like the British Constitution, had greatly developed. They had built on a solid foundation from the beginning. The suggestion by some in that Conference that the Insurance Act was for the panel alone implied a limitation of outlook. The whole of the medical profession and the whole of the British public would ultimately be affected by the introduction of National Insurance in 1911. But the Association had realized this, and had gripped with a tight hand anything and everything that was done under the Insurance Acts. Although for the time being the panel doctor was the fundamental party in the contract, his interests were only a part of the developing movement, and in the future the sanitarian and every other kind of doctor would find his fortunes involved in it. If the new association materialized it should be for the purpose of co-operating with or "gingering" the existing body. By standing by the British Medical Association and putting their energies into it, they would do good for themselves and leave a legacy of good for their successors.

Dr. COWIE, in replying, reminded those present that they were there, not as members of the British Medical Association, but as delegates—(Voices: "Representatives")—from Panel Committees. All that he and his friends proposed was what they thought would be a better collective body for this particular purpose than the British Medical Association. They were not attacking the British Medical Association. Some of them had higher ideals for that Association than had their opponents on this question. They wished to place the Association on a platform above the minor matters which might rightly concern any specialized body. It was not splitting the profession; it was organizing the profession.

On a vote being taken, the number of members supporting the mover of the amendment in his request for a formal division was insufficient, but the Chairman consented to count the hands, and there resulted:

For the amendment ...	...	...	16
Against ...	...	...	113

The CHAIRMAN pointed out that several members in the majority represented two or more constituencies.

Dr. MARTIN CUTHBERT (Shropshire) moved the addition to the resolution of confidence:

That this Conference strongly deprecates the division of forces brought about by the creation of new bodies as tending seriously to weaken the forces of the profession.

Dr. LACRISTON SHAW (London) opposed this amendment. He was convinced that a great body like the British Medical Association could not find out all individual and sectional points of view, and it was an actual advantage to the Association to encourage the development of other special bodies, such, for instance, as an association of consulting physicians and surgeons, to focus the views of a particular section and also to educate the members of that section as to its right position.

Dr. HARDING TOMKINS (Essex) said that it seemed possible that some part of the reason why the new Association of Panel Committees was held in certain quarters to be inimical to the British Medical Association was because the word "association" was used instead of "profession."

Dr. A. E. LARKING (Buckinghamshire) said that he did not see why the British Medical Association should finance and look after the interests of men who did not belong to it. He thought that the federation scheme described by Major Todd should be resuscitated.

Dr. F. COKE (Kent) said that the Association of Panel Committees had actually been formed, and he prophesied that it would hold eventually a considerable place in the profession.

The additional words were put as an amendment and carried.

Dr. W. HODGSON (Cheshire) moved an amendment recognizing the machinery of the Insurance Acts Committee as the central negotiating agency of Local Medical and Panel Committees, and authorizing the Committee to continue to represent those bodies, after consultation with them, in negotiations with the Commissioners and others. He said that his Committee was very much afraid of the formation of a body which might exercise the functions of a Government bureau. They wanted to look to the

Association as a central negotiating agency, but not to exclude Panel Committees from the right of making particular representations, if they felt impelled to make them, to the Commissioners. If the main resolution proposed by Dr. Brackenbury were carried it would practically exclude the moral right of any Panel Committee so to do.

The CHAIRMAN pointed out that it was impossible for the Insurance Acts Committee or any other to deprive these bodies of their statutory right, but if they wanted a common opinion expressed, or an opinion in which a number of bodies concurred, there must be a body to co-ordinate those opinions and to express them. He thought that perhaps Dr. Brackenbury would substitute "central negotiations" for "all negotiations" in his motion.

The Cheshire amendment was by leave withdrawn.

Dr. BRACKENBURY, replying on the whole discussion, said that he failed to see how any newly formed association could have any better means of gathering information from and co-ordinating the opinions of Panel Committees than the Insurance Acts Committee.

The motion renewing the expression of confidence and incorporating the addition proposed by Shropshire was then put to the meeting and carried by a very large majority. The word "central" was substituted for "all," as suggested by the Chairman.

Dr. G. G. GENGE (Croydon) and Dr. HARDING TOMKINS (Essex) moved and seconded a rider appointing six members of the Conference to meet representatives of the Council in order to consider and report upon any desirable and possible changes in the composition and procedure of the Insurance Acts Committee.

Dr. H. J. CARDALE suggested that an invitation be extended to other bodies to take part in such a conference.

Captain FOTHERGILL thought such a procedure a work of supererogation in view of the fifteen new members from their midst who would go upon the Insurance Acts Committee that day; and

Dr. P. MACDONALD (York) considered that such a consultation would be futile. The new Association of Panel Committees would be quite willing to confer with the Insurance Acts Committee to see how best to co-ordinate the forces of the profession.

In view of these expressions of opinion the rider was withdrawn, and in reply to other suggestions,

Dr. BRACKENBURY said that if it seemed likely that any good could come out of such a conference the Insurance Acts Committee would have no hesitation in calling or taking part in one.

The CHAIRMAN said that it was far better to leave the matter open, and to allow of an informal meeting if desired.

The Conference then returned to the consideration of the report of the Insurance Acts Committee.

Supply of Data to Panel Committees.

Dr. R. A. WELSH (Northumberland) said that in his area there was a feeling that the doctors as a whole did not receive the full total to which their area was entitled. Not only did they remain unsatisfied that the Insurance Committee had obtained for the area the amount which it should have received, but many individual doctors were not satisfied with the amounts given by the Insurance Committee, and could not understand how their lists were adjusted. The rural doctors in Northumberland got less than 6s. a head for attendance on an insured person and 1s. for drugs, and the county enjoyed the distinction of being the last in England to settle up for 1914-15. He moved that in the event of any such dissatisfaction the Panel Committee should have the right to demand an independent inquiry with full access to all papers, correspondence, and accounts relating to the matter in the hands of the Insurance Committee.

One or two members described the procedure in their own counties, and one suggested that an independent auditor should be authorized to go into the accounts.

Dr. BRACKENBURY was a little doubtful as to whether it would be possible to insist upon the disclosure by an Insurance Committee of all papers and correspondence relating to a particular matter. Perhaps the Northumberland Committee might be content with the powers it already possessed of receiving all information as to accounts for the area.

Dr. WELSH withdrew his amendment on the understanding that the matter would be placed before the

Insurance Acts Committee, who would get legal advice as to the limits of action.

The Advisory Committee.

Dr. I. G. MODLIN (Sunderland) moved an amendment protesting against the omission by the Insurance Acts Committee to recommend the name of a representative of the practitioners of the North of England as a member of the Advisory Committee. He said that between Leicester and Edinburgh there was not a single representative. Of the twelve originally suggested not one represented the North of England; of the additional seven there were two from Lancashire and two from Yorkshire but none were appointed; and while the South of England had two representatives, London two, Scotland two, Ireland one, Wales two, and the Midlands four, yet that large district embracing Northumberland, Durham, Yorkshire, and Lancashire was left without a single representative.

Dr. BRACKENBURY protested that the fault was not that of the Insurance Acts Committee. The appointments were entirely in the hands of Sir Edwin Cornwall, who, after pressure from the Committee, accepted nominations from local committees to the number of fifteen, though he limited them to eight at first. The Committee maintained that the different kinds of practice and of practising areas could not be represented by less than eighteen to twenty-one nominations. The course adopted was to nominate those persons who had received the greatest number of nominations from Panel Committees. Sunderland would have had the Committee use its own discretion, but this would have involved condemnation by the Conference. It was unfortunate that so large a district had no representative, and it was a thing to be remedied if possible.

Major D. F. TODD (Durham) thought the Committee had shown weakness. This was a case in which geographical representation should have come in. He did not agree that the Insurance Acts Committee was tied down; the fact was that it had not taken the different parts of the country sufficiently into consideration.

Dr. P. MACDONALD (York) said that this incident accentuated the need for proper organization of the profession.

The CHAIRMAN read the letter sent by the Committee to the Panel Committees in which it was stated that the Committee would be guided by the preferences shown.

Dr. A. FORBES (Sheffield) supported the amendment, and said that it was true that the circulars were sent out, but the committees had no means of communicating with others in the same group.

Dr. RATCLIFF-GAYLARD (Committee) said that if the committees in the North of England had had the matter at heart and only seven or eight of them had nominated one man, that man would probably have been included on the Advisory Committee.

Dr. STANCOMB (Southampton) thought that this side issue again illustrated the need for a new association.

Dr. H. F. OLDHAM (Lancashire) suggested that the amendment be revised so that it simply protested against the omission from the Advisory Committee of any representative from the North of England, and Dr. MODLIN accepting that suggestion, the amendment was carried in that revised form.

Dr. J. STEED (Herefordshire) had an amendment similarly protesting against the non-inclusion of a rural practitioner on the Advisory Committee. Two rural practitioners were nominated, one of them by a very large number of committees, and his Committee considered it regrettable that both should have been passed over.

Dr. E. LEWYS-LLOYD (Merionethshire) thought it incorrect to say that there was no representative of rural practice on the Advisory Committee. Dr. E. O. Price of Bangor, who was among those chosen, was actually a rural practitioner, covering a very wide area.

Dr. BRACKENBURY said that Dr. Price was appointed by Sir Edwin Cornwall from nominations taken from some other source than the Insurance Acts Committee.

Dr. STEED said that his Committee considered that a practitioner living in a town of 10,000 or 12,000 people could not be described as a rural practitioner.

The amendment was lost, whereupon Dr. CUMING ASKIN said that that was an instance of the treatment which the rural practitioner received from the Conference; but the CHAIRMAN, as a rural practitioner himself, demurred.

Dr. LEWYS-LLOYD moved, on behalf of Cardiff, a resolution of protest against the non-acceptance of two nominees, Dr. Treasure and Dr. Harding, as representatives on the Advisory Committee, and this was agreed to.

At this point, reverting to the discussion on the treatment of discharged disabled sailors and soldiers,

The CHAIRMAN moved, on behalf of Coventry, and it was agreed:

That this Conference, whilst agreeing that the Insurance Acts Committee, in view of the decision of last year's Conference, made as good an experimental arrangement as was possible with regard to the treatment of disabled soldiers and sailors, is distinctly of the opinion that such an arrangement will be detrimental to the financial interests of the profession unless a most careful account be kept and rendered by each individual medical practitioner of all services rendered, and that it be an urgent request from this Conference that each panel area instructs each member of its Committee in county areas to call a meeting in their respective districts to explain fully to their fellow practitioners the importance of the arrangement.

Medical Cards.

Dr. H. G. DAIN (Birmingham) moved:

That an insured person who has not selected a doctor or who has removed into another area is only entitled to medical benefit on production of the medical card; that fees charged in absence of such medical cards should not be returned; and that all medical cards should bear the date of issue, and if not presented to doctor for signature within twelve months, should be re-dated by the issuing committee.

He said that the position as it stood at present entailed the bringing of a number of cases before the Medical Service Subcommittee, and it was difficult to get the lay members to understand the intricacies of the question. The effect of the present ruling of the Commissioners was to make for slackness all round. The resolution was not intended to apply to people who had selected a doctor. The twelve months allowed before re-dating might seem a long period, but he was told that shorter periods would give rise to great administrative difficulties.

Dr. A. FORBES (Sheffield) supported the proposition, which had a distinct bearing on munition areas. On the general question of munition areas he desired to say no more than that Sheffield was dissatisfied with what was done on their behalf by the Insurance Acts Committee.

Dr. F. E. DANIEL (Barrow) supported the resolution, which, he said, went to the root of the matter. There were about five or six thousand insured persons in Barrow who had never chosen a doctor. As to the precise method of getting them to choose a doctor, he was not quite sure. He would like the Insurance Acts Committee to do its best to devise some scheme for overcoming the difficulty, either by penalizing the insured person, or—which would be better—penalizing the approved societies, with whom the fault lay quite as much as with the insured person.

Dr. BRACKENBURY said there was no need to press it upon the Insurance Acts Committee that it should devote its attention to this matter. They all realized the situation and knew it had to be met, and that the onus of proof should be on the insured person. He urged that the various suggestions should be referred to the Insurance Acts Committee rather than that the Birmingham motion, which expressed a preference for a particular method, should be adopted.

Dr. C. H. PANTING (Essex) said that his Committee had formulated an amendment on the subject which simply threw upon the Insurance Acts Committee the task of taking steps to find the best method of making insured persons present their medical cards to a panel practitioner immediately they received them. In his area they had at the present moment 30,000 "dud" cards on their register which they did not get paid for, and this was one of the causes of inflation. By removal from the district and subsequent return, together with the loss of cards and the issue of duplicates, inflated lists resulted.

Dr. G. J. B. CANDLER-HOPE (Yorkshire, N.R.) called attention to a rural matter in connexion with the medical card. When an insured person got his medical card he remained unallotted until the beginning of the next quarter. If he came to a rural practitioner for treatment in the interval, the practitioner had to supply him with medicine, though technically he was not on his list until the beginning of the following quarter, so that the practitioner got nothing for the medicines. In the towns, on the other hand, the prescription was sent to the chemist, who got paid for it.

Dr. G. AINSLIE JOHNSTON (Westmorland) gave some account of how the Lake District was affected by the brief stay of a number of insured persons who subsequently removed and transferred to doctors in other districts. He moved a rider embodying proposals to improve matters.

It was agreed that the suggestions contained in all the amendments on this subject should be referred to the Insurance Acts Committee.

The Conference then formally approved the report of the Insurance Acts Committee.

COLLECTIVE BARGAINING.

Dr. BRACKENBURY proposed a motion approving the scheme for collective bargaining as submitted by the Committee, and pledging the Panel Committees to carry it into effect. He said the scheme had now been set out in more definite detail, and one or two matters were settled which were left open on the previous occasion.

Dr. F. COKE (Kent) could not see where the two months' notice came in, and also criticized the scheme on other grounds.

Dr. E. H. M. STANCOMB (Southampton) urged that nothing short of trade union powers could suffice to organize the profession for collective bargaining. After those brief two months, the Association as it stood would have no power to use its central authority, its office and staff, for the purpose of advising any one of them to break or vary the contract at that time in existence. And not two months but six or twelve months might be necessary in order to carry out collective bargaining, during the whole of which time an association must be in existence to protect the profession.

Dr. C. J. PALMER (Nottinghamshire) moved that the scheme be referred back to the Insurance Acts Committee for further consideration, and this was seconded by Dr. E. BURCHELL (Brighton).

Dr. LAURISTON SHAW (London) said that the scheme was misnamed collective bargaining; it was really collective declaration of war against the Commissioners. What they wanted in any real system of collective bargaining was to know how they were to carry the war on after it had been declared, and also what machinery there was to ensure peace—that is, the withdrawal of resignations when the majority of practitioners wished that course to be adopted. The scheme should go further than the mere sending in of resignations.

Dr. F. E. DANIEL (Barrow-in-Furness) said that some of them thought that they had no right to take a drastic step of this kind during the war and in the absence of their fellows.

Dr. BRACKENBURY agreed that it should be a serious extremity which indicated such a course at the present time, or, for that matter, at any time; but that consideration should not deviate them from the purpose of having a scheme ready for use in emergency during the next twelve or eighteen months. The matter had been under their consideration for some years; it was accepted in some detail last year, and therefore he deprecated the motion to refer it back. Although Dr. Shaw's remarks were of extreme importance it did not seem to follow that this scheme, so far as it went, should not be accepted. It was true that they did not deal with the details of the situation which would arise after all the resignations had been sent in, but he thought that could be dealt with very well as a supplementary to the present subject. He went on to explain certain features of the scheme.

The amendment to refer back the scheme was lost, and Dr. BRACKENBURY accepted an amendment by Brighton instructing the Committee to take all possible steps to obtain the adherence of all the Panel and Local Medical Committees with a pledge to support the scheme loyally should it be necessary to carry it into effect; and another by Herefordshire, the intention of which was that the Insurance Acts Committee should consult with Panel Committees before agreeing to any proposals for alteration of regulations. With regard to this last, Dr. Brackenbury said that he understood it to refer to proposals affecting the operation of the regulations and not necessarily to the verbal regulations themselves. Circumstances might conceivably arise in which it would not be possible to have the actual wording of the regulations themselves submitted to Panel Committees.

Dr. COKE (Kent) and Dr. B. A. RICHMOND (London) protested against this last interpretation, and Dr. BRACKENBURY

further explained that the normal procedure would be, wherever possible, to have the actual wording of the regulations brought before the Committees, but in some remote contingency it might become necessary for the Committees to trust somebody to see that alterations which had been agreed upon were duly embodied.

The CHAIRMAN (speaking as the Representative of Somerset) said that this matter went down to the root of collective bargaining. Occasions might arise in which the procedure had to be pressed up so closely that it was necessary for somebody to decide at once on behalf of the panel service in general, and in that case it would be not only legitimate but absolutely necessary to repose a certain amount of trust in this central body.

Dr. COKE asked whether the Insurance Acts Committee did or did not ask Panel Committees to give it a mandate.

Dr. H. G. COWIE (London) said that it was absolutely impossible for any statutory body to depute any of its statutory privileges to any one else.

Dr. E. H. M. STANCOMB (Southampton) said that the procedure of delegating their powers, which Panel Committees had been content to adopt, meant a continual belittling and dwindling away of their proper functions as statutory bodies.

Dr. H. F. OLDHAM (Lancashire) said that the last speaker and those who thought with him apparently saw no danger or wrong in handing over the rights of Panel Committees to the particular organization which they persistently recommended to the Conference, but protested greatly against the handing over of any rights to the Insurance Acts Committee. Sooner or later the new organization would find itself in the same difficulty and open to the same reproach as the Insurance Acts Committee.

Dr. BRACKENBURY said that the whole point at issue related to a rather remote possibility. There might be occasions on which the actual wording of the regulations would be left to the Insurance Acts Committee. The Commissioners would submit to the central negotiating body the regulations shortly before they were issued, and they would do this, not as a matter of right, but of courtesy, and the Committee could say whether they did actually embody the agreement previously arrived at.

The meeting agreed to the Herefordshire amendment that before proposals for alteration of regulations were accepted the Panel Committees should be consulted, but the CHAIRMAN, in putting the amendment, said that it was on the understanding which had been brought out in the discussion that occasions might arise in which the decision as to whether the regulations did verbally embody the proposals agreed upon must be left to the central negotiating body.

An amendment by Birmingham relating to the calling of a conference at short notice was withdrawn on the understanding that should such a course be necessary the representatives at the previous annual Conference would be invited.

The motion approving the scheme for collective bargaining and pledging the Panel Committees represented to carry it into effect, and instructing the Committee to take all possible steps to secure the loyal adherence of all Panel Committees, was then put to the meeting and carried. Ten representatives dissented, and requested that their names be taken, which was done.

PAYMENT OF INSURANCE PRACTITIONERS.

Dr. H. G. DAIN (Birmingham) had a motion on the agenda which he submitted in four parts. He said that last year the view was expressed that although they felt that increased remuneration was due to them, they should not press for it on account of the war. But the war had gone on, and all other grades of workers throughout the country were receiving increased payment and doctors also were getting increased remuneration from non-panel patients. Therefore he moved:

That because of the continuance of the war and the uncertainty of its duration, it has become impossible to postpone the reconsideration of the rate of remuneration of medical practitioners under the Insurance Act till the war is over.

This was put to the meeting and agreed to, and Dr. Dain then went on to say that the reason why they should press for increased remuneration was most admirably stated in the Interim Report when dealing with the future rate of

payment. He urged the Conference to express its opinion that an increase of the capitation fee should obtain as from the beginning of next year. The profession was now in a stronger position for getting increased remuneration than it would be at a later stage. From a political point of view this was quite the right time to carry the matter forward. He moved:

That the increased costs of living and of carrying on practice and other reasons require an increase in the capitation fee as from January 1st, 1918.

This was also agreed to, and Dr. Dain then moved his third proposition, which dealt with the nature of the advance to be made. A 3s. advance in the capitation fee meant a sum of approximately 1½ million for the profession, or an extra £3 a week to the income of a practitioner with a net panel of 1,000. He moved:

That the present capitation fee of 6s. 6d. plus 6d. for domiciliary treatment be raised to 10s., which shall cover the increased liabilities with regard to discharged sailors and soldiers and all the services now rendered to tuberculosis patients by panel practitioners.

Dr. A. FOSTER (Leicester) asked whether the increased capitation fee was intended to be permanent or was only for the duration of the war and some while afterwards.

Dr. BRACKENBURY said that he did not want the ten shillings to go forward as a definite and settled amount to be presented in the manner of an ultimatum. The case for a substantial increase in the capitation fee was overwhelming, but he would not like it to be understood that they should go to the Government with nothing more nor less than 10s. in their minds. Although he believed some such amount to be right, he did not want to be tied down to specific amounts or to specific dates.

Dr. B. A. RICHMOND (London) said that this opened up the question as to whether the Conference did give the Insurance Acts Committee the right to accept terms issued by the Government. They had been rather too ready to take the Commissioners' dictum that Panel Committees could have no data. The Commissioners replied to their contention that they were doing more work for less money by saying that the statistics they (the Commissioners) were obtaining confuted this argument, and that these went to show that the war had had quite another effect. He submitted that that ignored entirely the distinction between medical benefit and sickness benefit. Neither the Insurance Commissioners nor the Treasury could have data for the real amount of work which panel practitioners were called upon to do under present conditions, and accordingly he asked the Insurance Acts Committee to make an effort to get from individual practitioners and Panel Committees the data which did actually show not the amount of money which approved societies were paying out, but the number of visits and attendances which practitioners were making on a reduced list and a reduced income, but a much greater visiting list.

A REPRESENTATIVE said that if the increase of the capitation fee was in the nature of a war bonus, it had been the custom to make war bonuses in other cases retrospective.

Dr. H. J. CARDALE (London) pointed out that in the motion by Birmingham the argument in favour of an increased capitation fee was based on the increased cost of living and of carrying on practice, and if that was the case, details of work done had no significance.

Dr. J. HARRISON (Lancashire) asked how rural practitioners who did their own dispensing would be affected.

Dr. J. MILLER (Dorset) supported Dr. Brackenbury in urging that there should be no rigid demand for this increase to 10s.

Dr. H. F. OLDHAM (Lancashire) emphasized the importance of carrying out the suggestion of Birmingham that the domiciliary sixpence should be included in the capitation fee. Some of them might not know that the index register on which they were paid for medical attendance and the index register on which they were paid for domiciliary treatment were two totally different things. How the difference arose no one had been able to explain. Nominally the doctor should get 6d. for every insured person on his register.

Dr. J. R. DREVER (Glasgow) said that the difference between the two lists was due to the fact that some persons who were entitled to medical benefit were not entitled to sanatorium benefit.

Dr. DAIN maintained that the Conference must decide on a figure. With regard to the rural question, if panel practitioners obtained increased remuneration, it was their duty to see that the rural practitioners were more fairly dealt with.

Dr. W. J. YOUNG (Cambridgeshire) hoped that the drug question as well as that of mileage would be considered when discussing the case of the rural practitioner.

The third part of Dr. Dain's motion was agreed to, and he then moved:

That the Insurance Acts Committee be instructed to negotiate these terms with the Government.

Dr. C. J. PALMER (Nottinghamshire) moved an amendment declaring the present time to be inopportune to demand an increased capitation fee, and pressing for a war bonus instead, but this amendment he subsequently withdrew. His reason for raising the matter, he said, was a feeling among some of his fellow practitioners that it was advisable to refrain from any action which might jeopardize their panel practice. It had been suggested that the suspension of medical benefit was a possible step for the Government to take, and a certain amount of medical opinion was advocating that extremity.

Dr. F. COKE (Kent) moved an amendment instructing the Insurance Acts Committee to confer with the Association of Panel Committees and the Panel Medico-Political Union with regard to the collection of resignations should the Commissioners refuse the demand for an increased capitation fee.

Dr. E. H. M. STANCOMB (Southampton) asked why the present was an inopportune time to press for increased remuneration, when every other class in the community was doing so.

Dr. BRACKENBURY said that if the Birmingham proposition was carried the Insurance Acts Committee would have to prepare at once a full presentation of the case for an increased capitation fee. But he hoped the Conference would not listen to the amendment just proposed by Kent. The Conference had deprecated the formation of other associations and had resolved to place the interests of Panel Committees in the hands of the Insurance Acts Committee. It was therefore an unnecessary complication to ask it to deal with other bodies in regard to this matter. It did not follow that because one's objective was the same as that of another person one walked with him on the same road or used the same weapons.

The amendment by Dr. Coke was lost by a very large majority, whereupon

Dr. STANCOMB moved the addition of the following words to the end of the Birmingham motion:

And to organize the profession forthwith in furtherance of this object.

This was agreed to, and the Birmingham motion with this addition was then carried. The CHAIRMAN again put to the meeting the four sections of the motion, which had been carried piecemeal, and the motion in its entirety was adopted with one dissentient.

Major H. E. COUNSELL (Oxford) moved:

That this Conference strongly protests against the unfair payment for insurance work for the year 1916 as shown by the amounts paid in final settlement of the accounts for that year, and instructs the Insurance Acts Committee to inform the Commissioners that some system must be devised which will make the payments more in accordance with the signed agreements.

In his own area, where the amount due in final settlement for each insured person for 1916 was 1s. 11½d., the amount received was under 10d.

The motion was carried, and Dr. DAIN (Birmingham) moved further:

That in view of the constant discussion as to whether the basis on which the central pool is instituted is the best, the Commissioners be asked to allow a committee of six, appointed by the Insurance Acts Committee, to see all the figures and particulars of the process of calculation of the central pool, necessary to enable them to reassure the Local Medical and Panel Committees on the points that still remain in doubt; and to permit an actuary nominated by the President of the Institute of Actuaries to accompany the committee and confer with the Government actuary, afterwards making a report to the committee.

Dr. Dain said that the expense would be considerable, but his Committee was prepared to bear a share of the cost.

Dr. OLDHAM (Lancashire) said that there was no reason why they should not have a voluntary levy from all panel practitioners. In his county they had done away with the statutory penny; and a voluntary levy, to which 70 per cent. had subscribed, and which was 4d. a year for every name on the list, had proved very successful.

The CHAIRMAN said that as soon as the Insurance Acts Committee arrived at an estimate of the cost it would send round to Panel Committees and ask them what they would be prepared to contribute.

The motion was carried.

A motion by Dr. JAMES HOLMES (Bury), urging that each panel practitioner ought to be paid the full fee for all on his list, without deduction on the ground of inflation, was lost. A motion by Dr. G. J. B. CANDLER-HOPE (Yorkshire, N.R.) pressing for an increased mileage grant for rural practitioners was adopted; and Dr. BRACKENBURY promised that the Insurance Acts Committee should consider a suggestion by Dr. F. R. RADCLIFFE (Oldham) that the meetings of that Committee should be held in some more central position than London during the war. A further matter left for the consideration of the Committee was an amendment by Dr. H. F. OLDHAM (Lancashire), which was carried on being put to the vote, suggesting that a circular letter be forwarded to every panel practitioner impressing upon him his obligation to safeguard the interests of absentee practitioners on service by signing on all fresh acceptances on the panel who might so desire as for the absentee and not in his own name.

PRICE OF PETROL.

Dr. J. GOFF (Lanarkshire) had a motion insisting on the Government making special arrangements by which the medical profession should receive an adequate supply of petrol at Government rate.

The CHAIRMAN said that there was no such thing as a Government rate. The petrol was under the control of two American firms, and the Government were buyers in the petrol market just the same as any other competitor.

Dr. DAIN said that the present Government price was 2s. 3d. a gallon.

Dr. T. W. H. GARSTANG (Lincoln, etc.) said that the question of the rapidly increasing cost of petrol had given rise to a very large number of complaints received at the offices of the Association, and had been considered by the Medico-Political Committee, who held that the proper remedy was for the practitioner to put up his fees.

Dr. GOFF withdrew his motion on the understanding that the Insurance Acts Committee would take the whole subject into consideration.

THE CHAIRMAN OF THE CONFERENCE.

The CHAIRMAN (Dr. J. A. Macdonald), who had to leave the meeting at this stage, referred to a later motion by Lanarkshire that the Chairman of the Conferences should be elected by the representatives and not chosen for them. He suggested that the best way would be to allow the Insurance Acts Committee to elect a chairman and give him a long time to study the agenda. There were evident dangers, in view of the complexity of the business, if a chairman were elected on the morning of the meeting.

The Conference passed a vote of thanks by acclamation to Dr. Macdonald as he left the room, and Dr. T. W. H. Garstang occupied the chair for the remainder of the proceedings. Dr. GOFF withdrew the Lanarkshire amendment with regard to the appointment of chairman.

On the motion of Dr. H. C. MACTIER (Burton-on-Trent) the subject matter of various motions was referred to the Insurance Acts Committee. These related to certificates, notices of removal and suspension, and the right of appeal by medical practitioners against the decision of the Insurance Commissioners.

Dr. A. FOSTER (Leicester) moved that a Conference of Representatives of Local Medical and Panel Committees be convened twice a year, and at other times upon a requisition of not less than one-fourth of the total number of committees.

Dr. BRACKENBURY pointed out that each conference cost the British Medical Association between £150 and £200, apart from the cost to the committees occasioned by the attendance of their representatives.

Dr. WILLIAMS-FREEMAN (Hampshire) supported the motion, and thought that there would be plenty of matters to interest two conferences a year, though he agreed that

it was hardly fair to ask the British Medical Association to bear the cost.

The CHAIRMAN suggested that the resolution in a mandatory form could hardly be satisfactory to the meeting, and on his suggestion the mover agreed to refer the matter to the Insurance Acts Committee.

It was also agreed, on the motion of Dr. CUMING ASKIN (Suffolk, E.), to refer to the Committee the advisability of altering the method of electing the fifteen direct representatives.

VOLUNTARY HOSPITALS AND THE TREATMENT OF DISCHARGED DISABLED MEN.

Dr. F. R. RADCLIFFE (Oldham) moved a resolution, for which he had been unable to find opportunity earlier, on the subject of voluntary hospitals and the treatment of discharged disabled soldiers:

That entirely apart from and above the amount paid to the governors of voluntary institutions from the State or local authorities for maintenance and attendance on discharged men, an amount should be paid for professional services rendered by the medical staff according to the scale to be agreed upon by the British Medical Association and the Ministry of Pensions.

Dr. BRACKENBURY said that this matter was scarcely within the province of the Conference, but the Association was fully alive to its importance, and had taken serious action with regard to it. The Ministry of Pensions had replied that they were not prepared under existing circumstances to suggest that there should be any such payment to the hospital staff. The Association had urged the staffs to refuse to undertake attendance unless the terms permitted a payment being made to them for the work they did. This attitude had met with a very favourable response all over the country.

The motion proposed by Dr. Radcliffe was carried.

RESULT OF ELECTION FOR COMMITTEE.

The selection of fifteen members for appointment on the Insurance Acts Committee was announced as follows:

Group A.—Scotland: Dr. J. R. Drever (Glasgow), Dr. J. Goff (Bothwell).

Group B.—Northumberland, Durham, Cumberland, Westmorland, Yorkshire, North Riding: Dr. H. L. Rutter (Newcastle-on-Tyne).

Group C.—Yorkshire, East and West Ridings: Dr. P. V. Fry (Sowerby Bridge).

Group D.—Lancashire and Cheshire: Dr. T. Campbell (Wigan), Dr. H. F. Oldham (Morecambe).

Group E.—Wales and Monmouthshire, Herefordshire and Shropshire: Dr. Hugh Jones (Dolgelly).

Group F.—Cornwall, Devonshire, Somersetshire, Dorsetshire, Isle of Scilly, and Gloucestershire: No nomination.

Group G.—Hampshire, Wiltshire, Berkshire, Oxfordshire, Buckinghamshire, Isle of Wight: Dr. J. P. Williams-Freeman (Andover).

Group H.—Kent, Surrey, and Sussex: Dr. G. G. Genge (Croydon).

Group I.—Middlesex, Herts, and Essex: Dr. H. B. Brackenbury (Stroud Green).

Group J.—Bedfordshire, Northamptonshire, Suffolk, Norfolk, Lincolnshire, Cambridgeshire, Huntingdonshire, Rutland, Isle of Ely, and Soke of Peterborough: Dr. C. Frier (Grantham).

Group K.—Derbyshire, Leicestershire, Nottinghamshire, Staffordshire, Warwickshire, and Worcestershire: Dr. T. Ridley Bailey (Bilston, Staffs), Dr. H. G. Dair (Birmingham).

Group L.—London County: Dr. H. G. Cowie (Denmark Hill).

The counties given in the above list include the county boroughs.)

The Conference passed the necessary formal resolutions with regard to the minutes, and the reference of them to the Insurance Acts Committee for appropriate action; and separated at 9.40 p.m., after passing hearty votes of thanks to Dr. Brackenbury for the manner in which he had conducted the business of the Insurance Acts Committee at the Conference, and to Dr. Garstang, for presiding over the later stages of the session.

A LIST of periodical publications, official reports, and Blue Books in the Library of the British Medical Association available for issue to members on loan has been printed, and copies can be obtained free on application to the Librarian at the house of the Association, 429, Strand, W.C.2. The regulations governing the loan of these publications are stated in the introduction to the list. The Library is open for consultation from 10 a.m. till 5 p.m. (on Saturdays till 2 p.m.).

Meetings of Branches and Divisions.

DORSET AND WEST HANTS BRANCH.

THE autumn meeting of the Branch was held at Bournemouth on October 17th, when the President, Dr. T. HOWARD, was in the chair.

Vote of Condolence.—On the motion of Dr. JOHNSON SMYTH a very sincere vote of condolence with the members of the family of the late Dr. Roberts Thomson (formerly President and Chairman of Council of the Association) was passed by the members standing, and deep sympathy was also expressed with Dr. Mahomed of Bournemouth, and Dr. Wright of Wool, in the loss of their sons at the front.

Annual Meeting.—It was decided to hold the annual meeting at Bournemouth in May, 1918.

Election of Officers for 1918-19.—The following were elected:

President: Dr. Harold Simmons. *Vice-Presidents:* Dr. Williams (Bournemouth), and Dr. Luther (Puddletown).
Honorary Secretaries: Dr. F. Fowler and Mr. P. A. Ross.

Scientific Proceedings.—Dr. F. C. FORSTER read a paper on the management of neurasthenia, psychasthenia, shell-shock, and allied conditions, which was followed by a discussion in which Dr. MACDONALD, Dr. J. SMYTH, Dr. FOWLER, Dr. SIMMONS, Dr. E. BOND, Dr. H. DAVY, and Dr. LE FLEMING took part, and Dr. FORSTER replied. Dr. HUMPHREY DAVY read a paper on certification of patients for asylum treatment, which was briefly discussed by Dr. MACDONALD, and Dr. H. DAVY replied.

Luncheon.—Members were entertained by the Bournemouth practitioners to luncheon and tea at the Hotel Metropole.

SOUTH-EASTERN OF IRELAND BRANCH.

AN ordinary meeting of the South-Eastern of Ireland Branch was held in Kilkenny on October 3rd, when Dr. M. MITCHELL was in the chair.

Dr. LAFFAN gave notice that he would move a further resolution:

Protesting against the deprivation of about 800 provincial medical men by an act of the Local Government Board of the statutory provisions conferred on them of the eligibility for the important positions of county councillors and to call attention to the scant help given to our resolution of May last by various public bodies and to move a resolution thereon.

The following resolution proposed by Dr. DENIS WALSH, seconded by Dr. M. MITCHELL, was unanimously adopted:

That the advice of the solicitor of the British Medical Association be asked as to whether a dispensary doctor or a medical officer of a workhouse in Ireland can be disqualified from being a member of a county council by any regulation of the Local Government Board in Ireland or whether he is disqualified by any statute.

Dr. P. Murphy (Carrick-on-Suir) and Dr. John Quirke (Cashel) were elected unanimously members of the Association. The applications of two other candidates were rejected.

THE FUTURE OF THE INDIAN MEDICAL SERVICE.

THE following letter has been forwarded to the Secretary of State for India by the Naval and Military Committee of the British Medical Association:

October 8th, 1917.

The British Medical Association has considered the report of the Royal Commission on the Public Services in India.

The Association notes with profound concern and disappointment the whole trend of the above report and its recommendations so far as they relate to the Indian Medical Service. The various points in the Association's Memorandum on the present position and future prospects of the Indian Medical Service, which was submitted to the Royal Commission, have received most scanty attention. In its evidence given before the Royal Commission, the Association drew attention to numerous grievances which, if allowed to continue, could not fail to result in a marked deterioration in a service which has already become unpopular with medical men of British parentage (as is instanced by the fact that the late Secretary of State for India, in October, 1913, requested the assistance of the Association in ascertaining the probable cause of the

deficiency of high class candidates for the Indian Medical Service), but there is little or no evidence in the recommendations of the Royal Commission of any intention to redress these grievances. The Association feels that the real storm centre is the question of limiting private practice of Indian Medical Service officers, and it desires that there should be no ambiguity in the future as to the policy to be adopted by the Secretary of State for India on this subject.

Another point to which the Association attaches great importance is the position of the Surgeons-General. In the opinion of the Association—and this point was strongly emphasized to the Royal Commission—the Surgeon-General should be a Secretary to Government, and the personal assistant to a Surgeon-General an Under Secretary to Government in the Medical and Sanitary Departments, both being paid as such. It will not be sufficient to give the Surgeons-General and the Inspectors-General of civil hospitals "regular and direct access" to the head of their Province or to the member of Council in charge of the Medical Department where there is a Council form of government. The present system whereby the recommendations of the Surgeons-General on medical questions can be criticized or set aside by non-medical men is a constant source of irritation which can only be removed by making the Surgeons-General secretaries to Government, and giving them complete control over their medical subordinates in all matters, including transfers from one station to another within the district.

The Association is anxious to know to what extent the Government proposes to give effect to the recommendations of the Royal Commission, and it will then be in a position to place the future prospects of the officers of this service clearly before the profession, and to give such advice on the subject to possible applicants as they are entitled to expect from it. The Association does not attempt to dictate the terms which the Government of India should offer to its medical officers, but knowing as it does the feeling of the medical profession it desires to make it clear to the Secretary of State for India that failure to redress the grievances which the Association has pointed out will most certainly result in a very marked augmentation of the deterioration already in progress in the class of recruits to the Indian Medical Service.

Before any definite decision is taken by the Government of India on the questions raised in the report of the Royal Commission, the Association is anxious that you should have its views before you, and I am directed to request that you will be so kind as to receive a deputation from the Association, who will place before you in greater detail the opinions which the Association has formed as a result of careful inquiry.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

COUNTY OF BEDFORD.

At a meeting of the Panel Committee on July 10th it was reported that the term of office of the committee had been extended to July 15th, 1918. It was resolved to request the clerk to the Insurance Committee, when issuing medical cards to insured persons, to enclose a slip printed in red ink, asking that the card be presented to a panel doctor at once for signature under part A.

DERBYSHIRE.

At a meeting of the Local Medical and Panel Committee on September 25th the representatives of the committee to the Conference of Local Medical and Panel Committees were instructed to support the resolution set out in the circular issued by the British Medical Association expressing renewed confidence in the Insurance Acts Committee as the central negotiating body of the Local Medical and Panel Committees of the country.

STAFFORDSHIRE.

At a meeting of the Local Medical and Panel Committee on July 3rd it was proposed that a separate fund should be established with regard to new acceptances on the panel, and that all practitioners on the panel, including doctors absent on service, should be credited with a percentage of payments proportionate to the number of persons on their lists at the beginning of the war. It was reported that the period of office of the members of the committee had been extended until July 15th, 1918. Communications from the Panel Medico-Political Union with

regard to the Advisory Committee and from the York Panel Committee with regard to the working of the Insurance Acts were received.

RENFREW COUNTY.

At the last meeting of the Renfrew Panel Committee suggestions for a division of the area into districts for the purpose of a medical referee scheme were approved for submission to the Insurance Committee, and it was agreed that the first referees to be appointed should hold office until December 31st, 1918. In a case where an insured person asked for assignment and the practitioner geographically nearest to the insured person's house by a rough moorland road was much further away than another doctor when the distance was judged by ordinary road mileage, the Committee expressed the opinion that "nearest practitioner" meant the practitioner whose residence to the insured person was nearest taking the ordinary road mileage as the basis of measurement.

INSURANCE ACT IN PARLIAMENT.

PANEL DOCTORS' REMUNERATION.

MR. SNOWDEN asked Sir E. Cornwall if he was aware that the panel doctors in many parts of this country, especially the rural districts, had received only from 25 to 50 per cent. of the sum due to them for their services for the year 1917? Sir E. Cornwall replied that in the great majority of cases the final payments for the year 1916 had been made. In those areas where some balance was outstanding the amount would only be small as the sums which had been advanced monthly or quarterly during the year would have approximated closely to the total sums which would be found to be due on the final settlement. If particulars of any cases were supplied, inquiries would at once be made.

AIR RAIDS AND SICK BENEFIT.

Mr. Chancellor asked whether approved societies were entitled to refuse sick benefit to insured persons on the ground that their illness had been caused by air raids. Sir Edward Cornwall (for the National Health Insurance Commissioners) replied that the question raised a point of law, but he was advised that approved societies would not be entitled to refuse sickness benefit to insured persons on the ground that their illness had been due to air raids unless the case was one in which the court would hold that the injury received in the air raid had arisen out of, and in the course of, the member's employment. In that case the matter must be one for compensation under the Workmen's Compensation Act, and in accordance with Section 11 of the National Insurance Act, 1911, benefit would not be properly payable.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—Fleet Surgeon E. L. Grazebrook to the *Queen*; R. J. Mackeown, M.B., to the *Emperor of India*; Staff Surgeon A. B. Marsh to the *Victory*, for disposal; Surgeon C. M. R. Thatcher, M.B., to the *Pembroke*. Temporary Surgeons: J. C. Baggs to Portland Dockyard and Depot; S. Hutchinson to Haslar Hospital; F. C. Gladstone, M.B., to the *Humbroke*, for Royal Naval Barracks; R. J. Monahan, M.B., to the *Vivid*, additional, for disposal; S. Worthington, M.B., D.P.H., to the *Pembroke*, additional, for disposal; R. C. J. Meyer to the *Blenheim*. To be temporary Surgeons: R. Curnock, K. L. S. Ward, R. C. Shaw, H. B. Bullen.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon H. C. H. Nuttall to the *Rescuer*. To be Surgeon Practitioners: V. M. McA. Watson, L. O. Lindsay, F. S. Vaughan.

ARMY MEDICAL SERVICE.

Temporary Surgeon-General Sir G. H. Makins, K.C.M.G., C.B., F.R.C.S., to rank of Lieutenant-General whilst specially employed.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel (temporary Colonel) P. MacKessack, D.S.O., M.B., relinquishes the rank of temporary Colonel on reposting.

To be acting Lieut.-Colonels:—Whilst in command of a general hospital: Major C. H. Carr, M.D., temporary Major E. W. Skinner, M.D. Whilst in command of a casualty clearing station: Major F. J. Garland, M.B. Whilst in command of a field ambulance: Captain W. W. Boyce. Lieutenant (temporary Captain) R. A. Preston, M.C., M.B.

Major (temporary Lieut.-Colonel) C. W. Holden, D.S.O., to be an Assistant Director of Medical Services of a Division, and to retain his temporary rank.

Major (acting Lieut.-Colonel) W. L. Steele retains the acting rank whilst in command of a general hospital.

Major R. E. Humphrey, M.B., to be acting Lieut.-Colonel whilst in command of a field ambulance.

Major W. L. Bennett, M.B., F.R.C.S.E., is placed on half-pay list on account of ill health, August 7th (substituted for notification in the *London Gazette* of August 8th).

L. F. B. Knuthsen, M.D., to be temporary honorary Major whilst serving with No. 5 British Red Cross Hospital.

Temporary Captain E. N. Coutts, M.B., relinquishes his commission on account of ill health contracted on active service.

Temporary Captain S. G. Dixon relinquishes his commission on account of ill health contracted on active service and is granted the honorary rank of Captain.

W. H. F. F. Godwin, late temporary Captain, is granted the honorary rank of Captain.

E. J. Tyrrell, M.B., late temporary Captain to be honorary Captain. Temporary Captain R. Sterling, M.B., relinquishes his commission on account of ill health.

Temporary honorary Lieutenant Sir F. M. Farmer to be temporary honorary Major.

The following are granted temporary rank for duty with the South African Labour Corps:—As Major: J. C. MacNeville. As Captain: E. Slack. As Quartermaster with the honorary rank of Lieutenant: J. T. Spotswood.

Temporary Captains relinquish their commissions: B. Jones, M.D., L. S. Kidd, M.D., J. S. Findlay, J. K. Morton, M.B., H. J. Bell, T. B. Riddall, M.B., S. Bryson, M.B., G. H. Powell, E. Gordon, M.B., E. Seely, M.B., J. F. Bullar, M.B., F.R.C.S., R. S. A. Heathcote, M.B., G. D. H. Wallace, C. H. W. Page, M.D., J. C. Bawden, R. N. Farrer, J. E. Rees, J. McTurk, J. Kirker, G. W. Lloyd, M.B., E. C. McKay, M.D., P. Gietleson, M.D., J. Joule, R. P. Nash, W. T. Wearine, M.B., A. C. Falkiner, M.B., V. M. Fisher, M.B., W. Millerick, B. W. Gonin, A. Lindsay, M.P., L. W. Crowe, M.D., S. H. Hay, M.B., R. Marshall, M.D., F. L. Brown, M.D., A. Macintyre, M.B., T. D. Moffatt, M.B., S. A. Bull, M.D., D. T. H. Croly, A. F. Cole, A. B. MacLean, M.B., H. Hebblethwaite.

Temporary Lieutenants to be temporary Captains: A. McP. Warner, M.D., H. R. Mayo, M.B., W. C. Connell, M.B., H. N. Eccles, L. W. Evans, K. D. Attridge, V. D. C. Wakeford, M.B., N. W. Rawlings, J. E. Sharp, M.B., J. B. Martin, A. A. Henderson, H. L. Cronk, H. M. L. Crawford, M.D., H. S. Brown, R. Adam, M.B., W. Geumill, M.B., T. E. R. Branch, M.B., W. Farquharson, R. H. Thomas, M.D., B. O. Kinney, J. Robertson, M.B., R. J. Farquharson, H. W. Weir, M.B., F. Robertson, M.B., C. E. O'Keefe, C. Elliott, A. J. Turner, M.B., F. Brickwell, M.B.

H. Nockholds, M.B., to be temporary honorary Captain whilst in charge of Queen Alexandra's Hospital.

A. Renshaw, M.B., to be temporary honorary Captain whilst employed with the Welsh Hospital, Netley.

P. Elias el Howie, M.B., late temporary Lieutenant is granted the honorary rank of Lieutenant.

Temporary Lieutenant W. Butterley relinquishes his commission on account of ill health.

Temporary Captains relinquish their commissions on account of ill health: E. W. Braithwaite, K. B. J. Vickers, M.B.

Temporary Lieutenants relinquish their commissions: J. F. Windsor, M.D., W. Shaw, M.B., G. L. Ranking, C. W. Coghill, J. R. McFerran, M.D., L. Cohen, M.B., R. D. R. Allison, M.D., G. H. Hanna, M.D., V. S. Sheldon, G. A. Ticehurst, M.B., J. A. C. Doonan, M.B., G. L. Crimp, M.B., F. H. Wolfe, J. Longworth, M.B., H. Austin, M.B., M.B., J. R. Davies, J. W. Turner, J. Brownlee, M.D., P. A. Staveu, M.B., C. F. P. Plunkett, W. Beckett, F. W. Waterworth, J. G. Drake, M.B., E. A. W. English, M.B., E. G. D. Menzies, M.B., E. H. Drake, G. H. Rendel, M.B., W. A. Loxton, M.B., F.R.C.S.E., A. Reid, M.B., G. H. Rodolph, J. R. Thompson, M.B., A. J. Kearney, H. T. Evans, M.D., W. S. Darby, M.B., V. C. H. Dearden, H. W. B. Montague, M.D.

A. T. Petersen, M.D., F.R.C.S.E., to be temporary honorary Lieutenant whilst employed with the St. John Ambulance Brigade Hospital (substituted for notification in the *London Gazette* of October 6th, 1916).

S. H. Kagan, M.D., and A. C. Delacroix to be temporary honorary Lieutenants.

T. S. Evans to be temporary honorary Lieutenant whilst serving with the British Red Cross Hospital, Netley.

INDIAN MEDICAL SERVICE.

Major T. H. Delany has been permitted to retire from the service with effect from January 28th 1918.
The promotion of Captain G. B. Harland to the rank of Major is antedated from October 22nd, 1914, to July 29th, 1914.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Major J. C. Furness relinquishes the acting rank of Lieut.-Colonel on reposting.

Captain W. H. L. McCarthy, M.C., M.D., relinquishes the acting rank of Lieut.-Colonel on reposting.

Captain W. McCombie, M.B., to be acting Lieut.-Colonel whilst in command of a field ambulance, from August 21st to 26th 1917.

Lieutenants to be Captains: F. M. Rorie, M.B., J. A. W. Cullen, M.B.

To be Lieutenants: P. F. A. Grant, M.B., J. G. McK. Macaulay, A. B. Cocker, J. B. Irving, J. W. Morris. Second Lieutenant G. R. Sharp, from unattached list, T.F.; D. E. Hearn, from Durham University Contingent O.T.C.; J. Michaelson, from Glasgow University Contingent O.T.C.

OVERSEAS CONTINGENTS.

AUSTRALIAN ARMY MEDICAL CORPS.

Deputy Assistant Director of Medical Services: Major W. J. Stack, vice Major J. J. Nicholas.

CANADIAN ARMY MEDICAL CORPS.

Lieut.-Colonels to be temporary Colonels: A. E. Snell, D.S.O., F. S. L. Ford, C.M.C., H. M. Jacques, D.S.O., G. E. Armstrong.

T. B. Fletcher to be temporary Lieut.-Colonel.

Temporary Major G. J. Boyce to be acting Lieut.-Colonel.

Temporary Captains to be acting Majors: G. W. Treleaven, S. G. Ross.

Temporary Captain H. K. Mitchell to take rank and precedence in his corps and in the army as if his appointment as temporary Captain bore date August 23rd, 1917.

Temporary Captain W. J. Bell resigns his commission.

Temporary Captain A. L. Jones to be acting Major while specially employed, June 17th (substituted for *London Gazette* notification of August 23rd incorrectly describing name as Jones).

Temporary Captain L. B. Graham resigns his temporary commission.

To be temporary Quartermasters with the honorary rank of Lieutenant: Regimental Sergeant-Major C. B. Tomkins, Sergeant-Major J. W. Clark.

BRITISH WEST INDIES REGIMENT.

C. G. Deane to be temporary Surgeon-Captain.

A. C. Kirton, M.B., to be temporary Surgeon-Lieutenant.

The notification in the *London Gazette* of July 17th regarding Surgeon-Captain W. D. Neish is cancelled.

SOUTH AFRICAN MEDICAL CORPS.

Temporary Captains relinquish their commissions on account of ill health: T. L. Blackburn, A. A. Gilchrist, M.C., A. U. Parkhurst.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Major (temporary Lieut.-Colonel) C. H. Lindsay, C.M.G., M.D., to be Assistant Director of Medical Services, and is granted the temporary rank of Colonel whilst so employed.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel (temporary Colonel) H. H. C. Dent, M.B., relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services and is restored to the establishment.

Major E. L. Anderson, M.B., from A.M.S., to be Major.

Major J. E. O'Connor, M.B., relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Major.

Captain (temporary Major) (Brevet Major) D. W. Boswell, M.D., relinquishes his temporary rank on alteration in posting.

Captain D. E. Evans, M.B., relinquishes his commission on account of ill health, and is granted the honorary rank of Lieut.-Colonel.

Captain H. J. Robson relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.

Quartermasters and honorary Lieutenants to be honorary Captains: H. E. B. Ware, C. T. Ross, C. H. Sedgwick, F. B. Wild, E. F. Masters, E. V. Warren, N. Greenwood, H. G. Hunter, J. E. H. Arderton.

Quartermaster and honorary Lieutenant G. D. Purnell to be honorary Captain and to remain seconded.

Attached to Units other than Medical Units.—Major R. W. Forrest, M.B., relinquishes his commission on account of ill health, and is granted permission to retain his rank and wear the prescribed uniform, April 11th, 1916 (substituted for announcement in the *London Gazette* of June 13th, 1916).

TERRITORIAL FORCE RESERVE.

Colonel J. A. Jones, M.D., K.H.S., to be Colonel.

Captain S. J. Fielding, M.B., from a field ambulance, to be Captain, and vacates the appointment of Deputy Assistant Director of Medical Services.

Captain N. S. Jeffrey, M.B., from a field ambulance, to be Captain.

VOLUNTEER FORCE.

Shropshire Medical Volunteer Corps.—W. A. A. Lewis and A. E. White, temporary Captain and Medical Officer J. Lytle, from 2nd Battalion Shropshire Volunteer Regiment, temporary Captain G. Hollies from 1st Battalion Shropshire Volunteer Regiment, H. C. Woodhouse to be temporary Captains. G. Riley to be temporary honorary Lieutenant and Quartermaster.

Hampshire Medical Volunteer Corps.—To be temporary Majors: H. W. J. G. Cantell, W. J. Smyth (late Surgeon-Captain A.M.S.), F. O. Bottomley to be temporary Captain. M. Savage to be temporary honorary Lieutenant and Quartermaster.

East Yorks Medical Volunteer Corps.—E. Harrison and J. H. Holt to be temporary Captains. A. C. Carter to be temporary honorary Lieutenant and Quartermaster.

Lancashire Medical Volunteer Corps.—Temporary Captain and Medical Officer E. Quayle from 2nd Battalion Lancashire Volunteer Regiment to be temporary Major. G. Stowell to be temporary Captain. W. Steel to be temporary honorary Lieutenant and Quartermaster.

Northampton Medical Volunteer Corps.—A. Linnell to be temporary Captain. W. Sears to be temporary honorary Lieutenant and Quartermaster.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

ASHTON-UNDER-LYNE: DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House-Surgeon. Salary, £250 per annum.

BARNLEY: BECKETT HOSPITAL.—Second Lady House-Surgeon. Salary, £225 per annum.

BOLTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary, £300 per annum.

BRIDGWATER HOSPITAL.—House-Surgeon. Salary, £140 per annum.

BRIGHTON: ROYAL ALEXANDRA HOSPITAL FOR CHILDREN.—House-Surgeon. Salary, £200 per annum.

BRISTOL MEDICAL MISSION.—Superintendent. Salary, £300 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician. (2) House-Surgeon. Salary, £120 per annum.

DERBYSHIRE SANATORIUM, Walton Lane, near Chesterfield.—Assistant Medical Officer. Salary, £350 per annum.

EDINBURGH: SCOTTISH WOMEN'S HOSPITALS.—Bacteriologist. Salary, £300 per annum.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Casualty Officer. Salary, £150 per annum.

LINCOLNSHIRE: COUNTY OF THE PARTS OF LINDSEY.—Assistant Medical Officer. Salary, £400 per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer (lady). Salary, £200 per annum.

MANCHESTER CORPORATION.—Lady Medical Officer. Salary, £350 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary, £300 per annum, rising to £450.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN.—House-Surgeon. Salary, £150 per annum.

MANCHESTER ROYAL INFIRMARY.—(1) Resident Surgical Officer; (2) Assistant Resident Surgical Officer; (3) Accident Room House-Surgeon; (4) Resident Medical Officer at Central Branch. Salary for (1) £225 per annum, and for (2), (3), and (4) £200 per annum.

MINISTRY OF PENSIONS.—Medical Practitioners to serve on Medical Boards.

NORTHAMPTON: AUXILIARY MILITARY HOSPITAL.—Resident Medical Officer. Salary, £350 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road, N.W.—Assistant Resident Medical Officer. Salary at the rate of £60 per annum, rising to £80 on appointment as Senior.

ROCHDALE INFIRMARY AND DISPENSARY.—(1) Senior House-Surgeon. (2) Second House-Surgeon. Salary, £400 and £200 per annum respectively.

ROTTERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

ROYAL FLYING CORPS HOSPITAL, Bryanston Square, W., and Eaton Square, S.W.—Resident Medical Officer. Salary, £500 per annum.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Third House-Surgeon. Salary at the rate of £50 per annum, and war bonus after four months' service.

SHEFFIELD CITY HOSPITALS.—Assistant Resident Medical Officer at the Lodge Moor Hospital.

SOUTHAMPTON: FREE EYE HOSPITAL.—House-Surgeon. Salary, £100 per annum.

STOKE-ON-TRENT: NORTH STAFFORDSHIRE INFIRMARY, Hartsill.—House-Surgeon (lady). Salary, £200 per annum.

WALSALL AND DISTRICT HOSPITAL.—Assistant House-Surgeon and Anaesthetist. Salary, £175 per annum.

WALTHAMSTOW URBAN DISTRICT COUNCIL.—Resident Medical Officer for the Hospital for Infectious Diseases, Chingford. Salary, £275 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House-Surgeon. Salary, £200 per annum.

WORCESTERSHIRE ASYLUM, Barnsley Hill.—Temporary Assistant Medical Officer.

CERTIFYING FACTORY SURGEON.—The Chief Inspector of Factories announces the following vacant appointment: Lytham (Lancashire).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

BADGEROW, Lieut.-Colonel George, C.A.M.C., Honorary Consulting Surgeon in Diseases of the Throat and Ear to the South African Military Hospital, Richmond Park.

BIRCH, C. M.R.C.S., L.R.C.P., Certifying Factory Surgeon for the Pangbourne District, co. Berks.

BYRNE, E. C., L.R.C.P. and S.I., Certifying Factory Surgeon for the Burton Latimer District, co. Northampton.

CROMPTON, K. E., M.B., B.C.Camb., Certifying Factory Surgeon for the Wotton-under-Edge District, co. Gloucester.

MATHEWSON, J. M.B., B.Ch., R.U.I., Certifying Factory Surgeon for the Bromley District, co. Kent.

MCCR, J. F., M.D.Glas., Certifying Factory Surgeon for the Whitehaven District, co. Cumberland.

ROBERTS, C. Hubert, M.D., F.R.C.S., F.R.C.P., temporary Assistant Physician Accoucheur to St. Bartholomew's Hospital for the duration of the war.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

MACKENZIE.—McMANUS.—At One Ash, Colwyn Bay, on October 11th, to Marion E. Mackenzie, M.B., Ch.B. Edin., wife of James McManus, L.R.C.P. and S. Edin., and L.F.P.S. Glas., late Captain R.A.M.C., of Beaumaris, Anglesey, a daughter.

MARRIAGE.

POWELL.—WOOD.—On October 16th, at All Saints, Margaret Street, by the Rev. H. F. B. Mackay, assisted by the Rev. Canon Arnott and the Rev. Edward Arundel, Sir Richard Douglas Powell, Bart., K.C.V.O., M.D., LL.D., D.Sc., second son of the late Captain Scott Powell, Royal Welsh Fusiliers, to Edith Mary Burke, younger daughter of the late Mr. and Mrs. Henry Wood of Cleveland Square, and granddaughter of the late Dr. Charles Burney, Archdeacon of St. Albans.

DEATH.

CONWAY.—Killed in action in France on October 4th, Brian Wiseman Conway, Captain Manchester Regiment, the beloved eldest son of Basil Wiseman and Jane Conway, of Overton House, Longsight, Manchester, in his 24th year. R.I.P.

DIARY FOR THE WEEK.

MONDAY.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—8.30 p.m., Nitrous Oxide and Oxygen with Regulated Rebreathing in Military Surgery, by Captain H. Edmund Boyle, R.A.M.C.(T.).

ROYAL SOCIETY OF MEDICINE.—Section of Laryngology: Friday, 4 p.m., Presidential Address. Cases. Section of Anaesthetics: Friday, 8.30 p.m., Paper.—Lieut.-Colonel J. F. Silk, R.A.M.C.: The Administration of Anaesthetics in Home Military Hospitals. Demonstration.—Dr. Hugh R. Phillips: Apparatus for administering chloroform and ether with oxygen.

DIARY OF THE ASSOCIATION.

Date. Meetings to be Held.

NOVEMBER.

1 Thur. London: Insurance Acts Committee.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 3RD, 1917.

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British Medical Association.

CURRENT NOTES.

Membership of the Association.

THE report of the Organization Committee, which was presented to the Council at its quarterly meeting on October 24th, contained a return showing the position of the membership of the Association between June 1st and September 26th, 1917. New members joining the Association during the period numbered 1,097, and there was a net increase of 963. The total membership at the end of September was 21,259, as compared with 20,905 at the corresponding date in 1916. These figures will, no doubt, give satisfaction to those who have worked on behalf of the Association throughout the past twelve months in face of all the difficulties due to the war. The large number of applications for membership from medical officers serving with the Forces indicates that the work of the Association and its JOURNAL are appreciated by those on active service.

The Education Bill.

The Education Bill recently introduced into Parliament contains certain clauses which have a direct bearing upon general practice. At the instance of the Medico-Political Committee a circular was accordingly issued on October 16th to honorary secretaries of Divisions and Branches of the Association, desiring that the attention of the profession should be drawn to the proposals contained in clauses 18 and 19 of the bill, and enclosing a memorandum analysing these provisions from the medical point of view. Since a copy of this memorandum has been sent to every member of the Association, it is only necessary to say here that the clauses in question, if enacted, would extend the duties of local education authorities to include the provision of medical inspection and medical treatment for all children and young persons between the ages of 2 and 18. It is maintained by the Association that such changes ought to be confined to medical inspection only, and that the position as regards treatment should be left unaffected pending further legislation dealing with the whole subject of public health. If the medical treatment authorized by clauses 18 and 19 were carried out on the plan hitherto usually adopted by local education authorities—namely, by the appointment of salaried officers—this would seriously affect the work and status of general medical practitioners. The Association has already taken steps to have these clauses amended in Parliament, but such central action should be reinforced by local endeavours. Since the issue of the circular and memorandum mentioned above, the Chancellor of the Exchequer has stated in the House of Commons that it will not be possible to pass the Education Bill this session. There is, however, good authority for believing that the bill will be proceeded with next January. This should give time for full discussion of the matter in the Divisions and throughout the profession generally.

Medical Certificates for Mmunition Workers.

At the last meeting of the Representative Body the subject of medical certificates required by the Ministry of Munitions was briefly debated. One member told the meeting that in his district practitioners for the most part used their own ordinary certificate forms. The matter has since been considered by the Medico-Political Committee, and a recommendation from it was approved by the Council at its last meeting. Practitioners are advised to decline to sign the elaborate form of certificate of incapacity for work issued by the Ministry unless an adequate fee is paid for it, and it is pointed out that the Representative Body has decided that one shilling is not adequate for that form of certificate. The recommendation is eminently reasonable and should be noted by medical men and women practising in munition areas.

Meetings of Branches and Divisions.

EDINBURGH BRANCH: EDINBURGH AND LEITH DIVISION.

A MEETING of this Division was held on October 19th, when Dr. WILLIAM STEWART, Chairman, presided.

Votes of Congratulations.—It was intimated that the executive had sent congratulations to Lieut.-Colonel J. M. Cotterill, C.M.G., and Mrs. Chalmers Watson, M.D., C.B.E., on their respective honours.

Annual Representative Meeting.—Drs. LUNDIE and STEVENS, having reported on the proceedings of the last Representative Meeting and on the motions forwarded by the Division, were cordially thanked for their services.

Ministry of Health.—On the motion of Dr. STEVENS, seconded by Dr. MCKENZIE JOHNSTON, it was resolved:

That, in accordance with the resolution *re* Ministry of Health passed unanimously on June 21st, this meeting welcomes the statement of the Prime Minister, that the introduction of a bill for this purpose is postponed.

Medical Attendance on Discharged Disabled Soldiers and Sailors.—The following motion by Dr. STEVENS, seconded by Dr. LUNDIE, was lost; a motion to proceed to the next business having been carried:

That this meeting adheres to the two resolutions on the subject of provision for medical attendance on discharged disabled soldiers and sailors, unanimously passed by the Division on June 21st, and disapproves of the provisions made, in so far as they are not in accordance with these resolutions.

Unqualified Dental Practice.—The executive reported its action with regard to a letter from the Central Office requesting inquiry into unqualified dental practice. The executive had the assistance of Major Guy, L.D.S.E.

Prescription of Cocaine and Opium.—The regulations with regard to prescriptions containing cocaine salts and opium for all classes of patients were read, as were also the regulations for prescriptions containing hypnotic and sedative drugs for any member of H.M. forces. The executive recommended that a request be sent to the Central Council to approach the Privy Council to have the regulations of the latter group extended to the civilian population.

Veneral Diseases Scheme in Edinburgh.—The SENIOR SECRETARY explained the draft scheme, and gave the information obtained by a deputation invited by the Public Health Committee to a conference with other interested medical bodies. The executive brought forward the following motion:

That medical officers (both chief and assistants) should be permitted to receive fees for consultations from patients able and willing to give them, also emoluments from any lectureship, so that medical officers of high scientific attainments may be obtained for the posts.

Dr. LUNDIE proposed and Dr. W. MILLAR seconded the following amendment:

That this meeting disapproves the proposal made in the report of the M.O.H. on the scheme prepared with regard to venereal diseases in Edinburgh, to appoint a whole-time (senior) clinical assistant medical officer, a course which they understand has not been carried out in any area in England or Wales.

The amendment was lost, and the motion of the executive was then passed as a substantive motion. The Secretary was instructed to send the motion to the town clerk, M.O.H., and the convener of the Public Health Committee.

Maternity and Child Welfare Scheme in Edinburgh.—The following two resolutions were adopted unanimously:

That the nurses under this scheme should advise a mother to obtain the services of a doctor for her child or for herself for maternity troubles when the nurses judge it desirable, but shall not recommend any treatment on their own responsibility.

That any one visiting under this scheme who thinks it is her duty to advise that medical treatment is necessary ought, in the first place, to ascertain whether the patient has a private medical attendant, and if she has a doctor, or is willing to obtain one, ought to advise that his services be obtained, and ought only to recommend treatment at or through an institution if there is not a private medical attendant available.

The report of the special committee on the participation of practitioners in the scheme was read to the meeting.

GRENADA BRANCH.

Veneral Diseases Ordinance.—The Venereal Diseases Ordinance before the legislature was considered at two meetings of the Branch on July 19th and August 22nd, when various amendments were submitted, some of which were adopted by the Branch. The ordinance, which was passed on August 30th, will impose a great deal of work on medical officers. Provision has been made for the free treatment of cases unable to pay, but no decision has been reached as to the remuneration the medical officers are to receive.

Dr. Paterson, who has been appointed colonial surgeon in succession to Dr. Hatton, has become president of the Branch.

Association Notices.

ELECTION OF COUNCIL, 1917-18.

NOTICE is hereby given that nominations for a candidate for the election as a Member of Council by the Glasgow and West of Scotland (five county Divisions), Border Counties, and Stirling Branches for the year 1917-18 must be forwarded to reach the Financial Secretary and Business Manager, at the office of the Association, not later than Saturday, November 17th. Each nomination must be on the prescribed form, copies of which will be furnished by the Financial Secretary and Business Manager upon application.

Separate forms have been prepared:

- (A) For a nomination by a Division, and
- (B) For a nomination by any three Members of a Branch respectively.

Those applying are requested to state for which purpose the form is desired.

An announcement of the Nominations received will be made in the JOURNAL of November 24th, 1917.

Election will be by voting papers. These papers will contain the names of all duly nominated candidates, and will be issued from the Central Office on Monday, November 26th, and will be returnable not later than Saturday, December 1st.

The result of the election will be published in the JOURNAL on or before December 8th, 1917.

By Order of the Council.

GUY ELLISTON,

Financial Secretary and Business Manager.

November 3rd, 1917.

IRELAND.

IRISH MEDICAL COMMITTEE.

A MEETING of the Irish Medical Committee was held in the Royal College of Surgeons, Dublin, on October 19th. Dr. R. M. BLAKE was in the chair, and the following members were present: Drs. J. S. Darling, J. R. Davison, F. C. Fitzgerald, S. Gawn, J. Giusani, D. Gray, W. J. Healy, J. McElroy, T. J. McGrath, W. W. Murphy, B. C. Powell, D. Walshe, Dr. T. Hennessy (Medical Secretary), and Mr. C. H. Gick (Secretary). The outgoing officers of the Irish Medical Committee and outgoing members of the Subcommittees were re-elected.

The Position of Irish Medical Services in the Event of any Changes in Irish Government.

A committee to watch and represent the interests of the Irish medical profession was appointed, and the Secretaries, in consultation with the chairman of the Irish Medical Committee (Mr. R. J. Johnstone, F.R.C.S.) were directed to communicate with the Secretary of the Irish Convention to inform him of the attitude of the Irish medical profession regarding the establishment of a National Medical Service. In 1911 over 90 per cent. of the profession in Ireland declared in favour of the reform of the Poor Law and other medical services in Ireland, on the following lines:

1. A National Medical Service entered by examination; payment by the State of adequate salaries, progressive according to service, and compulsory superannuation on retirement.
2. The establishment of a properly organized Public Health Service.
3. A system of hospitals accessible to all requiring treatment free from workhouse or pauper taint. The question of medical attendance on private patients in these hospitals was to receive special consideration.

Committee: Mr. R. A. Johnstone, Chairman; Dr. J. Power, Vice-Chairman; and Dr. R. M. Blake, Right Hon. M. F. Cox, M.D., Drs. James Craig, J. S. Darling, J. Giusani, J. H. Jellett, Mr. J. S. McArdle, F.R.C.S.I., Drs. W. W. Murphy, J. F. O'Carroll, M.D., P.R.C.P.I., R. J. Rowlette, Mr. W. Taylor, P.R.C.S.I., Dr. D. Walshe, Dr. T. Hennessy, Medical Secretary, and Mr. C. H. Gick, Secretary.

Number of Insured Persons in Insurance Areas and Dispensary Districts.

A communication from the Insurance Commission, Ireland (August 31st, 1917), was considered, explaining the causes of the difference in the numbers of insured persons as made out by the Insurance Commission and those made from the index registers of the Insurance Committees. The Commissioners stated that the returns made from the index registers of the Insurance Committees are inflated owing to the following causes: (1) They contain the names of the same person in duplicate or even in triplicate; they still include the names of persons (2) who have died; (3) who have joined H.M. forces; (4) who have gone out of insurance; (5) who have emigrated to Great Britain; (6) who have transferred their residence to the area of other committees, which latter have subsequently obtained duplicate notifications from the societies of which the insured persons were members. Arising out of the Commissioners' letter, it was proposed by Dr. GRAY, seconded by Dr. DAVISON, and passed unanimously:

That, in view of the great dissatisfaction regarding the returns of the numbers of insured persons, the Irish Medical Committee suggest that the Insurance Commissioners should ask all approved societies to make a return of their insured members in each insurance area, in order that definite figures may be obtained yearly for the purpose of payments.

Treatment of Tuberculosis.

A circular letter from the Local Government Board addressed to county and county borough councils and to clerks of unions, dealing with the treatment of tuberculosis and the action of certain councils in ordering their tuberculosis medical officers to undertake the domiciliary treatment of tuberculous patients, to the exclusion of the usual medical attendant, were considered, and in connection therewith the following resolution was unanimously passed:

That the Irish Medical Committee desires to remind the Local Government Board of the absolute necessity of co-operation between the patient's doctor and the tuberculosis officer for the purposes of medical treatment, and would look with grave distrust upon any scheme which would transfer patients from the care of their usual medical attendant to that of the tuberculosis officer.

POOR LAW MEDICAL COMMITTEE.

A meeting of the Irish Poor Law Medical Committee held on the same day, previous to the meeting of the Irish Medical Committee, was attended by the following members: Dr. R. M. Blake (in the chair), Drs. J. S. Darling, F. C. Fitzgerald, S. Gawn, J. Giusani, W. J. Healy, W. W. Murphy, B. C. Powell, D. Walshe, Dr. T. Hennessy (Medical Secretary), and Mr. C. H. Gick (Secretary).

A letter was read from Dr. Power (Ardinnan), urging that the necessary steps should be taken by the Irish Medical Committee to bring to the notice of the Irish Convention the very unsatisfactory position of the Irish Medical Services, with a view to radical reforms. The Poor Law Subcommittee forwarded a recommendation to the Irish Medical Committee to appoint a committee that would represent and promote the interests of the Irish medical profession in the event of any changes in Irish government. The Irish Medical Committee at its meeting adopted the recommendation of the Poor Law Medical Committee.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

London.—At the meeting of the London Panel Committee on October 23rd it was agreed to call the attention of the Commissioners to the following administrative matters: (1) To ask the Commissioners to supply such information as would enable the Committee to learn whether the degree of inflation was on the increase, and to explain the steps which were being taken to effect a central clearance of the registers of Insurance Committees throughout the country; (2) to draw the attention of the Commissioners to the question of late notification to doctors of the names of insured persons who ceased to be entitled to medical benefit, and to ask what steps were being taken to deal with the difficulties arising out of this circumstance; (3) the Commissioners were asked, in the case of approved societies demanding weekly certificates in cases of prolonged incapacity upon intimation being given by a practitioner, to take steps to satisfy themselves as to the likelihood of prolonged incapacity of insured persons with a view to the giving of certificates at less frequent intervals.

Surrey.—At a meeting of the Panel Committee on July 13th a report was received from the subcommittee upon the inflation of the lists of doctors who dispense, with special reference to rural areas, advising that whilst the contention that rural practitioners had a distinct grievance seemed to be substantiated the subject should be postponed for further consideration until after the war. It was agreed to notify the clerk of the Surrey Insurance Committee that there was therefore now no further objection to the final division of the unallotted fund for 1916.

Bedfordshire.—At a meeting of the Local Medical and Panel Committee on September 25th it was agreed that the new scheme for the medical benefit of invalided sea men, marines, and soldiers was workable, and that the remuneration should be accepted as adequate unless and until experience proved otherwise. The secretary was instructed when issuing the minutes to add a footnote requesting doctors to be careful when signing prescriptions for other medical men to sign for those for whom they are acting and not in their own name.

Oxford.—At a meeting of the Local Medical and Panel Committee on September 29th the Secretary reported on the payments to practitioners on the panel for 1916, and showed that, calculated on the doctors' acceptances, the amount credited showed a deficiency of £657 5s. 6d., representing 1,546 persons on those lists for whom no payment was being made. There was also no credit for the unallotted, numbering 2,300. The position was regarded as so unsatisfactory that the representative of the Committee was instructed to bring the matter before the conference on October 18th.

The arrangement for the treatment of disabled soldiers on the attendance basis was approved, and it was decided to support the motion of confidence in the Insurance Acts Committee and not to join any other proposed association of Local Medical and Panel Committees.

Renfrewshire.—At a meeting of the Panel Committee on September 26th it was decided to point out to practitioners the necessity of keeping a careful note of all services rendered to discharged disabled soldiers under the new procedure, and of duly rendering complete accounts to the Committee.

INSURANCE NOTES.

WE have received from the National Health Insurance Commission (England) a copy of a letter addressed by the Commissioners to the Lancashire Insurance Committee with reference to the report of the Inquiry Committee which inquired into the case of Dr. William Hamilton of 95, Wallgate, Wigan. The Commissioners observe from the report that, owing to the inability of the Insurance Committee to produce the necessary evidence, the inquiry proved abortive, and accordingly they do not propose to take any further action in the matter. The Commissioners add that they concur in the view expressed by the Inquiry Committee that it is matter for regret that in the circumstances the inquiry was allowed to proceed to a hearing.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been made at the Admiralty: Fleet Surgeons E. J. Finch, C.M.G., to the *Pembroke*, additional for disposal; T. W. Philip, M.B., to the *Fivild*; E. Sutton, to the *Colleen*; J. C. Durston, to the *Pembroke*; G. Ley, to the *Achilles*. Staff Surgeons: J. G. Peebles, M.B., to the *Thesens*, vice Gunner; G. D. Macintosh, M.B., to Haslar Hospital, vice Sanders. Temporary Surgeons: A. MacA. Scott, M.B., to the *Apollo*; K. L. S. Ward, M.B., to Chatham Hospital; J. A. Watson, to the *Victory*. To be temporary Surgeons: W. D. Nicol, F. C. Odling, J. A. Dimock, F. N. Reynolds, C. V. Isard, N. A. H. Barlow, M. H. Jope, B. S. Collings, A. McCallum, M.B., O. S. Thompson. Surgeon Probationer: R. C. Hall, to the *Broke*. To be Surgeon Probationers: L. T. Timings, T. W. Panter, A. J. Candham; P. Hutchinson.

ARMY MEDICAL SERVICE.

Colonel F. W. C. Jones, C.B., M.B., is placed on retired pay, August 24th (substituted for notification in the *London Gazette* of September 3rd).

ROYAL ARMY MEDICAL CORPS.

Major and Brevet Lieutenant-Colonel T. D. Acland, R.A.M.C. (T.F.), to be temporary Lieutenant-Colonel.

Major W. G. Maydon relinquishes the acting rank of Lieutenant-Colonel on reposting.

Temporary Major W. J. Prendergast, M.B., resigns his commission.

Temporary Major W. B. Edwards relinquishes the acting rank of Lieutenant-Colonel on reposting.

W. H. G. Aspland, M.D., F.R.C.S.E., to be temporary Major.

Temporary Captain E. P. Cathcart to be temporary Major whilst Assistant Chemical Adviser.

To be acting Majors whilst Chemical Advisers: Temporary Captains G. H. Clark, B. J. Collingwood, C. A. L. Evans.

Captain J. H. Gurley to be acting Lieutenant-Colonel whilst in command of a convalescent depot.

Captain O. R. McEwen relinquishes the acting rank of Major on reposting.

Temporary Captain R. M. Beaton, M.B., relinquishes his commission and is granted the honorary rank of Captain.

Temporary honorary Captain P. Maediarmaid, M.B., to be temporary honorary Lieut.-Colonel.

Temporary Captain W. T. Dobson relinquishes his commission on account of ill health contracted on active service.

Temporary Captain F. W. W. Griffin, M.D., relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.

The notification in the *London Gazette* of September 28th, 1917, regarding temporary Captain F. C. Drew is cancelled.

Temporary Captains relinquish their commissions on account of ill health: J. MacInnes, M.B., W. B. Thomson, M.D., G. J. Wilson, M.B.

Temporary Captains relinquish their commissions: R. H. Oliver, F.R.C.S.I., A. E. Stevens, M.D., W. V. Coffyn, M.D., F. T. Simpson, M.C., M.B., G. de B. Tuttle, M.D.

Temporary Captain W. T. Dobson relinquishes his commission on account of ill health contracted on active service.

Temporary Lieutenants to be temporary Captains: G. D. Laing, M.D., F. M. Bishop, R. C. Muir, M.B., G. J. Farie, M.B., C. C. Kerby, M.B., E. F. R. Alford, M.C., T. M. Bellew, W. P. Addey, M.D., J. G. Shanklin, M.B., A. J. Hutton, M.B., H. S. Jones, M.B., A. M. Barlow, A. A. Murison, R. C. H. Francis, M.D., H. W. Ogle-Skan, J. E. Freere, M.B., H. Bowring, M.B., C. G. T. Mosse, H. H. Beardsley, R. McAllister, M.D., J. G. G. Pizott, W. G. McAfee, M.B., H. G. Westropp, J. D. Pearson, H. P. W. Lincoln, J. Whitehead, M.B., A. N. Hodges, M.B., C. A. Joll, M.B., F.R.C.S., H. Chapple, M.B., F.R.C.S.

To be temporary Captains: W. E. C. Dickson, M.D., F.R.C.P.E., T. L. Wernald, M.D., F. H. Ellis, late Captain Rhodesian Regiment, J. L. Digby, M.B., W. J. B. Brown, A. C. Freeth, M.B.

Temporary Lieutenants relinquish their commissions: J. W. Mackie, M.B., F. G. Pedley, M.C., M.D., G. L. Gall, M.D., W. C. Brown, C. M. Anderson, M.D., T. Waterhouse, M.B., T. Stang, S. G. Kean, M.D.

Temporary Lieutenant J. A. Durante relinquishes his commission on account of ill health.

To be temporary Lieutenants: A. H. Saward, T. F. Collins, T. M. Boyd, M.B., J. M. Muir, V. J. Cullen, G. R. Harcourt, M.B., G. E. J. Greene, S. E. Cathcart, T. A. Clarke, H. H. James, M.B., A. G. Ede, M.B., I. C. MacKenzie, C. Murray, S. Vosper, L. R. G. de Glanville, H. F. Powell, M.D., E. E. Clay, F. W. Maunsell, W. Dalgleish, M.B., R. H. G. Bruce, M.B., W. B. Dove, M.B., J. McChig, M.B., A. S. Webley, C. H. A. Alderton, J. Ramsbottom, M.B., E. W. Diggel, M.D., W. O. Pitt, M.D., J. B. Burt, M.D., S. Stockman, M.B., R. E. Moyes, M.D., H. Walker, M.B., F.R.C.S., V. T. P. Webster, J. F. Smith, M.B., A. R. Barlas, M.B., M. J. Landy, M.B., R. W. Grentores, M.B., J. M. Sheridan, M.B., W. T. Thomson, F. J. Cutler, I. Feldman, L. F. Jameson, M.B., E. Clark-Cohen, M.D., T. J. D. Quigley, M.B.

To be temporary honorary Lieutenant: T. V. Keller.
Quartermasters and honorary Lieutenants to be honorary Captains:
C. W. Kinsella, A. F. Tait, R. N. Downing, T. D. Conway, F. C. Cross,
H. C. Dring, C. Drury, E. Edser, F. J. Fihner, J. Jackson, A. G. Powell,
W. C. Renton, E. H. Senior, G. J. Smith, T. J. Tillbrook, J. Wickersham,
W. Wilson.
To be temporary Quartermasters with the honorary rank of
Lieutenant: J. H. Hards, S. T. Beard, T. Allen, L. F. Hayman.

INDIAN MEDICAL SERVICE.

Major R. A. Needham, D.S.O., I.M.S., Assistant Director-General,
Indian Medical Service (Stores), has been appointed, until further
orders, to officiate as Health Officer, Simla, in addition to his own
duties, with effect from June 11th, 1917.

Lieutenants to be Captains with effect from August 1st, 1917:
J. W. Pigeon, M. L. Treason, P. Vieyra, M.B., B. M. Mitra, P. Savage,
A. Chand, M.B., R. Lee, M.B., N. S. Jater, T. S. Sastry, M.B., Jamal-
udin, M.B., F. B. Chenoy, S. B. Venugopal, C. de Carteret Martin, M.B.,
J. H. Smith, M.B.

Lieut.-Colonel E. C. Hare has been permitted to retire from the
service on account of ill health with effect from August 3rd, 1917.

The services of Major L. Cook, M.B., F.R.C.S., have been placed
permanently at the disposal of the Government of Bihar and Orissa
with effect from October 1st, 1914.

Lieut.-Colonel C. H. James, C.I.E., F.R.C.S., has been appointed
Professor of Operative Surgery in the Medical College, Lahore,
substantively *pro tempore*, with effect from April 1st, 1917.

Lieut.-Colonel H. Burden, C.I.E., has been appointed Assistant
Director, Medical Services, with effect from May 31st, 1917.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL CORPS.

Assistant Director of Medical Services: Lieut.-Colonel H. M.
Jacques, D.S.O., and to be temporary Colonel whilst so employed,
vice Lieut.-Colonel (temporary Colonel) F. J. Fotheringham, C.M.G.

Deputy Assistant Director of Medical Services: Major T. A. Lomer,
vice temporary Colonel H. M. Jacques, D.S.O.

Temporary Captain T. F. O'Hagan to be acting Major.
Temporary honorary Lieutenant S. R. Balcom to be temporary
Quartermaster, with the honorary rank of Lieutenant.

Sergeant-Major H. T. Cameron to be temporary Quartermaster, with
the honorary rank of Lieutenant.

BRITISH WEST INDIES REGIMENT.

Surgeon-Captain W. D. Neish relinquishes his commission on
account of ill health.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Captain S. Miller, M.C., M.B., to be acting Lieut.-Colonel whilst in
command of a field ambulance.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Captains G. D. Thomson and D. Macaulay, M.B., relinquish their
commissions on account of ill health.

Captain A. D. Reid, M.B., is dismissed from His Majesty's Service by
sentence of a general court-martial, August 31st, 1917.

Quartermaster and honorary Captain A. Gibbon relinquishes his
commission on account of ill health contracted on active service and
is granted the honorary rank of Captain.

Quartermasters and honorary Lieutenants to be honorary Captains:
W. J. Rice, E. S. Darmady, F. C. Fletcher, R. H. Porter, A. Pinnington,
J. King, W. H. Russell, H. B. Briggs, A. Naldrett.

TERRITORIAL FORCE RESERVE.

Captain J. H. Wilkinson, from Mounted Brigade Field Ambulance,
to be Captain.

VOLUNTEER FORCE.

Huntingdonshire Volunteer Regiment (1st Battalion).—W. F. Fisher
(late Surgeon-Captain 4th V.B. the Bedfordshire Regiment) to be
temporary Lieutenant and Medical Officer.

Kent Regiment (1st Battalion).—J. Richardson to be temporary Lieut-
enant and Medical Officer. (10th Battalion).—R. Wilkinsen to be
temporary Lieutenant and Medical Officer.

Lancashire Regiment (311th Battalion).—W. O. Piper to be temporary
Lieutenant and Medical Officer.

Leicestershire Volunteer Regiment (1st Battalion).—J. A. H. Barnes
(late Captain I.M.S.) to be temporary Captain and Medical Officer.

County of London Volunteer Regiment (29th Battalion).—H. Johnson
to be temporary Lieutenant and Medical Officer.

Middlesex Volunteer Regiment (1st Battalion).—H. Tipping (late
Lieutenant R.A.M.C.) to be temporary Captain and Medical Officer.

Staffordshire Volunteer Regiment (1st Battalion).—W. T. Shields to
be temporary Lieutenant and Medical Officer.

Survey Medical Corps.—C. S. Crichton (late Captain R.A.M.C.) to be
temporary Major; A. E. Porter to be temporary Captain.

West Riding Volunteer Regiment (22nd Battalion).—P. Macdonald
(late Lieutenant R.A.M.C.) to be temporary Captain and Medical
Officer.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is
called to a Notice (see Index to Advertisements—Important
Notice re Appointments) appearing in our advertisement
columns, giving particulars of vacancies as to which inquiries
should be made before application.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL.—
House-Surgeon.

BOLTON INFIRMARY AND DISPENSARY.—Senior House-Surgeon,
Salary, £300 per annum.

BRIDGEWATER HOSPITAL.—House-Surgeon. Salary, £140 per
annum.

BRISTOL MEDICAL MISSION.—Superintendent. Salary, £300 per
annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-
Surgeon. Salary, £120 per annum.

CHESTER ROYAL INFIRMARY.—Assistant House-Surgeon. Salary,
£150 per annum.

GLAMORGAN COUNTY COUNCIL, Cardiff.—Temporary Woman
Medical Officer. Salary, £200 per annum.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway Road, N.—
Two House-Surgeons. Salary, £100 per annum.

HACKNEY HOSPITAL INFIRMARY.—Junior Assistant Medical Officer,
Salary, £200 per annum.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's
Court, S.W.—Resident Medical Officer. Salary, £250 per annum.

MAIDSTONE WEST KENT GENERAL HOSPITAL.—Assistant
House-Surgeon. Salary, £125 per annum.

MANCHESTER ANCOATS HOSPITAL.—Unqualified Resident.
Salary, £50 per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident
Medical Officer (lady). Salary, £200 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND
CHILDREN.—House-Surgeon. Salary, £150 per annum.

MANCHESTER ROYAL INFIRMARY.—(1) Resident Surgical Officer;
(2) Assistant Resident Surgical Officer; (3) Accident Room House-
Surgeon; (4) Resident Medical Officer at Central Branch. Salary
for (1) £225 per annum, and for (2), (3), and (4) £200 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Casualty House-Surgeon
(female). Salary, £250 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.—Resident
Medical Officer. Salary, £160 per annum.

ROTHERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150
per annum.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City Road,
E.C.—Clinical Assistants for Out-patient Department.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—
Third House-Surgeon. Salary at the rate of £50 per annum, and
war bonus after four months' service.

SOUTHAMPTON FREE EYE HOSPITAL.—House-Surgeon. Salary,
£100 per annum.

STOKE-ON-TRENT NORTH STAFFORDSHIRE INFIRMARY,
Hartshill.—House-Surgeon (lady). Salary, £200 per annum.

SURREY COUNTY COUNCIL.—Medical Officers for Mother and
Infant Welfare and School Work. Salary, £400 per annum, rising
to £425.

WORCESTERSHIRE ASYLUM, Bromsgrove.—Temporary Assistant
Medical Officer.

CERTIFYING FACTORY SURGEON.—The Chief Inspector of
Factories announces the following vacant appointment:
Bangor (Down).

To ensure notice in this column—which is compiled from our
advertisement columns, where full particulars will be found—
it is necessary that advertisements should be received not later
than the first post on Wednesday morning. Persons interested
should refer also to the Index to Advertisements which follows
the Table of Contents in the JOURNAL.

APPOINTMENTS.

ALLAWAY, E. E., M.B., Ch.B. Aberd., District Medical Officer of the
Bingham Union.

DRABBLE, E. P., M.R.C.S., L.R.C.P. Lond., District Medical Officer of
the Cannock Union.

LOWE, Joseph Peter, M.B., Ch.B., Medical Referee under the Work-
men's Compensation Act, 1906, for County Court Circuit No. 9,
and to be attached more particularly to the Macclesfield and
Congleton and Sandbach County Courts, vice P. M. Davidson,
L.R.C.P. Edin., L.F.P.S. Glas., deceased.

PORTER, E. R., L.R.C.P. and S. Edin., District Medical Officer of the
Swansea Union.

SAWDON, George, M.B., Ch.B. Viet Manch., Honorary Assistant
Medical Officer to the Devonshire Hospital, Buxton.

THEOBALDS, Annie F., M.D. Edin., Honorary Assistant Medical Officer
and Honorary Anaesthetist to the Devonshire Hospital, Buxton.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and
Deaths is 5s., which sum should be forwarded with the notice
not later than the first post on Wednesday morning in order to
ensure insertion in the current issue.

BIRTH.

CROMBIE.—On October 26th, at Highden, Sideup, the wife of
W. Maurice Crombie, M.B., Indian Medical Service, of a son.

DEATH.

FENTON.—At "Langstone," Ealing, on October 16th, Frederick E.
Fenton, F.R.C.S. Edin., M.R.C.P. Edin., V.D., aged 64.

DIARY FOR THE WEEK.

TUESDAY.

RÖNTGEN SOCIETY, 18, John Street, Adelphi, W.C., 8.15 p.m.—Presi-
dential Address by Captain G. W. C. Kaye, on The Part played by
X Rays in the War. Exhibition of radiological and electro-
therapeutic apparatus.

ROYAL SOCIETY OF MEDICINE: SECTION OF PATHOLOGY, Tuesday,
5 p.m.—Inaugural Address by the President, Professor W. Bulloch,
M.D., F.R.S.: The Abbe Spallanzani as an Experimental
Pathologist.

WEDNESDAY.

HUNTERIAN SOCIETY, 1, Wimpole Street, W., 5 p.m.—Hunterian
Lecture by Lieut.-Colonel Sir A. Pearce Gould, K.C.V.O.: Modern
Antiseptics.

THURSDAY.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields,
W.C., 5 p.m.—Bradshaw Lecture by Sir John Bland-Sutton:
Misplaced and Missing Organs.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.,
5 p.m.—Bradshaw Lecture by Professor E. S. Reynolds: The
Causes of Disease.

POST-GRADUATE COURSES AND LECTURES.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's
General Hospital, Tottenham, N.15.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 10TH, 1917.

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British Medical Association.

CURRENT NOTES.

National Insurance Central Pool.

THE recent Conference of Local Medical and Panel Committees made the suggestion that a Subcommittee of six, appointed by the Insurance Acts Committee, together with an actuary nominated by the President of the Institute of Actuaries, should be allowed to see all the figures and particulars of the process of calculation of the Central Pool necessary to enable them to reassure the Local Medical and Panel Committees on the points that still remain in doubt. The Commissioners have assented, on the understanding that such figures as those relating to the actual monthly enlistments and discharges supplied to the Commissioners by the War Office and Admiralty can only be shown during the investigation to the Actuary accompanying the Subcommittee. The Insurance Acts Committee has accepted this condition, and has invited the President of the Institute of Actuaries either to act himself or to nominate an actuary of high professional standing, who would be willing to undertake the proposed investigation in conjunction with the Subcommittee. The Subcommittee appointed by the Insurance Acts Committee consists of Dr. H. B. Brackenbury (London), Dr. H. G. Dain (Birmingham), Dr. H. L. Rutter (Newcastle), Dr. P. V. Fry (Sowerby Bridge), and Dr. R. Paterson (Liverpool) and Dr. J. C. Lyth (York), subject to the consent of the last two to act.

Lay Radiographers.

While there is a mechanical side to radiography, in which the lay assistant can be extremely useful to the medical radiographer, it is highly undesirable that lay persons, however skilled in technique, should be encouraged to set up in practice by themselves and pose as experts in the interpretation of skiagrams. At the present time the army employs a very large number of x-ray assistants in base hospitals and clearing stations; and many of these men, under the tuition of medical officers, have attained much skill in the taking and development of radiograms. A good many also have acquired more self-confidence in diagnosis than is good for them or for the public. It is probable, therefore, that after the war numbers of these men will seek employment as expert radiographers in civilian life, and we learn that already a certain number of discharged soldiers have applied to medical men for practical tuition in x-ray work with this object in view. The Medico-Political Committee of the Association, in view of these circumstances, has recommended that some line of policy should be adopted in order to meet the position which seems likely to arise after the war. The Committee recommended that the practice of medical radiography by lay persons, except under the direct instruction and supervision of medical practitioners, ought not to be encouraged, and the Council concurred in this view at its last quarterly meeting.

Medical Certificates for Munition Workers.

In a note published in the SUPPLEMENT of November 3rd attention was drawn to the elaborate form of certificate of incapacity for work issued by the Ministry of Munitions, and it was pointed out that the Council at its last meeting advised medical practitioners to decline to

sign this form unless an adequate fee is paid for it. We are now informed that a precisely similar form is being issued by the Inspection Department of the Royal Arsenal, Woolwich, and that the Department is requesting practitioners to be good enough to sign the prescribed certificate, but is not offering any payment. We believe that employers of labour in other parts of the country are also adopting the form of certificate originally issued by the Ministry of Munitions, and it will be well for practitioners to be on their guard, and to decline to sign any such elaborate form unless an adequate fee is paid.

IRISH COMMITTEE.

A MEETING of the Irish Committee was held on October 19th at the Irish Offices, 16, South Frederick Street, Dublin, when Dr. J. GUSANI presided.

Election of Officers.

All the outgoing officers were re-elected, and Drs. W. W. Murphy, J. Power, and H. T. Warnock were co-opted members of the Committee.

Poor Law Medical Officers as County Councillors.

A resolution was considered from the South-Eastern (Ireland) Branch protesting against the Order of the Local Government Board (Ireland) preventing Poor Law medical officers acting as county councillors, and advising that the Solicitor of the Association be consulted as to its legality. It was unanimously resolved:

That the Irish Committee approve of the resolution of the South-Eastern (Ireland) Branch in connexion with the General Order of the Local Government Board debarring Poor Law medical officers from sitting on county councils, and request the Council to take such action in the matter as it may be advised.

Poor Law Medical Officers' Salaries.

Solicitor's advice was considered regarding the powers of the Local Government Board to fix the salaries of Poor Law medical officers. The matter was fully discussed, and the following resolution unanimously passed:

That owing to the actual and threatened resignations of Poor Law medical officers in different parts of Ireland, as the result of the refusal on several occasions of their boards of guardians to give them adequate salaries, the Irish Committee calls upon the Local Government Board, in the interests of the sick poor and their medical officers, to fix the salaries of Poor Law medical officers so that they may be in a position to discharge efficiently their duties under the Medical Charities Acts.

Treatment of Disabled and Discharged Soldiers.

It was unanimously resolved:

That the Irish Committee of the British Medical Association call upon the Ministry of National Service to take immediate steps to arrange for the treatment of disabled and discharged soldiers in Ireland, as, at the present time, they are for the most part treated in charitable institutions and under the Poor Law Medical Charities Acts.

Maternity and Child Welfare.

It was unanimously resolved:

That the Irish Committee, whilst approving of the very excellent scheme for maternity and child welfare formulated by the Local Government Board through its medical commissioner, Dr. Bigger, is convinced that it will be for the most part a failure owing to (1) the insufficiency of the Treasury grant, which is only £5,000 for all Ireland; (2) the adoption of the scheme being voluntary by the local sanitary authorities, who will be found, in many instances, unwilling to levy rates towards defraying their part of the expenses of the scheme.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty: Staff Surgeons J. Fullerton, M.B., to the *Glory*; R. Connell to the *Victory*, additional, for Haslar Hospital; H. M. Langdale to the *Calliope*. Temporary Surgeons: T. H. W. Idris, to the *Victory*; W. F. Bowen and W. P. Vicary, to the *Vivid*; F. A. Fiddian and W. Whitfield, to the *Glory*; G. W. Carte, M.B., to the *Vivid*, additional, for Plymouth Hospital; H. F. Percival to the *Africa*; A. G. Swain, M.B., to the *Tiger*; F. R. Law to the *Superb*; W. S. O'Loughlin to the *Wildfire*; E. P. L. Hughes to the *Crescent*. To be temporary Surgeons: J. W. McK. Nicholl, R. W. Payne, H. G. Taylor, F. G. Pailthorpe, A. P. Kennedy, B. L. Skeggs.

ARMY MEDICAL SERVICE.

Colonel M. J. Sexton, C.B., M.D., is retained on the active list under the provisions of Articles 120 and 522 Royal Warrant for Pay and Promotion, and to be supernumerary.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel J. C. Connor, C.M.G., M.B., relinquishes the rank of temporary Colonel on reposting.

The undermentioned relinquish the acting rank of Lieut.-Colonel on reposting: Major C. H. Straton, Captain H. Gibson.

The undermentioned Majors retain the acting rank of Lieut.-Colonel whilst in command of a casualty clearing station: T. F. Ritchie, D.S.O., M.B., E. W. Siberry.

Temporary Major G. Stoker relinquishes his commission on account of ill health, and is granted the honorary rank of Major.

Captain J. B. A. Wigmore, M.B., to be acting Lieut.-Colonel whilst in command of a field ambulance.

Temporary Captain G. K. Allan, M.B., relinquishes his commission on account of ill health contracted on active service.

Temporary Captain C. J. Sparrow relinquishes his commission and is granted the honorary rank of Captain.

Temporary Captains relinquish their commissions: D. S. Cooper, M.B., W. S. Allan, M.B., J. Lindsay, M.D., M. Polson, M.B., I. B. D'Olier, M.D., H. V. Drew, F.R.C.S., A. G. Bodman, J. I. Johnson, A. McC. Davidson, M.D., W. M. Will, M.B., J. B. Wood, M.B.

R. B. Lilly, late temporary Captain, is granted the honorary rank of Captain.

Temporary Lieutenant J. M. Ahern, M.B., late Surgeon-Captain, Liverpool Regiment (Volunteers), to be temporary Captain.

V. M. Fisher, M.B., late temporary Captain, is granted the honorary rank of Captain.

Quartermasters and honorary Lieutenants to be honorary Captains: F. Higdon, E. J. Tilbury.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel D. L. Hamilton to be restored to the establishment on vacating the appointment of Deputy Assistant Director of Medical Services.

Captains (temporary Majors) C. M. Fegen and G. A. Ewart relinquish their temporary rank on alteration in posting, and to be restored to the establishment.

Captain G. L. L. Lawson to be temporary Major whilst in command of a field ambulance.

Captain A. L. Flemming to be restored to the establishment.

Captains seconded for duty with a general hospital: H. H. Markham, T. A. Rowden, M.C., J. Pearson, M.B., W. I. Cumberlidge, F.R.C.S.

Captain A. C. O. Brown relinquishes his commission on account of ill health.

Lieutenant J. R. Clark, M.B., to be Captain.

Quartermasters and honorary Lieutenants to be honorary Captains: D. P. Taylor, J. E. Jones.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BETHNAL GREEN UNION—Temporary Medical Superintendent at the Infirmary, etc. Salary, £550 per annum, and fees estimated at about £75.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL—House-Surgeon.

BIRMINGHAM GENERAL HOSPITAL—Radiographer.

BRISTOL ROYAL INFIRMARY—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURY INFIRMARY—Junior House-Surgeon. Salary, £150 per annum.

DORCHESTER: DORSET COUNTY HOSPITAL—Senior Student to act as House-Surgeon. Salary, £125 per annum.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Resident Medical Officer. Salary, £150 per annum.

LEICESTER POOR LAW INFIRMARY—Resident Medical Officer. Salary, £300 per annum.

LONDON COUNTY COUNCIL—Assistant Organizers of Children's Care Work. Salary on permanent staff £100 per annum, rising to £130, and temporary £2 a week.

MAIDSTONE: WEST KENT GENERAL HOSPITAL—Assistant House-Surgeon. Salary, £125 per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer (lady). Salary, £200 per annum.

MANCHESTER ROYAL INFIRMARY—(1) Resident Surgical Officer; (2) Assistant Resident Surgical Officer; (3) Accident Room House-Surgeon; (4) Resident Medical Officer at Central Branch. Salary for (1) £225 per annum, and for (2), (3), and (4) £200 per annum.

NETLEY: WELSH HOSPITAL—Medical Officer for Surgical Wards. Salary, £400 per annum.

NORTHAMPTONSHIRE SANATORIUM, Cretton.—Medical Superintendent. Salary, £300 per annum, rising to £350.

NORTH EASTERN HOSPITAL, St. Ann's, Tottenham.—Lady Assistant Medical Officers. Salary, £7 7s. per week.

NOTTINGHAM CHILDREN'S HOSPITAL—Resident House-Physician and Anaesthetist. Salary, £250 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.—Lady Resident Medical Officer. Salary, £160 per annum.

PRESTON ROYAL INFIRMARY—Resident Medical and Surgical Officer. Salary, £120 per annum.

READING: ROYAL BERKSHIRE HOSPITAL—House-Surgeon. Salary, £275 per annum.

ROTHERHAM HOSPITAL—Junior House-Surgeon. Salary, £150 per annum.

ROYAL EYE HOSPITAL, St. George's Circus, S.E.—House-Surgeon. Salary, £150 per annum.

SURREY COUNTY COUNCIL—Medical Officers for Mother and Infant Welfare and School Work. Salary, £400 per annum, rising to £450.

CERTIFYING FACTORY SURGEON.—The Chief Inspector of Factories announces the following vacant appointment: Bangor (Carnarvon).

MEDICAL REFEREE.—The Home Secretary announces a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 9, and to be attached more particularly to the Stockport, Ashton-under-Lyne, and Stalybridge and Hyde County Courts. Applications to the Private Secretary, Home Office, by November 23rd, 1917.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

EATON, O., M.R.C.S., L.R.C.P.Lond., Medical Officer of the Bingham Union Workhouse.

PARKINSON, W. H., M.D., D.P.H., Medical Officer of Health to the Basford Rural District Council, Nottingham.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

DEVANE.—November 3rd, 1917, at 1, Upper Hartstonge Street, Limerick, the wife of J. P. Devane, M.D., F.R.C.S., of a son.

DEATHS.

McVAIL.—At 3, St. James's Terrace, Glasgow, on the 4th inst., Sir David Caldwell McVail, M.B., F.R.F.P.S.G.

O'KELLY.—On October 30th, Sarah (Sallie), the dearly beloved wife of Captain Fitzgerald O'Kelly, R.A.M.C., of Cross Lodge, Boldon, Newcastle-on-Tyne, aged 33. R.I.P.

RANDALL.—John Beaufort Randall, Captain R.A.M.C. (M.B. and M.S.Lond., M.R.C.S. and L.R.C.P., B.Sc.), younger son of Emma and Wyndham Randall, Surgeon, Brigden, Glam. Killed in action in France, October 31st, 1917, aged 28 years.

STERLING.—On October 16th, 1917, at a Nursing Home in London, in his 58th year, Robert Sterling, M.B., B.S., M.A., Captain R.A.M.C., and Canon of St. George's Collegiate Church, Jerusalem. For twenty-four years C.M.S. Missionary at Gaza, Palestine.

DIARY FOR THE WEEK.

MONDAY.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.—8.30 p.m.—Discussion on "The Value and Limitations of Sanatorium Treatment for Tuberculosis." (a) Introduction by Dr. T. D. Lister. (b) As Regards the Well-to-do—Dr. David Lawson. (c) The Middle Classes—Dr. Noel Bardswell. (d) The Working Classes—Dr. Wilfred O'Meek. To be continued on November 19th.

TUESDAY.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.—5 p.m., First FitzPatrick Lecture by Dr. Arnold Chaplin: Medicine in England during the Reign of George III.

THURSDAY.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.—5 p.m., Second FitzPatrick Lecture by Dr. Arnold Chaplin: Medicine in England during the Reign of George III.

ROYAL COLLEGE OF SURGEONS, Lincoln Inn Fields, W.C.—3 p.m., Annual meeting of Fellows and Members.

FRIDAY.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos Street, W.—5.30 p.m., Dr. A. T. Ozard: Some Sanitation Problems of the Sugar Estates and Villages of British Guiana. Dr. A. J. Chalmers and Dr. Raino Pekola: *Enteromonas hominis* da Fonseca 1915. Dr. A. C. Stevenson will show specimens of trypanosomes in the brain of guinea-pigs.

ROYAL SOCIETY OF MEDICINE.—Section of Dermatology: Thursday, 4.30 p.m., Cases. Section of Otolaryngology: Friday, 5 p.m., Address by the President, Dr. H. Banks Davis. Paper by Mr. T. Mark Howell: Ménière's Symptoms; Their Causation and Treatment. Cases. Section of Electro-Therapeutics: Friday, 8.30 p.m., Clinical evening: Cases, radiograms, etc.

POST-GRADUATE COURSES AND LECTURES.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.

DIARY OF THE ASSOCIATION.

Date. Meetings to be held.

NOVEMBER.

15 Thurs. London: Procedure Subcommittee, Insurance Act Committee, 2.30 p.m.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 17TH, 1917.

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British Medical Association.

CURRENT NOTES.

The New Regulations for Treatment of Discharged Disabled Soldiers and Sailors.

THE recent Conference of Panel Committees after a long discussion passed a resolution approving the action of the Insurance Acts Committee in accepting the new regulations as an experimental arrangement. The resolution was passed by such a large majority as justified the members of the Conference in believing that the regulations would now be accepted by all Panel Committees. This seems not to be the case. The London Panel Committee has issued a circular to practitioners on the panel in London urging them to write to the Insurance Committee refusing to accept discharged disabled soldiers and sailors on the lines laid down in the new regulations. The Panel Medico-Political Union, also, has issued a circular to insurance practitioners generally, urging them to take the same course. The result of the vote taken at the Conference on a motion proposed on behalf of the London Panel Committee was overwhelming against the policy of rejecting the regulations, and can only be interpreted as a decision of the very large majority of Panel Committees in favour of accepting them as a temporary measure—that is to say, of acquiescing in the experiment. The experiment is intended to show whether, and to what extent, discharged disabled men require more attendance than the average insured person, and, therefore, what capitation fee would be suitable to meet their case. If some practitioners refuse to attend on the lines of the new regulations while a large majority accept the terms, the experiment which the Conference approved will be vitiated.

Inquiry into Central Insurance Pool.

In a current note last week it was mentioned that Dr. J. C. Lyth of York had been invited to act on the committee which is to co-operate with the President of the Institute of Actuaries in an inquiry into the composition of the Central Insurance Pool. Dr. Lyth has, however, intimated that his other engagements will not allow him to accept the invitation, and Dr. Peter Macdonald of York has been invited to act in his stead, and has agreed to do so.

PROCEEDINGS OF COUNCIL.

A MEETING of the Council was held at 429, Strand, on October 24th last, when there were present:

Dr. J. A. Macdonald, Chairman of Council, in the chair; Sir T. Clifford Allbutt, President; Mr. E. B. Turner, Chairman of Representative Meetings; Dr. G. E. Haslip, Treasurer; Lieut.-Colonel Sir James Barr, Dr. M. G. Biggs, Lieut.-Colonel R. A. Boiam, Dr. H. B. Brackenbury, Dr. H. J. Campbell, Dr. Francis W. Clark, Major Russell Coombe, Dr. J. Singleton Darling, Dr. Edward J. Dornville, Lieut.-Colonel R. H. Elliot, I.M.S., Captain E. Rowland Fothergill, Dr. A. Fulton, Dr. T. W. H. Garstang, Dr. J. J. Giusani, Dr. T. Duncan Greenlees, Mr. N. Bishop Harman, Dr. I. W. Johnson, Dr. R. Langdon-Down, Major Albert Lucas, Fleet Surgeon F. D. Lumley, R.N., Dr. H. C. Mactier, Major George Parker, Dr. C. E. Robertson, Dr. S. Noy Scott, Dr. F. J. Smith, Dr. W. Johnson Smyth, Dr. W. B. Crawford Treasure, Dr. T. Jenner Verrall, Dr. Claude Wilson, and Dr. O. R. M. Wood.

Apologies.

Letters of apology for non-attendance were sent by Dr. John Adams, Major A. C. Farquharson, Dr. James Green, Dr. John Mills, Lieut.-Colonel J. Munro Moir, Dr. E. N. Nason, Dr. John Stevens, and Major C. S. Young.

Death of Dr. Roberts Thomson.

THE CHAIRMAN reported the death of Dr. John Roberts Thomson, President of the Association at the Bournemouth meeting in 1891, and subsequently President of Council 1899-1901, and was requested to forward to Mrs. Thomson the sympathy of the Council in her bereavement and an appreciation of the valued services rendered by Dr. Roberts Thomson to the Association.

Resignation from Council.

Major J. Livingstone London, representative of the Glasgow and West of Scotland (five County Divisions), Border Counties, and Stirling Branches, wrote resigning his seat on the Council consequent upon his military duties.

Lieut.-Colonel Montgomery-Smith, D.S.O.

The Chairman was requested to forward to Colonel Montgomery-Smith, a former member of Council, a letter of congratulation on being awarded the D.S.O.

FINANCE.

Council Room.

It was decided to carry out certain structural alterations in the Council Room with a view to improving the light and ventilation.

Accounts.

The accounts for the period June 2nd to September 30th, 1917, amounting to £18,221 18s. 7d. were approved, and the Treasurer was empowered to pay the same.

ORGANIZATION COMMITTEE.

Annual Representative Meeting.

THE question of the advisability of altering Article 29, as to the holding of Annual Representative Meetings, has been considered, and the Council is of opinion that it is inadvisable to obtain powers to suspend the Annual Meetings of the Representative Body.

Grants to Branches for 1917.

A further grant of 2s. per head was made to the Dorset and West Hants Branch, and 1s. to the Lancashire and Cheshire Branch. No grant is made to the East Anglian Branch, which had in its possession at December 31st, 1916, including moneys in the hands of Divisions, a balance sufficient to meet its average approved expenditure, and leave the Branch in hand at the end of 1917 a balance equivalent to at least 2s. per Branch member.

Representation of Divisions in Representative Body, 1918-19.

THE Home Divisions are provisionally grouped in constituencies for election of Representatives 1918-19 in the same way as for 1917-18, except that the Dewsbury Division of the Yorkshire Branch is grouped with the Leeds Division of that Branch. This provisional list of constituencies will be forwarded to the Divisions, and if any proposals for alteration are received by January 7th, 1918, the constituencies affected by these proposals will be reconsidered at the January meeting of the Council. Each Oversea Division and Division-Branch which has an Honorary Secretary and the necessary organization is

granted independent representation in the Representative Body 1918-19.

JOURNAL COMMITTEE.

Usefulness of the Journal.

Certain criticisms as to the usefulness of the JOURNAL having been carefully considered, the Council is of opinion that the present form of the JOURNAL on the whole is suitable, and does meet the present needs of the Association, but feels that members would welcome an increase in the number of contributions on clinical subjects. In order to increase the general interest of members the Editor has been requested to develop in the SUPPLEMENT the column of "Current Notes" on the Association work by publishing weekly notes on the work of various committees and subcommittees.

CENTRAL ETHICAL COMMITTEE.

Position of Practitioners Examining Patients of other Practitioners.

With regard to the rules approved by the Annual Representative Meeting 1912, respecting the position of medical practitioners called upon to examine (otherwise than by request of the patient or persons acting on his behalf) patients who are under the care of other practitioners, after consideration of certain suggestions made at the Annual Representative Meeting, 1917, it was agreed that in Rule 1 the word "examination" be not substituted for the word "visit" in each instance, while Rule 5 should not be amended.

PUBLIC HEALTH COMMITTEE.

Ministry of Health.

The Chairman of the Committee, with the consent of the Council, withdrew certain recommendations in view of the fact that the Ministry of Health Committee was conferring with the medical officers of health organizations upon the matter.

MEDICO-POLITICAL COMMITTEE.

Medical Certificates of Incapacity for Work of Munition Workers.

Medical practitioners are urged to refuse to sign the elaborate form of certificate of incapacity for work, issued by the Ministry of Munitions, unless an adequate fee be paid for it. The Annual Representative Meeting, 1917, decided that one shilling was not adequate for that form of certificate.

Lay Persons and the Practice of Medical Radiography.

The Council is of opinion that it is not desirable to encourage the practice of medical radiography by lay persons, except under the direct instructions and supervision of medical practitioners.

Medical Fees for Private Practice.

The Council came to the decision that without prejudice to the sufficiency or otherwise of medical fees before the war, it considers that under present war conditions individual or local collective action in the direction of securing an increase of medical fees is justified.

Medical Motorists and Petrol.

The Medico-Political Committee was instructed to consider the advisability of issuing a badge by the Association to its members for their motor-cars, and, in conjunction with the Chairmen of Council and Representative Meetings, was empowered to take any necessary action in connexion therewith. Should the Committee decide to take the action suggested, the various chief constables throughout the kingdom will be informed.

Postal Medical Officers.

It was referred to the Medico-Political Committee to consider the question of the desirability of the Association taking action with a view to securing an increase in the capitation payment to postal medical officers.

INSURANCE ACTS COMMITTEE.

Conference of Representatives of Local Medical and Panel Committees.

The Chairman of the Committee reported that the Conference on October 18th decided by 113 to 16 to renew its expression of confidence in the Committee as the central negotiating body of the Local Medical and Panel Committees of the country.

HOSPITALS COMMITTEE.

Payment for Treatment of Discharged Disabled Soldiers and Sailors at Voluntary Hospitals.

It will be recommended to the Annual Representative Meeting that where it is possible, without detriment to the claims of the civil population, to give hospital treatment, either as in- or out-patients, to discharged soldiers and sailors for whom a public authority is liable, a charge should invariably be made which shall repay the hospital for cost of working and maintenance, and that in addition £2 2s. per case treated, or alternatively a sum equal to 10 per cent. of the amount paid to the institution for working and maintenance expenses, should be put at the disposal of the medical staff.

CHAIRMEN'S COMMITTEE.

Ministry of Health.

A Special Committee was appointed, in place of the Subcommittee which has hitherto had the matter in hand, to deal with the Ministry of Health question, consisting of, in addition to the officers of the Association, the following practitioners: Dr. John Adams (Glasgow), Dr. E. J. Domville (Exeter), Dr. T. Campbell (Wigan), Mr. N. Bishop Harman (London), Professor A. Bostock Hill (Birmingham), Dr. H. J. Cardale (London), Dr. T. Ridley Bailey (Bilston, Staffs), Dr. Alice Benham (London), Dr. M. G. Biggs (London), Dr. H. J. Campbell (Bradford), Captain E. R. Fothergill (Brighton), Sir Malcolm Morris, K.C.V.O., (London), Dr. J. Kennish (London), Dr. T. W. H. Garstang, and Mr. R. J. Johnstone (Belfast) (to be invited when questions which may concern Ireland are under consideration). The committee is instructed to take action in connexion with the following Minutes of the Annual Representative Meeting, 1917, and to report to the Council:

Minute 104.—Resolved: That a Ministry of Health should be created to take over from the existing Government departments such duties as are concerned with the health of the community and to deal with those duties only.

Minute 114.—Resolved: That the Representative Meeting approves generally the scheme submitted for the establishment of a Ministry of Health, and instructs the Council to consider the amendments presented to the Representative Meeting, or by any Divisions, to present the scheme to the Government, and to secure its acceptance so far as it is found to be possible.

NON-PANEL COMMITTEE.

A Non-Panel Committee was reappointed to consider in what manner the British Medical Association can best promote the interests of members who have not entered into agreements with the Insurance Committees.

The Committee consists of, in addition to the *ex officio* members, Dr. Kennish (Wandsworth), Dr. M. G. Biggs (Battersea), Dr. J. Stevens (Edinburgh), Dr. Howell (Putney), Dr. H. B. Densham (Stockton), Dr. Nason (Nuneaton), Dr. H. B. Brackenbury (Stroud Green, N.), Dr. Charles Buttar (London), with power to co-opt not more than four additional members.

CANDIDATES.

There were 145 candidates for membership of the British Medical Association and they were duly elected.

INSURANCE.

NATIONAL HEALTH INSURANCE AMENDMENT BILL.

THE National Insurance Amending Bill, introduced in the House of Commons by Sir Edwin Cornwall, is a measure of forty-five clauses and five schedules. The bill finds its origin in the report of a Departmental Committee, of which Sir Gerald Ryan was chairman, appointed last year to consider what amendments in the financial scheme were desirable upon experience of the administration of the sickness, disablement, and maternity benefits. The bill does not altogether follow the recommendations of the report as regards finance; it varies them, and it also makes proposals to improve the working of National Insurance. Thus it deals with (1) financial provisions, (2) simplification of machinery, and (3) additional powers.

FINANCIAL PROVISIONS.

The Ryan Committee found that as regards men, and even as regards women generally, the financial basis of the Act was sound, but that the claims of married women

had proved to be in excess of the actuarial allowances. When they framed the scales the actuaries had no experience of the insurance of women. The Ryan Committee proposed an additional grant of £150,000 per annum from the Exchequer, but, though this was allocated by Parliament some time previously, it was held up. The bill proposes the recognition of this grant and of the further sum of £250,000 per annum. The Ryan Committee proposed to extend the intervals between valuations of societies from three to six years; the bill proposes that the normal intervals shall be five years instead of three years, and the men's Special Reserve Fund to provide against the remote effects of war service upon the health of insured men is dropped.

Under the existing Acts there is set apart from each weekly contribution for an insured woman the sum of 1½d. for the redemption of reserve values. The bill proposes that this sum shall be reduced to 1¼d. and that the difference of ½d. per contribution shall be released to provide an additional margin to approved societies for their ordinary benefit fund.

The proportion of each weekly contribution, which will in future be set aside by the Commissioners, will be 1¼d. for men and 1½d. for women, but the bill proposes that ¾d. in the case of men and ¾d. in the case of women shall be retained by the Commissioners for the purpose of constituting two new reserve funds known as the Contingencies Fund and the Special Risks Fund.

A third new fund is created called the Women's Equalization Fund. The income of this fund is provided out of Exchequer moneys. It is to be constituted retrospectively, and for the years 1913-16 inclusive its income will be derived from an application of the £500,000 special grant for women voted by Parliament in 1914, supplemented, if necessary, by a payment from the accumulated reserve values. For 1917 and subsequent years the whole income will be provided out of the new Exchequer grants which the Government has undertaken to find.

Application of Funds.

The Women's Equalization Fund is to be applied in assisting approved societies in meeting their liabilities in respect of the sickness claims. A scheme is to be framed by the Joint Committee under which a sum not exceeding 8s. will be paid to a society for every married woman member to be available for the payment of benefits. Although the money is found by the Exchequer, the payment will be treated as a payment from contributions, and accordingly societies will have a claim to an additional two-ninths from State moneys.

The Contingencies Fund will be apportioned to societies in proportion to the number of contributions paid in respect of their members. It will be available for meeting any deficiency of the society or of the branches, and no part of the surplus of any society or branch disclosed on a valuation will be applied in meeting any deficiency in any other society or branch. Thus each society or branch will have its own Contingencies Fund, the object of which is to meet its own deficiency. Any sum not required to meet the deficiency must be carried forward until after the second valuation; thereafter any balance more than necessary for a reasonable reserve may be applied as a surplus available for additional benefits under Section 37 of the 1911 Act. There are provisions to guard against maladministration.

The Special Risks Fund, the income of which is derived, as explained above, from a proportion of the contributions retained by the Commissioners, will be supplemented by the annual parliamentary payment of £150,000, to which reference has already been made, and any interest which the accumulated fund may earn will be available to make good any deficiency not met out of the Contingencies Fund of a society:

(1) Due in whole or in part to an abnormal rate of sickness attributable to—

- (a) Nature of employment;
- (b) Environment;
- (c) Physical condition of the members;
- (d) Any epidemic disease; or

(2) Due to any other special cause beyond the control of the Society or Branch.

It is laid down in the bill that the National Health Insurance Joint Committee shall, if requested by a society, appoint an independent body to investigate the circumstances of a deficiency.

SIMPLIFICATION OF MACHINERY.

It is proposed to abolish for the future the voluntary class of contributors, but to admit to a new class of voluntary contributors all the present class as at November 5th, 1917, and also all persons who have been compulsorily insured for 104 weeks, and who give notice that they desire to be voluntary contributors. This qualification of two years comes in place of a previous one of five. The new class will pay the ordinary employed rate of contribution, and will receive the ordinary benefits, except that a voluntary contributor resident in Great Britain who is not entitled to receive medical benefit because his income exceeds £160 per annum will be entitled to a rebate of contribution of 1¼d.

It is proposed in future that where workers receive rates of remuneration of 2s. or less a working day, the employer shall pay the full contribution, and may claim repayment of the amount advanced. The contribution payable by an employer for an employee who holds a certificate of exemption at present varies with rate of remuneration. It is proposed in future that in every case the contribution shall be 3d. per week.

No claim can be made at present for maternity benefit until an insured person has been 26 weeks in insurance and paid 26 contributions, or, in the case of a voluntary contributor, 52 weeks and 52 contributions. The bill proposes a uniform period of 42 weeks and the payment of 42 contributions. The voluntary contributor will receive a concession of six weeks and six contributions, and the approved society in the case of an ordinary contributor will receive a measure of protection against "constructive" entrance to insurance for the period of drawing maternity benefit. It is felt that the addition of 16 weeks and 16 contributions will be an effective deterrent to a growing tendency to engage in work for a few days in order to secure maternity benefit.

Much trouble has been caused to societies by failure to give timely notice of sickness or disablement. It is proposed that unless notice is given within three days of the commencement of the incapacity, benefit shall ordinarily be payable only from the date of notice.

Where an insured person ceases to be employed or to pay contributions as a voluntary contributor he will for twelve months after the last contribution remain an insured person entitled to ordinary benefit, and to medical and sanatorium benefits to the end of the year in which he ceases to be insured. Thus, a person who drops out of insurance in January, 1918, will receive ordinary benefits till January, 1919, and medical benefit to December 31st, 1919. If, during any part of the twelve months, he is incapable of work by incapacity and gives notice to his society, the period of incapacity will be added to the twelve months. If such a person again enters insurance he will be treated as a new entrant.

Another fresh provision touches the right of an insured person to change from one society to another. Obviously the loss of a substantial number of members by such transfers might imperil the stability of the society, and the desire to change may be due to the resentment of reasonable inquiries. The bill proposes expressly to allow insured persons to terminate membership, but to do so only at times prescribed by the Commissioners, and there are various other safeguards against the risks indicated.

Clause 20 amends the law in respect of contributors who are inmates of hospitals, etc., and provides for the payment of any benefits which accrued during such residence being paid to the insured person's representatives in the event of his death in the institution.

The present complicated provisions of the Act under which a woman on marriage has various options are proposed to be repealed, and in place of these options it is proposed to provide for a marriage benefit of £2 with a right to medical and sanatorium benefit to the end of the year following that in which she ceases to be employed.

This provision is in effect on the lines of the surrender-value provision which is afforded under ordinary insurance policies.

One clause of the bill varies the existing powers of the Insurance Commissioners in regard to the withdrawal of the names of medical practitioners from lists. The text is as follows:

(1) Where the Insurance Commissioners in pursuance of their powers under section fifteen of the principal Act remove

the name of any medical practitioner from any list of medical practitioners prepared under the said section, they may, if they think so to do, remove his name from all or any of the other lists so prepared in which it is at the time included, and until such time as the Commissioners direct to the contrary that practitioner shall be disqualified for inclusion in any other list, whether in England, Scotland, or Wales, in which his name was not then so included or from which it was then removed.

(2) Regulations made under section fifteen of the principal Act may, subject to such modifications as may be prescribed, provide for the application to inquiries held under paragraph (b) of subsection (2) and paragraph (b) of subsection (5) of the said section respectively of any of the provisions of the Arbitration Act, 1889, relating to the costs of an arbitration, the attendance of witnesses, and the production of documents, and the regulations may provide that the costs of any inquiry and of the finding thereon shall be in the discretion of the Commissioners instead of in the discretion of the person holding the inquiry.

The special provisions of Section 45 of the 1911 Act regarding aliens are repealed, and it is proposed that they shall be treated as ordinary insured persons.

Section 47, which provides a special rate of contribution in cases where an employer has undertaken to pay wages during sickness, is repealed.

Inmates of reformatory or charitable institutions who receive maintenance and medical attendance might hitherto on the application of the managers be exempted from insurance, their benefits being suspended. It was a condition of the exemption that the institution should, in the event of their leaving the institution, provide the capital sum necessary to put them in a position to obtain the ordinary benefits. It has been found that the provision is difficult to work, and that under the amended scheme of arrears such cases are best treated under the general provisions. The section is repealed.

Section 63 of the original Act, which dealt with the question of excessive sickness, is amended. It is proposed that where an allegation of excessive sickness is made by an approved society or insurance committee,

the society or committee shall, in the event of their failing to arrive at an agreement with the person or authority concerned refer the matter with a statement in support of the allegation to the Insurance Commissioners, and shall not make an application for an inquiry unless the Commissioners are of opinion that a *prima facie* case for an inquiry is disclosed, and authorize such an application to be made.

In the Act the definition of "excessive sickness" is "in excess of the average expectation of sickness by more than 10 per cent." The bill proposes that for these words shall be substituted "in excess of the amount of sickness which, in the opinion of the person holding the inquiry, ought, in all the circumstances of the case, to have occurred."

Further powers are to be conferred on the Commissioners to make regulations dealing with a number of matters, including medical certification and the cost of administration of medical benefit.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary, £8 8s. per week.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

BURY INFIRMARY.—Junior House-Surgeon. Salary, £150 per annum.

DERBY. **DERBYSHIRE ROYAL INFIRMARY.**—House-Surgeon. Salary, £200 per annum.

DORCHESTER. **DORSET COUNTY HOSPITAL.**—Senior Student to act as House-Surgeon. Salary, £125 per annum.

GLAMORGAN COUNTY COUNCIL.—Temporary Woman Medical Officer in connexion with Medical Inspection of Public School Children. Salary, £200 per annum.

HAMPSTEAD GENERAL HOSPITAL. Haverstock Hill, N.W.—Resident House-Physician. Salary, £200 per annum.

HOSPITAL FRANCIS. Shaftesbury Avenue, W.C.—Anaesthetist. Honorarium, £25 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST. Brompton, S.W.—House-Physician. Honorarium, 50 guineas for

INVERNESS. **NORTHERN INFIRMARY.**—House-Surgeon. Salary, £100 per week and £1 ls. additional as war bonus.

LEICESTER ROYAL INFIRMARY.—House Surgeon. Salary, £250 per annum.

LONDON LOCK HOSPITAL. Dean Street, W.—House-Surgeon. Salary, £150 per annum.

NETLEY. **BRITISH RED CROSS HOSPITAL.**—Anaesthetist.

NEW HOSPITAL FOR WOMEN. Euston Road, N.W.—(1) House-Physician. (2) Obstetric Assistant. (3) Two House-Surgeons. (4) Resident Medical Officer at House of Recovery, New Street. (5) Clinical Assistants and Anaesthetists. Salary for (1), (2), and (3), £50 per annum, and for (4) £60 per annum.

NORTHAMPTONSHIRE SANATORIUM. Creaton.—Medical Superintendent. Salary, £300 per annum, rising to £350.

NOTTINGHAM CHILDREN'S HOSPITAL.—Resident Lady House-Physician and Anaesthetist. Salary, £250 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Casualty House-Surgeon (female). Salary at the rate of £250 per annum.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Salary, £120 per annum.

QUEEN MARY'S HOSPITAL FOR CHILDREN. Carshalton.—Temporary Assistant Medical Officer. Salary, £7 7s. a week.

ROTHERHAM HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Milroy Lecturer.

SUFFOLK HOSPITAL. Ampton Hall, near Bury St. Edmunds.—Assistant Resident Medical Officer. Salary, £200 per annum.

SUNDERLAND. **CHILDREN'S HOSPITAL IN CONNEXION WITH ROYAL INFIRMARY.**—Resident Medical Officer. Salary, £200 per annum.

TYRONE COUNTY COUNCIL.—Tuberculosis Medical Officer. Salary, £50 per annum.

WARWICK. **WARWICKSHIRE COUNTY COUNCIL.**—Assistant County Medical Officer of Health. Salary, £325.

WINCHESTER. **ROYAL HAMPSHIRE COUNTY HOSPITAL.**—Assistant Resident Medical Officer. Salary, £150 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House-Surgeon. Salary, £200 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

KIRKALDY. W. B., M.D. Edin., District Medical Officer of the Cannock Union.

ST. THOMAS'S HOSPITAL.—The following house appointments have been made:—Casualty Officers and Resident Anaesthetists: F. C. Odling, B.A. Cantab., M.R.C.S., L.R.C.P.; J. G. McCann, M.R.C.S., L.R.C.P.; C. V. Issard, M.R.C.S., L.R.C.P.; H. I. Mariner, Resident House-Physicians: W. E. Le Gros Clark, M.R.C.S., L.R.C.P.; J. S. Elciff, M.R.C.S., L.R.C.P.; E. A. Gibb, B.A. Cantab., M.R.C.S., L.R.C.P.; E. D. Russell, M.R.C.S., L.R.C.P. Resident House-Surgeons: T. F. M. Dilworth, M.B., B.Ch., B.A.O., N.U.I.; A. H. Hilmy, M.R.C.S., L.R.C.P.; F. R. G. Hief, B.A. Cantab.; R. Calvo, Resident House-Surgeon to Block 8; R. A. Walker, Resident Obstetric House-Physician; F. N. Reynolds, M.R.C.S., L.R.C.P.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

COFFEY.—On November 2nd, at 21, Storey Square, Barrow-in-Furness, the wife of Lieut.-Colonel Coffey, R.A.M.C., a daughter.

MARRIAGE.

ALDRIDGE-KNEVITT.—On Monday, November 5th, 1917, at Emanuel Church, Plymouth, by the Vicar, the Rev. Dr. Flynn, Charles Aldridge, M.D., of Belle Vue House, Plymouth, S. Devon, to Edith Knevitt, of 4, Thom Park Terrace, Mannamoad, Plymouth.

DIARY FOR THE WEEK.

MONDAY.

MEDICAL SOCIETY OF LONDON. 11, Chandos Street, W.1.—8.30 p.m., Resumed Discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis, by Sir Douglas Powell, Bt., Sir Arthur Newsholme, Dr. F. R. Walters, Dr. A. Niven Robertson, Dr. Grace Calvert, Dr. J. J. Perkins, and others.

FRIDAY.

ROYAL COLLEGE OF SURGEONS OF ENGLAND. Lincoln's Inn Fields, W.C., 5 p.m.—Professor A. Keith: Principles of Orthopaedic Treatment. Lecture I. Principles Enunciated and Applied by John Hunter.

ROYAL SOCIETY OF MEDICINE.—Tuesday, 5 p.m., General meeting of Fellows. Section of History of Medicine: Wednesday, 4.30 p.m., Exhibition of Books, etc. 5 p.m., Conjoint meeting with the Folk Lore Society. Dr. R. R. Marett: The Medicine Man. Section of Study of Disease in Children: Friday, 4.30 p.m., Cases.

POST-GRADUATE COURSES AND LECTURES.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. Prince of Wales's General Hospital, Tottenham, N.15.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE. Hammer-smith, W.

DIARY OF THE ASSOCIATION.

Date. Meetings to be Held.

NOVEMBER.

17 Sat. London: Science Committee, 11 a.m.

SUPPLEMENT

TO THE

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 24TH, 1917.

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British Medical Association.

CURRENT NOTES.

Repairs and Spare Parts for Doctors' Cars.

THE Priority Branch of the Ministry of Munitions has sent to the British Medical Association a copy of a circular addressed by the department to all makers of motor cars and cycles with reference to the supply of spare parts, and the execution of repairs to motor vehicles of their manufacture. The circular authorizes such manufacturers to supply spare parts, or execute repairs to motor cars or motor cycles used by doctors, dentists, or veterinary surgeons, necessarily for professional purposes, without application to the Ministry of Munitions, where the total value (including the value of labour as well as of material) does not exceed £10 at any one time for any one vehicle. The manufacturer must furnish to the Priority Department a monthly return of all orders executed by him under this authorization, accompanied by the written declarations of the users. The declaration must accompany each order, and be written in the following form:

I hereby declare that
the car Regn. No.
cycle
falls under the class of vehicle enumerated in Class (1).

The proviso is made that no order may be executed under this authority if such would directly, or indirectly, interfere with, or delay, the progress of any work in Class "A." If medical practitioners are unable to obtain their requirements from the makers of their cars under the above conditions, or if they need repairs and spare parts exceeding £10 in value, they should then, and then only, apply to the Priority Branch of the Ministry of Munitions, 1, Caxton Street, Westminster, S.W.1, for assistance, stating their requirements and the reasons for urgency.

A Motor Car Badge for Members of the Association.

In view of the new regulations restricting the use of motor cars to persons engaged in specified duties, the Council of the British Medical Association at its last meeting decided that a badge of distinctive character should be issued to members of the Association for affixing to their cars. A badge has therefore been designed, and will shortly be ready for issue to members who desire it. It will be of paper, gummed for attaching to the inside of the wind screen, and printed with the caduceus within the words "British Medical Association." It will be issued at the cost of 1s. to any member who undertakes to use it only when his car is engaged on professional or other duties within the regulations. Steps will be taken to bring it to the notice of all police authorities, who, in view of its significance and the conditions under which it is issued, will, it is hoped, give general instructions that cars displaying it are to be held up for inquiries as little as possible. The badge is expected to be ready for use by

the new year, and further particulars as to its issue will be given in this column, and also by notice to secretaries of Branches and Divisions.

Conditions of Dental Practice.

The Medico-Political Committee has accepted on behalf of the British Medical Association the invitation of the recently appointed Departmental Committee on the working of the Dentists Act, 1878, and matters connected therewith, to submit a memorandum dealing with (a) the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act, and (b) the extent of the inadequacy of the supply of qualified dentists and dental surgeons. Valuable information has been obtained from Branches and Divisions, and from individual medical practitioners, which is being incorporated in a memorandum for submission to the Departmental Committee, and will, if required, be supported by oral evidence of witnesses on behalf of the Association.

INSURANCE.

REMUNERATION UNDER THE INSURANCE ACTS.

DEPUTATION TO THE INSURANCE COMMISSIONERS.

A DEPUTATION of members of the Insurance Acts Committee of the British Medical Association was received by the Insurance Commissioners on November 15th. The deputation consisted of Dr. H. B. Brackenbury, Dr. T. Campbell, Dr. H. G. Cowie, Captain E. R. Fothergill, Dr. P. V. Fry, Dr. G. G. Genge, Dr. Hugh Jones, Dr. J. Ratcliff-Gaylard, Mr. E. B. Turner, Dr. J. Williams-Freeman, the Medical Secretary, and the Deputy Medical Secretary of the British Medical Association.

The deputation was received by Sir Robert Morant, K.C.B., Chairman of the National Insurance Commission (England), who was accompanied by Dr. J. Smith Whitaker, Deputy Chairman, Sir James Leishman, Chairman of the Insurance Commission (Scotland), and Dr. Meredith Richards, Deputy Chairman of the Insurance Commission (Wales).

For the sake of convenience the various points discussed are dealt with under the minutes embodying the resolutions passed at the Conference of Representatives of Local Medical and Panel Committees held on October 18th, and cross-headings have been introduced.

Insurance Acts Committee Representative of Local Medical and Panel Committees.

Dr. Brackenbury opened the discussion by referring to the resolution embodied in Minute 39, renewing the mandate of the Insurance Acts Committee to represent the Local Medical and Panel Committees in central negotiations, which the Conference had passed with thirteen dissentients. He pointed out that the resolution was a vote of confidence in terms substantially more emphatic than those of similar resolutions in previous years

Central Pool.

On Minute 67, asking for an inquiry by representatives of the Committee assisted by an independent actuary into the method of composition of the Central Pool, Sir R. Morant stated that the Commissioners and the Government Actuary were fully prepared to fall in with the suggestion made. Dr. Brackenbury announced that six members had been selected to deal with the matter and that the President of the Institute of Actuaries had been invited and had agreed to confer with the Government Actuary and report on the subject. It was agreed that the names of the six members should be furnished to the Commissioners, and that a preliminary discussion as to procedure should take place as soon as possible.

On Minutes 58, 59, and 60, dealing with questions of remuneration, Dr. Brackenbury stated that there were three distinct points in connexion with remuneration:

1. The composition of the Central Pool.
2. The actual rate of remuneration.
3. The method of distribution of the Central Pool among areas and among doctors.

The first point was the subject matter of Minute 67, already dealt with. With regard to point 3, the method of distribution was one of the principal grievances of the profession, and various resolutions of Panel Committees bearing on it had been referred by the Conference to the Insurance Acts Committee for consideration. That Committee hoped that the Commissioners would agree to some arrangements for discussion and investigation of this subject similar to those proposed for dealing with questions arising under Minute 67.

Sir R. Morant agreed that the matter might well be taken up in some such manner as was suggested, and it was further agreed that the necessary arrangements should be made as soon as possible.

Actual Amount of Remuneration.

As regards the second point, amount of remuneration, Dr. Brackenbury pointed out that various methods of increasing the amount might be suggested, but that the Insurance Acts Committee had been instructed to approach the Commissioners particularly with reference to an increase of the capitation fee. The reasons for this application were various, but the main consideration was the actual increase in the cost of carrying on practices and in the cost of living; 7s. was not worth what it had been when the bargain was made in 1912, and it was certain that the profession would never have made such a bargain if it had anticipated present conditions.

Another point which he pressed strongly was that the Government should not aim at paying the smallest amount for which they could get a doctor to undertake the work. The standard of services given by many insurance practitioners was far above the minimum standard, and they felt that the present capitation fee (which, having regard to the temporary resident calculations, corresponded to attendance fees at approximately the rate of 2s. 4½d. per visit and 1s. 5d. per attendance at the surgery) was altogether inadequate. The fact that in certain areas a high standard of work was not fully maintained by every practitioner was an argument in favour of rather than against raising the rate of remuneration. The profession felt that the matter was urgent. They did not press it last year, but in refraining from doing so they stated definitely that their willingness to continue on the existing basis must be regarded as a contribution by the profession to the country as a whole. The Conference now asked that the capitation fee paid for medical attendance in connexion with medical and sanatorium benefits be raised from 7s. to 10s.

Sir R. Morant agreed that it was the desire of the Government as of the profession to secure an effective medical service, but it was another question whether increased payment would alone or would necessarily secure this. It was, however, most important to know whether the present application was based on the diminished value of money, or whether it was put forward on the ground that, apart from war conditions or any other considerations which might prove to be temporary, the present rate of remuneration must be regarded as inadequate. If put forward on the latter grounds it could only be considered in connexion with a general revision of all the conditions of service, a matter on which obviously a final decision could not be reached by the Government

in any short time, if indeed at all under existing conditions. But if it were on grounds of war conditions the submission of this question to the Government would not involve such difficulties.

After some discussion it was agreed by the deputation that the present application should be submitted to the Government as one based on war conditions; this would, of course, be without prejudice (whether as regards the profession or the Commissioners) to any future consideration of the general question of the proper rate of remuneration for insurance practice.

Further points mentioned by the deputation in connexion with the question of increased remuneration were: (a) The heavy expenses under normal conditions of rural practitioners; (b) the increased number of women as compared with men in insurance; and (c) the number of children of well-to-do parents who had entered munition works and other industrial employment for the first time.

With regard to the second of these points, Sir R. Morant stated that the sickness incidence of women had been steadily decreasing, and suggested that though this was not an infallible criterion of the extent of the liability imposed by women as a class upon doctors, it afforded indications which had to be taken to some extent into account in making any estimate of that liability. Members of the deputation, while agreeing that this datum must necessarily be considered, expressed the opinion that it would be an extremely unreliable one from which to draw conclusions as to the amount of medical attendance required.

Invalided Soldiers: Mileage.

On Minute 30, objecting to the mileage allowance offered for attendance on discharged sailors and soldiers, Dr. Brackenbury stated that the Conference of Panel Committees had emphatically taken the view that the scheme of treatment of invalided soldiers was vitiated by the mileage arrangements. It was alleged that in many cases a rural doctor was actually at loss in attending cases.

Sir R. Morant suggested that there was no difference in principle between this question and the question of mileage in the case of ordinary patients, on which it was understood that the Committee had also received instructions to approach the Commissioners.

Rural Practitioners: Mileage.

Dr. Williams-Freeman, on behalf of rural practitioners, gave figures showing the cost per mile of motor travelling under pre-war and present conditions, and referred to the mileage rates paid by the Home Office and the War Office. After further discussion, it was agreed that the matter was one to be considered as a whole, and not merely from the point of view of the invalided soldiers arrangement.

Dr. Brackenbury stated that the matter was very urgent in view of the additional grievance that it was felt was being imposed by the mileage allowance under the new regulations, and Sir R. Morant agreed that it might be more quickly disposed of than the main question of increased remuneration, and stated that he hoped some decision could be announced in the course of a few weeks.

It was agreed that certain detailed figures which had been given by members of the deputation having rural practices should be forwarded to the Commissioners in the next few days, and that specific modifications should then be worked out promptly for consideration.

THE CENTRAL POOL AND THE INVALIDED SOLDIERS' FUND.

CHESTER.

The Honorary Secretary of the Cheshire Local Medical and Panel Committees was good enough to forward to us on November 7th a copy of an important correspondence between that Committee and the Commissioners, dealing with the remuneration of panel practitioners and the Invalided Soldiers' Fund. The Committee first informed the Commissioners that it had resolved to advise its constituents to give notice at the proper time of the termination of their agreements on the present terms at the end of the year. The Committee proposed to advise its constituents to accept service (a) at a capitation fee of 10s., and (b) on payment per attendance for invalided soldiers and sailors at the schedule rates stated in the new regulations, with a scale for operations based on

the Poor Law scale, but with a more comprehensive list of operations, and with the proviso that such payment per attendance must be the actual payments of the sums named in the agreed tariff, and not on any dividend basis or other indirect method of computation. The secretary of the Committee then set out at length the reasons which had influenced the Committee in arriving at the above decisions, and expressed doubts in particular as to the making up not only of the General Medical Benefit Fund, but the Invalided Soldiers' Medical Fund, which the Commissioners were requested to explain. The reply of the Commissioners, dated October 5th, commences by stating that they were not then in a position to deal with the general revision of the terms of remuneration of panel practitioners pending the Conference of Panel Committees. With regard to the scale of fees for services rendered to invalided soldiers the Commissioners state that it was submitted in detail to all Local Medical and Panel Committees, when it was adopted in the case of temporary residents and met with general approval. The remainder of the Commissioners' letter is as follows:

With regard to the application of the temporary resident dividend rate in ascertaining the payments to be made in respect of the services to disabled men treated under the special arrangements, I am to state that the sole object of this procedure is to apply to the treatment of discharged soldiers the rate per service applicable to ordinary insured persons and does not in any way limit the number of services for which the doctor will be paid. In order to remove any misunderstanding on the point, I am to explain that the payments to be made in respect of services to disabled men are in no way restricted to the amount in the Invalided Soldiers' Medical Fund. The position may perhaps be made clearer by means of a concrete illustration. Assuming for the purpose, that the aggregate of the doctors' accounts for services to disabled men when calculated on the scale contained in the regulations is £100,000 and the temporary resident dividend rate for the year is 95 per cent., the actual payment to the doctors will be £95,000 irrespective of the amount in the Invalided Soldiers' Medical Fund. If, as is likely to be the case, the amount in the latter is less than £95,000, the balance will be found by the Exchequer.

With reference to the remarks in your letter relating to the constitution of the General Medical Benefit Fund and Invalided Soldiers' Medical Fund, I am to state that the Committee appear to be under a substantial misapprehension as to the actual position.

The latter part of your letter suggests that while 9s. a head for invalided sailors and soldiers is clearly to be taken out of the General Medical Benefit Fund there is a doubt as to whether 9s. a head for such persons had previously been paid into that fund.

It cannot be too clearly stated that there is no justification for any such doubt as to the constitution of the General Medical Benefit Fund.

The doubt has apparently arisen in the case of members of approved societies who submit no stamped contribution cards. It is unnecessary, therefore, in this letter to deal in detail with any of the other classes. It may be mentioned, however, that all insured disabled men who do not belong to approved societies become automatically members of the Navy and Army Fund, and the 9s. in their case is paid by the fund for the solvency of which the Exchequer is liable. The number of such men is definitely ascertainable, and no difficulty therefore arises in their case in calculating the amount payable to the General Medical Benefit Fund.

Turning to the members of approved societies who submit no contribution cards, in respect of whom the doubt has arisen, the 9s. in their case (less the State proportion) is payable by societies, notwithstanding the absence of stamped contribution cards.

The Commissioners have stated in paragraph 43 of Memo. 229 I.C. that they fully recognize their responsibility for the proper constitution of the General Medical Benefit Fund and that they have no other purpose in view than to arrive as accurately as is humanly possible at the sum of money due to the doctors.

In paragraphs 29-31 of the Memo. it is explained that normally society members who are permanently incapacitated are a set-off in a central pool against excess credits in respect of other classes of insured persons. But in paragraph 39 the special procedure adopted in the 1915 medical benefit settlement is set out, and this course was again adopted at the instance of the medical profession in 1916. It is expressly stated in this paragraph that the total charges for 1915 against societies in respect of medical benefit were calculated on the basis of the charges for 1914, adjustments being made *inter alia* in respect of the number of insured persons discharged from the navy and army; these adjustments have the effect of adding the proper credits to the central pool in respect of these discharged persons.

It follows therefore that the proper credit at 9s. per head is paid into the Medical Benefit Fund annually in respect of discharged sailors and soldiers, and that societies are charged in respect of these men if they are members of societies and the Navy and Army Fund if they are not.

Insurance calculations affecting several millions of insured persons are of necessity complicated, but it should be apparent

from the extracts of Memo. 229 I.C. to which reference has been made that the original formula in accordance with which the Central Medical Pool is calculated has not been followed blindly, but has in fact been the subject of adjustment to meet the conditions created by the return of disabled soldiers and sailors to insurance, entitling them to medical benefit, and that it will, in accordance with the general undertaking given by the Commissioners in paragraph 42 of the Memo., continue to be adjusted either in that respect or in any other in which revision is called for, in order that the doctors may in fact receive what is due to them.

In reply to the above letter from the Commissioners the Panel Committee wrote on October 29th, reaffirming its resolution about the 10s. capitation fee, and expressing the hope that, now that the Conference had sat, the Commissioners would deal with the matters raised, in view of the near approach of the date when notices to terminate the agreement of panel services must be sent in. The Committee further informed the Commissioners that no system of capitation can be satisfactory to the profession "unless it be made upon the actual lists upon some given date in arrears, and not as at present on a system of estimate and conjecture." A further letter was sent by the Panel Committee on November 6th, asking the Commissioners to explain certain apparent discrepancies between the Commissioners' letter above and Memo. 236 I.C., and we hope to deal with this when the reply of the Commissioners is received. It is, perhaps, of importance to remember that in the Act of 1911, sect. 46, provision is made for a transfer value to be paid to approved societies by the Navy and Army Fund when men are discharged and join societies, and provision is similarly made for those who become deposit contributors, or whose state of health prevents them being accepted by any society.

LONDON.

At the meeting of the London Panel Committee on November 20th the regulations for medical attendance on discharged disabled sailors and soldiers were considered. A special meeting of the Committee, held the previous week, had adjourned the consideration of the matter in view of the fact that a deputation from the Committee was to be received by the Commissioners. The impression of the deputation, as given by the chairman, Dr. Cardale, was that the Commissioners took up the attitude that Article 16 of the general regulations did not apply in this instance, but was only intended to meet any special points affecting a local area. With regard to the general circumstances attending the introduction of the regulations, the Commissioners stated that they had not made and had no intention of making regulations to be immediately operative without having first satisfied themselves that the changes were not only acquiesced in but, so far as they could judge, were desired by panel practitioners generally. In this instance they admitted no illegality whatever. There was no statutory obligation on the part of the Commissioners to consult Panel Committees, but the Commissioners made it clear that they did recognize a moral obligation to consult the profession fully, and insisted that that moral obligation had been fulfilled in this instance. In view of this ruling of the Commissioners it was decided to send a circular to the practitioners placing the circumstances fully before them, and advising them to accept the new regulations. A proposal that counsel's opinion should be sought on the rights and powers of the Panel Committee under the Acts and regulations in order to make the position of the Committee clear, was opposed by Dr. H. B. Brackenbury, who, while agreeing that every opportunity should be taken to enlarge the rights and powers of Panel Committees, protested against the spending of perhaps £50 in eliciting counsel's opinion on the particular point at issue. He was supported by a number of members, one of whom, Dr. J. V. C. Denning, said that the contention of the Committee had been proved to be wrong on three points—namely, that the Commissioners were bound to consult with the Panel Committee before making any changes in the regulations, that the six or eight weeks' notice was a matter of right, and that the Commissioners had not the power to substitute a dividend for a capitation scheme of payment. Dr. Lauriston Shaw thought it desirable to take counsel's opinion as to whether Panel Committees had a right to be consulted, and, if they had not such right, as to the manner in which they should endeavour to secure it. The recommendation that counsel's opinion be sought, was, by a majority, agreed to.

THE DEMAND FOR AN INCREASED
CAPITATION FEE.

MEETINGS IN MANCHESTER AND SALFORD.

On November 16th a crowded meeting of panel practitioners was held at the Grosvenor Hotel, Manchester, to consider the position in reference to the demand for an increase in the capitation fee for attendance on insured persons. The meeting was summoned by the Burnley Panel Committee, and the invitation was sent to the panel practitioners of Burnley, Blackburn, Bolton, Acerington, Preston, Rochdale, Oldham, Manchester, Salford, Bury, and Darwen. From the circular convening the meeting it appeared that the Burnley Panel Committee had received a letter from the Medical Secretary of the British Medical Association, dated November 9th, stating that the suggested increase had been brought to the notice of the Commissioners, and that the interview with them, the result of which is reported in the SUPPLEMENT (p. 101), was about to take place. Dr. Cox added that in all probability the result of the negotiations would require consideration by a special conference before any definite line of action was decided upon, and that the British Medical Association was not going to risk a fiasco by handing in resignations now.

The meeting was attended by several hundred panel practitioners, and Dr. T. Arthur Helme was voted to the chair. It was evident from the outset that the meeting was very much in earnest in its resolve to enforce the increase in the capitation fee. Strong remarks were made by nearly every speaker as to the dilatory methods of the Insurance Acts Committee which, it was urged, ought to have gone to the Government long before, as it was known from previous negotiations with the Commissioners on this subject that the decision did not lie with the Commissioners; and it was complained that the meeting felt that it had only two clear days in which to organize any attempt to obtain resignations from the panel. It was proposed by Dr. J. H. Taylor of Salford, and resolved, that the Panel Committees of the towns represented should be urged to summon immediately emergency meetings in their respective areas to consider the position, and to take immediate action where thought desirable, and should be asked to report to a further joint meeting of the areas to be held at an early date.

In accordance with the above resolution of the joint meeting of panel areas, an emergency meeting of the panel practitioners of Salford was held on November 18th, and, in spite of the short notice, was largely attended. The feeling appeared to be unanimous that valuable time had been lost by the Insurance Acts Committee, and that "organization forthwith of the profession," which the Conference of Panel Committees had ordered, had not been carried out; only about thirty hours now remained in which any attempt to obtain resignations from the panel could be carried out. Though such a step was forcibly advocated by several speakers, it was not considered practicable in that short time, and the meeting felt that if the demand for the increased capitation fee were not granted it could only rely on the action of the Panel Medico-Political Union to obtain it by more drastic measures. Resolutions were adopted to the effect that a substantial increase in the capitation fee is necessary, owing to the increase of values due to the war, that negotiations with this object should be continued, that the increase should date from January 1st, 1918, and that pending such negotiations practitioners should continue to act on the panel.

It was also resolved to recommend that periodical joint meetings of all the panel areas of South-East Lancashire should be held for mutual information on insurance questions and to ensure more certainly concerted action when required.

In connexion with the above report, it may be pointed out that a circular addressed to Local Medical and Panel Committees on November 19th by the Medical Secretary contains the following paragraph:

"As it appears from documents that have been sent to this office that some committees were under the impression that the collection of resignations was to take place at once in support of the claim for increased remuneration, it should be noted that the following words were deleted from a motion placed before the Conference asking for the

increase—'and that the 1918 Agreements be not signed until they (the demands previously stated) are conceded.' This was done because it was explained (1) that this was the first time a specified increase had been discussed; (2) that the Conference had no means of knowing whether insurance practitioners, to the extent of the 80 per cent. required by the collective bargaining scheme, were prepared to hand in their resignations unless the demands were conceded; and (3) that it would not be helpful to conduct negotiations on a claim which had never been specifically put before the other side if it were known that resignations were being collected. The Conference having accepted this view, no steps are being taken by the Committee at present to collect resignations, and indeed these steps cannot be taken until the Insurance Acts Committee has a definite pledge of support to the scheme from all, or at any rate a great majority, of the Local Committees throughout the country."

Meetings of Branches and Divisions.

GLASGOW AND WEST OF SCOTLAND BRANCH.

The annual general meeting of the Glasgow and West of Scotland Branch was held in the Faculty Hall, Glasgow, on November 8th, when Dr. W. F. BROWN, President, occupied the chair, and reports by the Interim Secretary and the Treasurer were approved.

Election of Officers.—The following were elected:

President: Dr. W. S. Syme. *Vice-Presidents:* Dr. W. F. Brown, Dr. D. J. Mackintosh, M.V.O., Dr. Lawrie (Greenock).

Honorary Secretary: Dr. W. Bryce (re-elected). *Interim Honorary Secretary:* Dr. J. Wishart Kerr. *Honorary Treasurer:* Dr. J. Wishart Kerr (re-elected).

Representatives: On Joint (Disablement) Committee for South-West of Scotland under the Naval and Military War Pensions Act, 1915: Dr. W. F. Brown (Ayr); on National Council for Combating Venereal Disease: Dr. T. Russell (Tollcross).

Fees.—The question of the proposed increase of medical fees was discussed, and it was agreed to send the card which had been issued to practitioners in the city to all the members of the Branch with slight alteration.

The Secretary was instructed to write to the Public Health Committee of Glasgow, pointing out that medical practitioners do not receive the full sum of one shilling as allowed by law for notifications on account of their having to prepay the postage on such notifications, and asking the Public Health Committee to authorize the issue of stamped envelopes.

Votes of Thanks.—Votes of thanks to the office-bearers, the retiring president and the chairman concluded the proceedings.

Association Notices.

ELECTION OF COUNCIL, 1917-18.

In consequence of the resignation of Major J. Livingstone London, a representative of the Glasgow and West of Scotland (five county Divisions), Border Counties, and Stirling Branches, nominations were invited to fill the vacancy.

JOHN GOFF, M.D., The Lindens, Bothwell, Lanarkshire, being the only nomination, he is hereby declared duly elected.

GUY ELLISTON,

Financial Secretary and Business Manager.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty: Fleet Surgeons T. W. Phillips, M.B., to the Pembroke Dock Hospital and Yard; E. B. Pickthorn to the Medical Department, Admiralty; J. C. Ferguson, M.B., to Chatham Dockyard, vice Pickthorn; E. J. Finch, C.M.G., to the *Valiant*, vice Ferguson; B. F. Parish to R.N. Barracks, Chatham; C. B. Fairbank to R.N. Barracks, Devonport; J. Thornhill, M.B., to the *Hannibal*; F. J. L. P. McKenna, M.B., to the *Britannia*; W. E. Gribbell, to the *Victory*, for disposal. Staff Surgeons T. E. L. Jones to the *Glasgow*; W. C. B. Smith, H. Cooper, and R. McGiffin, M.B., to the *Tivid*, additional, for disposal. Surgeons promoted to acting Staff Surgeons: R. J. G. Parnell, J. H. B. Martin, M.B., F. L. Smith, C. D. Bell, M.B., T. C. Patterson, M.B., M. H. Langford, D.S.O., A. Fairley, M.B., A. G. V. French, A. C. Rusack, M.B., C. G. Sprague, Surgeons S. L. McBean, M.B., to the *Crescent*, additional; A. J. Tozer, to the *Powerful*. Temporary Surgeons J. F. McQueen to the *Pembroke*; T. E. Ashley to the *Tivid*; A. E. D. Bayliss to the *President*; J. B. Orr, M.D., D.S.O., M.C., and E. F. Deacon to Chatham Hospital; T. C. Clark, M.B., to the *Cumberland*, vice Thompson; F. D. Davies, W. H. Jones, A. J. Muirhead, M.B., and H. L. G. Foxall, to the *Victory*, for disposal; A. J. Pollock, M.B., and H. B. Maitland, M.B., to Haslem Hospital; W. A. McKerrrow to the *Victory* for R.N. Division; H. Rowan and A. L. Abel to the *Pembroke*, additional, for Chatham Hospital. To be temporary Surgeons: J. S. Ellis, D. McK. Black, R. Pollok, E. L. H. MacDowell.

ROYAL NAVAL VOLUNTEER RESERVE.

Staff Surgeon (acting) D. P. D. Wilkie to the *Victory*, additional, for disposal.
Surgeon Probationer R. C. Williams to the *Sourge*. To be Surgeon Probationers: W. M. Kennedy, R. G. Clouston.

ARMY MEDICAL SERVICE.

Colonel S. Hickson, C.B., M.B., to be temporary Surgeon-General.
Colonel J. W. Bullen, M.D., is retained on the active list under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.
Temporary Lieut.-Colonel T. P. Legg, C.M.G., M.B., F.R.C.S., to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieut.-Colonel J. H. Brooks, M.D., relinquishes his commission on account of ill health.
To be acting Lieut.-Colonels whilst in command of a medical unit: Major R. N. Woodley, D.S.O., temporary Captain A. Jones, M.C., M.D.
Temporary Lieut.-Colonel E. H. Starling, M.D., F.R.S., relinquishes his commission.

The undermentioned are granted temporary rank whilst serving with No. 83 (Dublin) General Hospital:—As Lieut.-Colonel: H. C. Drury, M.D., F.R.C.P.I. As Majors: J. Lumsden, M.D., C. M. Benson, M.D., F.R.C.S.I., S. H. Law, M.D., F.R.C.S.I. As Captain: J. W. Killen, M.B., F.R.C.S.I.

Temporary Major Sir Vincent Nash relinquishes his commission.
Temporary Major G. D. Gray, M.D., to be acting Lieut.-Colonel whilst in command of the Chinese General Hospital.

To be temporary Lieut.-Colonels: Lieut.-Colonel R. Bruce, D.S.O., M.D., Gordon Highlanders, T.F.; temporary Major A. D. Reid.

The undermentioned are granted temporary rank whilst serving with the Staincliffe War Hospital:—As Major: J. Russell, M.D. As Captains: H. Keighley, G. S. Mill, M.D.

Temporary Major K. W. Monsarrat (Captain R.A.M.C.T.F.) relinquishes his temporary commission on reposting to T.F.

Majors relinquish the rank of temporary Lieut.-Colonel on ceasing to command a training centre: (Brevet Lieut.-Colonel) B. A. Craig, A. N. Fraser, D.S.O., M.B.

Major J. M. Cowan, M.D., R.A.M.C.(T.F.), to be temporary Lieut.-Colonel.

Major E. H. Marshall, R.F.A.(T.F.), to be temporary Major.
E. W. Hore, M.B. (Lieut.-Colonel I.M.S.reb.), to be temporary Major whilst employed with the Wharfedale War Hospital.

Temporary Captain G. Schofield, M.D., to be temporary Major.
J. W. Darling, M.C., M.B., and H. D. Welby, M.B., late temporary Captains, are granted the honorary rank of Captain.

Temporary Captains relinquish their commissions: W. J. Calder, C. Sand, J. Todd, M.D., D. R. MacGregor, M.B., S. W. Fisher, M.B., W. O. Arnold, M.B., M. W. Robertson, M.B., J. C. King, L. A. Moore, M.B., C. J. Gibson, M.D., W. B. Heywood, M.D., A. R. Wight, M.B., C. G. L. Wolf, M.D., C. W. Chaplin, M.D., T. Woodman, M.D., A. Darlow, H. M. Brown, M.B., J. T. Hurst, M.C., M.B., C. S. Kingston, R. C. Thomas, R. Kennon, M.D., J. Fleming, M.B., E. W. Alment, W. G. Lidderdale, M.B., R. Park, M.D., M. R. MacKay, M.B., J. A. Smith, M.C., M.B., W. G. T. Hepplewhite, M.C., M.D., P. J. O'Reilly, M.C., D. K. Parkes, M.B., M. P. Scanlon, M.B., F. A. Murray, J. S. Stewart, M.B., J. C. D. Simpson, M.B.

The notifications in the *London Gazette* of September 28th and October 23rd regarding temporary Captain F. C. Drew, M.B., and temporary Lieutenant G. D. Laing, M.D., respectively are cancelled.

Temporary Captain S. Samuel, M.B., relinquishes his commission on account of ill health contracted on active service.

To be temporary Captains: L. E. Williams, M.D., H. C. Martin, M.B., C. D. Pile, M.B., D. Gillespie, M.D., H. S. Moore, M.D., C. D. Keen, M.D., S. Y. Walsh, M.B., A. G. Howson, M.B., G. B. Burwell, M.C., M.B., E. M. Eaton, M.D., J. G. Greenfield, M.B., A. C. Sturdy, M.C., F.R.C.S.

To be temporary Captains for duty with the South African Native Labour Corps: T. M. Johnstone, I. M. Swanepoel.

Temporary honorary Captain H. T. Thomson, M.D., having ceased to be employed with No. 11 Stationary Hospital, relinquishes his commission.

Temporary Lieutenants to be temporary Captains: C. W. Macpherson, M.B., T. H. Martin, M.B., M. J. Wilson, M.B., H. A. Whyte-Venables, M.B., R. V. Ford, C. J. R. Hoffmeister, W. Howat, M.B., A. W. Kendall, M.B., S. F. Fouracre, M.B., W. H. Duncan, F.R.C.S.E., R. J. B. Loney, S. F. Cheesman, M. J. Loftus, D. MacKinnon, M.B., W. J. Thomas, G. A. Crowe, G. C. Hartley, M.B., A. P. Pigott, C. Duncan, M.C., M.B., T. Clapperton, M.B., J. Geoghegan, M.B., C. T. M. Ploverright, M.B., W. McAlpine, H. J. Simson, M.B., M. H. Laslett, H. Goodale, J. R. Anderson, M.B., S. H. Ryan, M.B., R. W. Nairn, M.B., S. A. Owen, M.D., T. B. Sellers, F. J. Spilsbury, D. C. P. Taylor, C. J. N. Longridge, M.D., F.R.C.S., A. L. Saunders, H. C. Burbidge, E. V. Dunkley, M.D., F. Anderson, M.B., H. Gooch, M.B., W. Turner, M.B., J. L. Lawry, M.D., E. M. Fannin, M.B., A. L. Saunders, S. Potter, T. W. G. Johnson, M.B., S. P. Bedson, M.D., A. Chance, M.D., F.R.C.S.I., K. J. Aveling, M.B., G. Adam, M.B., A. Fleming, M.B., F.R.C.S., P. J. Verrall, M.B., F.R.C.S., J. B. Anderson, M.B., J. Campbell, M.B., S. Macbeane, M.B., L. Pern, S. C. Shanks, M.B., R. Franklin, W. J. Poole, M.B., C. W. Macpherson, M.B., V. St. L. Pinnock, M.B., F. S. Poole, W. Lessey, M.D., E. A. C. Beard, M.B., R. Curle, N. Purcell, M.B., G. W. Harrison, M.C., E. R. Thompson, M.B., D. L. Carmichael, M.B., R. J. McFeeters, M.B., H. Heathcote, M.D., F. N. Marsh, M.B., J. L. Rubidge, M.B., P. A. Hall, M.B., C. L. McDonagh, M.B., H. T. Howell, E. A. Donaldson-Sim, H. R. Grellet, A. H. Porter, M.D., J. Fanstone, M.B., J. B. Ferguson, M.B., G. E. Spicer, H. E. M. Bayliss, M.B., A. S. Bradley (late Staff Surgeon R.N.), J. Glaister, M.B.

Temporary Lieutenants relinquish their commissions: W. S. Wallace, J. C. Lee, G. Elam, M.D., J. H. Stephens, M.B., W. Dunn, M.B., J. C. Nixon, M.B., R. W. S. Walker, M.D., S. Hutchinson, F. Rogerson, M.B., C. Murphy, M.B., J. C. Murray, W. J. Morrish, M.D., A. B. Ferguson, M.B., T. W. Walker, M.D., A. Spong, M.D., F.R.C.S., G. E. Macvie, M.D., G. M. B. Liddle, M.B., F.R.C.S.E., W. B. Harris, C. M. Keillor, M.D., T. G. Fenton, F.R.C.S., A. Falconer, M.B., J. Anderson, M.B., R. J. Scarr, G. Saportis, M.D., R. Govan, M.B., M. A. Harrington, M.B., R. Dunstan, F. H. P. Wills, J. L. Scott, M.B., J. McC. Gibson, M.B., W. H. Canter, M.B., C. Hackney, W. W. Dempster, S. Nix, M.D., A. I. Simey, M.D., V. F. Kroenig-Ryan, E. Lachapelle, M.B.

Temporary Lieutenant A. S. Mellor, M.B., relinquishes his commission on account of ill health.

Temporary honorary Lieutenant R. A. Holmes to be temporary Honorary Captain.

Temporary honorary Lieutenant T. J. Blackshear relinquishes his commission on account of ill health.

To be temporary honorary Lieutenants: S. R. Meaker, J. R. Beaven, M.B., J. M. Bremner, M.B., V. S. Laurin, L. W. Darrab.

To be temporary Lieutenants: W. Wright, M.B., J. M. Glasse, M.B., W. V. Naish, M.D., V. C. Pennell, W. H. Richardson, M.B., H. W. P. Young, M.D., E. A. Miller, M.B., G. M. Cameron, J. McCausland, M.B., H. M. Gilbertson, B. R. Vickers, M.B., A. S. Bradley, M.B., A. Evans, P. J. Flood, F. W. K. Lawrie, M.B., W. S. Gibson, R. V. Howell, M.B., E. W. Atkinson, G. W. Clark, M.B., C. W. S. Boggs, H. Parsons, M.B., H. Tipping, M.D., T. C. Graves, M.B., F.R.C.S., J. A. C. Smith, M.B., H. Love, W. H. Condell, N. S. Williams, H. S. Campion, M.B., J. B. McMorland, M.B., B. W. Skinner, M.D., D. McCormack, C. K. Athle, H. F. Penman, M.B., W. H. Ogilvie, M.B., G. Hoffmann, M.B.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Lieutenants to be Captains: G. K. E. Inman, M.B., J. K. R. Landells, M.B., G. H. Rosedale, M.B., A. G. Anderson, M.B., E. Chapelle, M.B., F. J. C. Johnstone, M.B., J. Ratcliffe, M.B., J. Fellar, M.B., N. B. B. Fleming, M.B., H. D. Brown, M.B., W. M. Cameron, M.B., J. Crerar, M.B., W. Donald, M.B., G. M. Hetherington, M.B., A. R. Hill, M.B., T. J. Honeyman, M.B., J. N. Jamieson, M.B., S. Johnstone, M.B., H. E. McColl, M.B., D. B. Robertson, M.B., J. Steel, M.B., H. W. Torrance, M.B., R. N. Walker, M.B., J. E. Bannen, M.B., J. Beveridge, M.B., A. La B. Clark, M.B., R. Cunningham, M.B., J. MacA. Mackintosh, M.B., J. Stirling, M.B.
J. F. van der Westhuyzen, late Captain, is granted the honorary rank of Captain.

To be Lieutenants: Temporary honorary Lieutenant E. S. Phillips from R.A.M.C., W. D. Mackinnon, M.B., from Edinburgh University O.T.C., W. L. Yell, M.B., from Aberdeen University Contingent O.T.C., J. P. White, M.B., J. Macleod, M.B., and A. Riddell, M.B., from Glasgow University Contingent O.T.C., C. S. Baxter and W. Stansfield from Manchester University Contingent O.T.C., E. J. Coombe, J. Berry, R. F. C. H. Buchanan, J. B. D. Galbraith, M.B., I. M. Robertson, M.B., T. R. Wilson.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL SERVICE.

Assistant Directors of Medical Services: Temporary Major J. S. Jenkins, D.S.O., and to be temporary Lieut.-Colonel whilst so employed. Temporary Lieut.-Colonel C. E. Doherty relinquishes his appointment.
Deputy Assistant Director of Medical Services: Temporary Major A. Macphail.

CANADIAN ARMY MEDICAL CORPS.

Assistant Director of Medical Services:—Temporary Lieut.-Colonel H. M. Robertson relinquishes his appointment.
Temporary Major R. E. Wodehouse to be temporary Lieutenant-Colonel.

Temporary Major D. A. Whitton to be acting Lieut.-Colonel while specially employed.

Temporary Captains resign their commissions: J. F. McCracken, C. W. Anderson.

Temporary Captain G. H. Emery, from Western Ontario Regiment, to be temporary Quartermaster, with the honorary rank of Captain.

Temporary Lieutenant A. V. Greaves to be temporary Captain.

SOUTH AFRICAN MEDICAL CORPS.

Temporary Major A. Liebaert, M.D., and Captain H. J. Brady, from South African General List, to be temporary Major and temporary Captain respectively.

To be temporary Captains: A. H. Gifford, A. L. Gwiney, A. H. Lawrence.

G. Bidwell to be temporary Second Lieutenant.

BRITISH WEST INDIES REGIMENT.

I. McDowall, M.B., to be Surgeon Lieutenant.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Colonel W. Kinnear, M.D., K.H.P., relinquishes his commission on account of ill health, and is granted permission to retain his rank and to wear the prescribed uniform.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel A. W. Mackintosh, M.D., Major L. B. Rawling, and Captains K. W. Monsarrat, M.B., J. S. A. Thomas, M. H. Way, W. E. Alderson, G. S. Haynes, and F. E. Price, F.R.C.S., are restored to the establishment.

Officers seconded for duty with a general hospital: Lieut.-Colonel (Brevet Colonel) A. B. Gemmell, Majors R. A. Bickersteth, M.B., F.R.C.S., M.D., T. M. Allison, E. N. Cunliffe, M.D., Captains R. W. McKenna, M.D., P. R. Wrigley, W. J. S. Bythell, W. A. Hooton, H. H. Rayner, J. B. F. Wilson, J. Stokes.

Lieut.-Colonel C. Averill, M.D., from Assistant Director of Medical Services, to be Lieut.-Colonel.

Major (temporary Lieut.-Colonel) J. G. Andrew, M.B., relinquishes his temporary rank on alteration in posting, and is restored to the establishment.

Captain A. B. Whitton, M.B., to be Major, March 23rd, 1916 (substituted for announcement in the *London Gazette* of May 27th, 1916).

Major A. Wilson, F.R.C.S., vacates his appointment on the permanent personnel, and is restored to the list of officers available for service on mobilization.

Major A. S. F. Leyton, M.D., relinquishes his commission on account of ill health.

Lieut.-Colonel E. J. R. Evatt to be temporary Colonel whilst holding the appointment of Assistant Director of Medical Services of a Division and to remain seconded.

Major (temporary Lieut.-Colonel) R. M. West, M.D., relinquishes his temporary rank on alteration in posting.

Major A. C. Hartley, M.D., relinquishes his commission on account of ill health and is granted permission to retain his rank and to wear the prescribed uniform.

Major (temporary Lieut.-Colonel) F. W. Burton-Fanning relinquishes his temporary rank and is restored to the establishment.

Major C. G. Strachan from field ambulance to be Captain.

Captain (temporary Major) R. M. Wilson relinquishes his temporary rank on alteration in posting.

Captain A. Don to be temporary Major whilst specially employed.

Captain S. W. Plummer, M.D., to be Major, August 10th, 1914 (substituted for announcement in the *London Gazette* of August 7th, 1915).

Captain H. W. Beedman, M.C., to relinquish his commission on account of ill health.

Captain R. Gill resigns his commission.

Captain (acting Lieut.-Colonel) G. S. Williamson relinquishes his acting rank on ceasing to command a field ambulance.
 Captain (acting Lieut.-Colonel) A. A. Hingston, M.B., to revert to temporary Major with precedence as from November 10th, 1914, on ceasing to command a field ambulance.
 Captain C. L. Lander, M.B., to be acting Lieut.-Colonel whilst commanding a field ambulance.
 Captain R. A. Broderick, M.C., M.B., to be acting Lieut.-Colonel whilst commanding a field ambulance.
 Captains (temporary Majors) D. H. de Souza and J. Eason, M.D., relinquish their temporary rank on alteration in posting, and are restored to the establishment.
 Captain H. F. Wilkin, M.C., F.R.C.S., from A.M.S., to be Captain.
 Captain W. B. Secretan, M.B., F.R.C.S., is seconded for duty with a war hospital.
 Captain S. Acheson, M.B., relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.
 The seconding of Captain T. C. Holland, announced in the *London Gazette* of June 25th, 1917, is cancelled.

TERRITORIAL FORCE RESERVE.

Lieut.-Colonel S. A. M. Copeman, M.D., from R.A.M.C., to be Lieut.-Colonel.
 Majors C. S. de Segundo, M.D., and B. Addenbrook, M.D., from R.A.M.C., to be Majors.
 Captain L. C. V. Hardwicke, M.B., from field ambulance, to be Captain.
 Captain E. B. C. Mayrs, M.B., relinquishes his commission on account of ill health, and is granted the honorary rank of Captain.
 Captain (temporary Major) W. Tyson, M.D., and Captains A. G. Williams, A. Heath, M.D., F.R.C.S., W. J. Lacy-Hickey, M.B., T. Porter, M.B., J. A. Innes, M.B., W. Rogers, M.D., M. B. Dawson, and C. C. Messiter, from R.A.M.C., to be Captains.
 Captain R. G. Wills, M.B., relinquishes his commission on account of ill health.

VOLUNTEER FORCE.

Lincolnshire Medical Volunteer Corps.—Major H. P. Berry (R.A.M.C.T.F. Reserve) to be temporary Major.
County of Durham Medical Volunteer Corps.—Major T. E. Hill (late R.A.M.C.) to be temporary Lieut.-Colonel.
East Yorks Medical Volunteer Corps.—R. T. Forster (late Captain R.A.M.C.), D. H. Davy, and A. H. Field to be temporary Captains.
Lancashire Medical Volunteer Corps.—S. J. Yeates (late Lieutenant R.A.M.C.) to be temporary Captain.
Anglesey Regiment.—G. L. Jones (late Lieutenant R.A.M.C.) to be temporary Captain and Medical Officer.
Berkshire Regiment: 1st Battalion.—J. T. R. Millier to be temporary Lieutenant and Medical Officer.
Carmarthen Regiment: 1st Battalion.—Surgeon-Lieut.-Colonel E. Evans (late Welsh Regiment) to be temporary Captain and Medical Officer.
Durham Regiment: 1st Battalion.—J. C. French (late Surgeon-Lieutenant 2nd Durham R.G.A. Vols.) to be temporary Captain and Medical Officer.
Lancashire Regiment.—J. Brown to be temporary Lieutenant and Medical Officer.

Vacancies and Appointments.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House-Surgeon. Salary, £175 per annum.
BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary, £8 8s. per week.
BRISTOL ROYAL INFIRMARY.—(1) House-Physician. (2) House-Surgeon. Salary, £120 per annum.
DERBY: DERBYSHIRE ROYAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.
HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W.—Resident House-Physician. Salary, £200 per annum.
ILFORD URBAN DISTRICT COUNCIL.—Temporary Medical Officer of Health. Salary at the rate of £550 per annum.
KENSINGTON DISPENSARY AND CHILDREN'S HOSPITAL.—Resident Medical Officer.
LEICESTER CORPORATION.—Second Resident Medical Officer for the Isolation Hospital and Sanatorium. Salary, £300 per annum.
NEW HOSPITAL FOR WOMEN, Euston Road, N.W.—(1) House-Physician. (2) Obstetric Assistant. (3) Two House-Surgeons. (4) Resident Medical Officer at House of Recovery, New Barnet. (5) Clinical Assistants and Anaesthetists. Salary for (1), (2), and (3), £50 per annum, and for (4) £60 per annum.
NOTTINGHAM CHILDREN'S HOSPITAL.—Resident Lady House-Physician and Anaesthetist. Salary, £250 per annum.
QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—House-Surgeon. Salary, £100 per annum.
RECUPERATIVE HOSTELS FOR SAILORS AND SOLDIERS INVALIDED WITH NERVE STRAIN, Fitzjohn's Avenue, N.W.—(1) Honorary Neurologist. (2) Honorary Laryngologist. (3) Resident Medical Officer; salary, £400 per annum.
STOKE-ON-TRENT BOROUGH.—Resident Assistant Medical Officer at the Stanfield Tuberculosis Sanatorium. Salary, £250 per annum.
SUNDERLAND: CHILDREN'S HOSPITAL IN CONNEXION WITH ROYAL INFIRMARY.—Resident Medical Officer. Salary, £200 per annum.
WYRE COUNTY COUNCIL.—Tuberculosis Medical Officer. Salary, £500 per annum.

WARWICK: WARWICKSHIRE COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary, £325.

CERTIFYING FACTORY SURGEON.—The Chief Inspector of Factories announces the following vacant appointment: Coventry (Warwick).

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

BARBOT, D., M.B., Ch.B., Certifying Factory Surgeon for the Muirkirk District, co. Ayr.
COMBINS, William Edward Ashley, M.D., M.Ch., Medical Referee under the Workmen's Compensation Act, 1906, for the West Riding of the county of York (Macroom and Bandon Divisions), and for the portion of the East Riding of the county, including Cork City and Cork East Riding, except the towns of Passage Monkstown and Queenstown.
FITTON, H., L.R.C.P. Edin., M.R.C.S. Eng., Medical Officer of the Staincliffe Institution of the Dewsbury Union.
KING, J. C., M.R.C.S., L.R.C.P. Lond., Certifying Factory Surgeon for the Barry District, co. Glamorgan.
LEAKEY, C. M., L.M.S.S.A., Certifying Factory Surgeon for the Gunnislake District, co. Cornwall.
LEAKEY, Llewellyn James, B.A. Lond., M.D., Medical Superintendent of the Bristol Medical Mission, vice Dr. William Elder, deceased.
LUTHER, E. L., M.D. Dub., District Medical Officer of the Cerne Union.
MACARTHUR, John Hardie, M.B., Ch.M. Glasg., Medical Superintendent, Dunwich Benevolent Asylum, and Superintendent, Inebriate Institution, Dunwich, vice Linford Elsie Row, L.R.C.P. and S. Glasg., M.D. Brux., resigned.
ROBERTS, A. H., L.R.C.P. Lond., M.R.C.S. Eng., District and Workhouse Medical Officer of the Malling Union.
SCHOOLBREAD, Thos. B., M.B., C.M. Edin., Resident Medical Officer to the Carlisle Dispensary.
WILSON, A. R., M.D. Oxon., District Medical Officer of the Blandford Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTHS.

HANCOCK.—On the 15th November, at Bentley, Hants, the wife of Dr. F. Thompson Hancock, of a son.
PEARCE.—To Margaret Florence, wife of Francis Henry Pearce, Kingsland, Cumnor Hill, Oxford, a daughter (Margaret Adeline Worth), at Ridgebourne, Shrewsbury, the residence of her mother.

DEATH.

BARNARD.—On November 14th, at Boston, Lines, of acute pneumonia, Annie Thompson Barnard, M.D., B.S. Lond., D.P.H. Camb., youngest daughter of the late William Barnard, of Harlow, Essex.

DIARY FOR THE WEEK.

MONDAY.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—8.30 p.m., Adjourned discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis, to be continued by Sir William Osler, Dr. A. Niven Robertson, Dr. Grace Calvert, Dr. Camac Wilkinson, Dr. Muthu, Dr. Henry Ellis, Dr. Jane Walker, Dr. John Sorley, Dr. H. J. Cardale, and others.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—5 p.m., Professor A. Keith:—Principles of Orthopaedic Treatment: Monday, Principles and Practice of John Hilton; Wednesday, Principles and Practice of Hugh Owen Thomas; Friday, Methods applied by G. F. Stromeyer, W. Adams, and J. Wolff.

ROYAL SOCIETY OF MEDICINE.—Section of Medicine: Tuesday, 5.30 p.m., Serum Disease following Intrathecal Injections. Section of Epidemiology and State Medicine: Thursday, 5 p.m., Surgeon-Colonel V. Soubbotitch (Serbian Army): Typhus Fever in Serbia, 1914-15.

POST-GRADUATE COURSES AND LECTURES.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammer-Smith, W.

DIARY OF THE ASSOCIATION.

Date.	Meetings to be Held.
NOVEMBER.	
27 Tues.	London: Contract Practice Subcommittee, 2.30 p.m.
DECEMBER.	
13 Thur.	London: Propaganda Subcommittee, 2.45 p.m.

SUPPLEMENT

TO THE

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 1st, 1917.

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GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1917.

Tuesday, November 27th, 1917.

Sir DONALD MACALISTER, K.C.B., President,
in the Chair.

THE one hundred and sixth session of the General Council of Medical Education and Registration was opened at the offices of the Council, 44, Hallam Street, W., on Tuesday afternoon, November 27th, 1917.

PRESIDENT'S ADDRESS.

Gentlemen,—Happily I have to record but few changes in the membership of the Council since our last meeting. Dr. Robert Saundby, the representative of Birmingham University for the last twelve years, has retired, leaving a record of manful service of which he may well be proud, and for which we shall long be grateful. In all that concerned the work of the Council as a judicial body, his wide experience in the field of ethics, his well-balanced judgement, and his high sense of professional honour, gave his conclusions a great weight of authority. He is succeeded by the Vice-Chancellor of the University, Lieut. Colonel H. Gilbert Barling, C.B., whose eminence as a surgeon and an administrator ensures him a welcome among us.

Dr. George Wilks has also retired, on the ground of advancing age, after a membership of five years. We shall retain a pleasant remembrance of his courtesy and loyalty. The Society of Apothecaries of London has sent in his place Mr. Meredith Townsend, Medical Officer in the south district of Kensington. His official and personal knowledge of metropolitan conditions will be of assistance to the Council. You will learn with regret of the sudden death of our former colleague, Sir David C. McVail, who retired five years ago after twenty years' service as Crown member for Scotland. None who served with him will easily forget his forceful and independent spirit; and all will join with me in offering to his brother, Dr. John McVail, the present Crown member, our sympathy in the loss he has sustained.

His Majesty has been pleased to confer a baronetcy of the United Kingdom upon our Junior Treasurer, Sir Frederick Taylor, President of the Royal College of Physicians of London; and to admit to the Companionship of the Order of St. Michael and St. George Colonel David Hepburn, who represents in this Council the University of Wales. The Council itself is honoured by the distinctions thus bestowed on its members.

Direct Representatives.

By an Order of the Privy Council, dated August 10th, 1917, the tenure of office of the six Direct Representatives of the registered practitioners of the United Kingdom has once more been extended for a year. It would be a gratuitous error to predict what may happen at the end

of that time; but in view of the fact that a new Parliament is likely to be elected during 1918, it is possible that a general election of members to serve on this Council may fall to be held next November. In the meantime we can but carry on, with hope and courage, the duties entrusted to us, thankful that we retain for the time being the ungrudging services of our directly-elected colleagues.

The Ministry of National Service.

The conditions created by the war are pressing upon all departments of medical organization, straining to its limit the old machinery, and compelling the construction of new and extemporary devices. As you are no doubt aware, the medical duties of the Army Recruiting Department have been transferred to the civilian Ministry of National Service. The new Minister, Sir Auckland Campbell Geddes, is himself a registered medical practitioner, and he is assisted by a Medical Advisory Board, which includes members of this Council. The Ministry co-operates also with the statutory Professional Committees in England and Scotland, and through them with the Local Medical War Committees throughout the country. The new organization is designed to meet the national need of the time for the better distribution of medical services as between the army and navy and the civilian population, for the medical examination and classification of recruits for the various forms of national service, and for the conservation of our resources in the matter of candidates for medical qualifications. Many of the measures initiated by the Ministry are already in operation, and seem well calculated to produce satisfactory results in practice. It is our simple duty as a profession to support loyally the efforts of a Minister who brings to his responsible task full knowledge of the conditions and a keenly sympathetic intelligence.

Return of Medical Students from Combatant Service.

In several of my addresses since the war began, I have expressed the conviction that the withdrawal of students from the medical schools, for combatant service, would deprive the country of the necessary quota of new practitioners in the years 1918 and 1919. I have continued to press this conviction on the authorities, and have been enabled to support my view by the aid of statistics continuously furnished for the information of your Emergency Committee and of the Government by the deans of medical faculties and schools. You will remember that, in January, 1917, a census of students actually engaged in professional study showed that in the third year of the curriculum we could count only on 572 men and 261 women to provide in 1919 for the necessary accession of new practitioners to the Register. In normal times this accession should number about 1,100. Only by returning third year students then on active service could the deficiency be made good. In September the Army Council, by an instruction, subsequently amended in one point directed that students registered prior to August 1st, 1914, who had before enlistment completed two years of the curriculum, should be passed out of combatant service to resume medical study and proceed to qualification.

The Number of Students at Various Stages.

In order to determine the effect of this instruction, and to provide data for further action if necessary, the Minister of National Service requested that a fresh census of medical students in actual attendance during October, 1917, should be taken. The forms sent out by the Registrar were returnable on November 14th, and nearly all have now been received. So far as they go they show the following aggregate results, as compared with that of January, 1917:

	1917.	Men.	Women.	Total.
First year students	(Jan.	1,499	674	2,123
	Oct.	1,386	764	2,150
Second year students	(Jan.	987	472	1,459
	Oct.	871	642	1,513
Third year students	(Jan.	572	261	833
	Oct.	805	432	1,237
Fourth year students	(Jan.	851	164	1,015
	Oct.	709	194	903
Final year students	(Jan.	1,088	164	1,252
	Oct.	995	200	1,195

Of the men students of the first and second years over 520 were under 18 years of age in October, 1917, and about 180 are from places outside the United Kingdom. The third year men students (who last year numbered some 520) have increased by about 230, and the women students by about 220. The fourth year men numbered 709 and the women 194. Unless therefore all students of this standing are returned from service with the navy or the army, the supply of new men, duly qualified for the medical service of the country, cannot be maintained in 1919.

In the meantime the Minister has declared his intention to provide, if possible, that the supply of students in training shall be maintained at a level sufficient to ensure the annual accession of at least 1,000 new medical practitioners to the *Register*. To effect this purpose it will almost certainly be necessary to extend the scope of the Army Council's Instruction of September, either by relaxing its restriction to students registered prior to August 1st, 1914, or by including second year students who on enlistment were sufficiently advanced in their studies to compass the second professional examination within a few months.

Surgeon Probationers, R.N.

On the other hand, the Admiralty makes an urgent demand for capable third year students who have passed the professional examination in anatomy and physiology, and are able to render aid as surgeon probationers in the minor units of the navy. To withhold these from their studies for an indefinite period of service would unduly postpone the date of their full qualification as practitioners, and would proportionately diminish the number annually added to the *Register*. The Medical Director-General of the Navy has accordingly arranged with the Ministry of National Service that the period of service of surgeon probationers shall not be longer than six months at home or twelve months abroad. The functions of a surgeon probationer being comparable with those of a surgical dresser or student assistant in surgical wards, licensing bodies generally have agreed to accept his surgical service afloat as equivalent to six months of the hospital attendance prescribed for the minimum curriculum. The Admiralty arrangement should therefore ensure that most of the surgeon probationers will return and qualify within the normal period, and in the meanwhile they will have gained experience relevant to their profession, which may hereafter stand to their advantage as practitioners.

The Army and the Civilian Profession.

The claims of the army for fresh drafts from the civilian members of the medical profession continue, though it has become a serious problem how the claims are to be met. A War Office Committee, which included members of the Medical Council, visited the Western front during the summer for the purpose of discovering what economies in personnel, if any, might be made in the medical corps. Its report is not yet issued; but it is questionable whether any practicable economy can be commensurate with the continuous wastage due to the incidents of warfare. The devotion and success of the medical corps in preserving and restoring the health of our troops have been recognized in the warmest terms by the highest authorities; but the service is rendered at a heavy cost in sacrifice. The

Registrar informs me that on almost every page of the *Medical Register* he has had some military distinction to insert. But too often, after making the insertion, he has had to remove the bearer's name as having "died on service." In the three years 1911-13, the average number of names annually removed from the *Register* "on evidence of death" was 620. In the year 1916 the number rose to 983. In the current year it will probably not be less.

Officers of the American Medical Service.

The welcome co-operation of the United States of America in sending over medical units in advance of its troops, has afforded the Allies some relief in this respect. Officers of the American Medical Service have accepted honorary or other temporary positions in hospitals at home and abroad, and have thus released British officers and practitioners for other work. But we shall not be able to count on this help after the arrival in Europe of the American forces in full strength. And again we cannot count on American civilian practitioners to furnish many accessions to our *Register*. In the absence of American Federal legislation authorizing professional reciprocity between the United States and Britain, His Majesty in Council is debarred from applying the Medical Act, 1886, to the United States, and this Council has accordingly no power to admit American medical practitioners to the *Register*, unless they pass a recognized examination in medicine, surgery, and midwifery, and so acquire a professional title registrable in this country. Where such legislation, within or without the Empire, has been accomplished, the Council has not failed to give it effect. Already the Foreign and Colonial Lists of the *Register* include over 1,000 practitioners, and their legal status in regard to practice is the same as our own.

Dentists and Military Service.

I mentioned in May that at the request of the Director-General of National Service, Mr. Tomes and I had attended a conference on questions relating to the supply and distribution of qualified dentists for military and civil purposes. The recruiting authorities had apparently adopted no general principle regulating the calls on the dental profession for combatant service, and in some quarters the dental needs of the community had not been sufficiently regarded. Certain conclusions on the subject were adopted and laid before the Government. Since that time the question has been pressed on the authorities by the British Dental Association, and by myself on behalf of the Council. Probably as a result of our communications, a recognized professional board, called the Dental Service Committee, with a subcommittee for Scotland, has now been set up. It will advise the central and local tribunals in respect of the exemption of dentists, and will otherwise assist the authorities on the questions of supply and distribution.

Unqualified Practitioners.

Certain recent trials have shown that the present shortage of medical men has induced unqualified and unregistered persons falsely to assume professional titles, or to personate duly qualified practitioners whose names are on the *Register*. In some cases the impostor has succeeded in holding a military or other official appointment, until much mischief has been done and his fraud has been discovered. There is reason to think that other cases of false assumption or personation remain, which call for criminal investigation and prosecution by the police authorities, under the Perjury Act or other statute. The Medical Defence Union has done good service by bringing offences of the kind to public notice. The Registrar of the Council is always ready to assist in cases of doubt by examining or verifying the claims of persons professing to be registered. Grave mistakes would often be avoided, both by officials and by the public, if reference to the Registrar's office became the general practice in all such cases.

Venereal Diseases.

The Venereal Diseases Act, 1917, has passed into law since last May and is now operative in some forty English county and borough areas. Within such areas it is a penal offence for an unqualified person to treat, advise, or prescribe for patients in relation to venereal disease, or to issue public advertisements or announcements of his practice. It is to be hoped that the Act will speedily come into force throughout the whole country, so that the

destroying plague may be stayed, and its victims may be protected against the noxious cupidity of charlatans. The reforms in regard to other quack advertisements, proposed in the Criminal Law Amendment Bill, 1917, have not yet been effected by Parliament.

Midwives (Ireland) Bill.

The public advantages, in respect of maternal and infant welfare, which have followed on the operation of the Midwives Acts for England and for Scotland, respectively, have led the Government to propose a similar measure for Ireland. The Midwives (Ireland) Bill, which is now before Parliament, follows the lines of the Scottish Act and provides that the rules (*inter alia*) regulating the practice of midwives shall be communicated to the General Medical Council for its observations before they are officially approved by the Privy Council.

Committee on the Dentists Act.

The Lord President of the Privy Council has been moved to appoint a Special Committee, which includes Mr. Tomes and Sir Arthur Newsholme, to inquire into the questions raised by the Council's recent memorandum on the Dentists Act. The terms of reference are comprehensive; they are as follows:

"To investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act; and to consider and report upon

"1. The causes of the present inadequate supply of qualified dentists and dental surgeons;

"2. The expediency of legislation prohibiting in the United Kingdom the practice of dentistry and dental surgery by unqualified persons; and in the event of such legislation being deemed expedient, the conditions under which certain classes of unqualified persons at present engaged in the practice of dentistry might be permitted to continue in practice, by the institution of a special roll for the purpose.

"3. The practicability, without impairing the existing guarantees for the efficient practice of dentistry of (a) modifying the course of study and examination prescribed for dental qualifications; (b) reducing the time occupied; (c) diminishing the cost of training dental students."

At the request of the Committee, Sir Bertram Windle and I, with Mr. Harper, the Council's solicitor, gave evidence in support of your memorandum on November 14th. It is understood that we may be called again at a later stage. All I need say at present is that the Chairman and other members of the Committee gave a courteous and careful hearing to the Council's case, and examined us thereon in a manner which showed that they were fully seized of the important issues involved in it.

Sugar and Glycerin.

On representations from the Home Office regarding the urgent necessity of conserving the national supplies of glycerin and sugar, it became the duty of the Pharmacopoeia Committee to exercise the powers delegated to it by the Council at the last session. After careful consideration, it appeared that the Government's request for prompt action could not be met otherwise than by the immediate withdrawal of the official directions for the preparation of certain pharmacopoeial compounds, containing appreciable amounts of glycerin or sugar. Time was not allowed to the Committee to devise officially sanctioned alternatives. Practitioners had thus to be left free to prescribe, instead of the medicines hitherto official, any substitutes they might deem therapeutically equivalent, and pharmacists to apply their professional skill in suggesting suitable vehicles and adjuvants for compounding these. The proper notices for the alteration in this sense of the *British Pharmacopoeia* (1914) were accordingly adopted unanimously by the Committee, and published on behalf of the Council in the *Gazettes* of London, Edinburgh, and Dublin, in July, 1917. There is evidence that the steps taken had the desired effect of speedily reducing the consumption of glycerin and sugar for pharmaceutical purposes. In the interest of general uniformity in compounding preparations no longer official, the Pharmaceutical Society of Great Britain has this month issued, for the use of prescribers and dispensers, a formulary of suitable recipes for these preparations. Further experience

may suggest modifications of the formulæ; but a useful purpose is served by their publication at the present time. Meanwhile—I am asked by the Government to say this—practitioners will sensibly assist the authorities in charge of our supplies if they refrain from prescribing glycerin or sugar whenever an approved substitute is admissible for purposes of treatment.

Secondary Schools Examination Council.

In August the English Board of Education published a scheme, which has long been under consideration, for the establishment of a Secondary Schools Examination Council. It will include representatives of the English universities, and of the managers and teachers of State-aided schools throughout the country. It is designed to supervise the working of a system of leaving certificates for pupils under instruction in schools providing secondary education analogous to the system in operation in Scotland. The certificates are to be of two grades: one suitable for pupils of 16, and qualifying if obtained "with credit" for admission to universities; and another, suitable for pupils of 18 who have undergone a full secondary course. In each grade the syllabus of instruction at the school, and the school record of the pupil, will be taken into account.

When the scheme comes into effect it should practically solve the difficulties of the Council in regard to preliminary examinations, and by a method of which the Council has more than once expressed its hearty approval. At my request Dr. Norman Moore and Sir Francis Champneys have represented the Council in conference on the new arrangements with Mr. Fisher, the President of the Board of Education; and I desire to thank them in your name for their efficient service. I understand from Dr. Mackay that a report will be offered by the Education Committee on this important subject. You will probably agree that it would be proper to await the actual introduction of the new scheme before resuming our discussion of the present system of multiple preliminary examinations. The proposed leaving certificate may, and I trust it will, supersede these examinations in England altogether, and afford a single guarantee of sound general education which the Council may safely accept as qualifying for entrance on a professional course in this country.

Disciplinary Cases.

Cases calling for judicial inquiry will occupy much of your time during the present session; but I need not particularly refer to them. One case deals with alleged laxity in the granting of medical certificates. Several other instances of doubtful or irregular certification, reported by Tribunals and other like bodies, were considered by the Penal Cases Committee; but after explanations had been obtained, the authorities concerned were satisfied that evidence of culpable carelessness or bad faith was absent, and accordingly they have put forward no formal complaints for inquiry by the Council. I am requested, however, by the Government to state that some medical practitioners still lay themselves open to suspicion by the National Service Ministry owing to the looseness or irrelevance of the statements they profess to attest by their signature. Unverified assertions made by the patient himself, personal opinions as to his fitness or unfitness for unknown forms of service, vague predictions as to his health at some future time, and reflections on the competence of the official medical examiners, are not proper matter for a certificate signed by a practitioner as his testimony to facts within his professional knowledge. Yet some of the authorities under the Military and National Service Acts say that they could furnish examples of "certificates" which contained little else, and which they were accordingly obliged to disregard. If a medical certificate is to have its rightful weight as evidence of truth it should obviously not bear marks of bias or prejudice, still less of insincerity or laxity in its statements. Certificates which are not, in the words of the Council's Warning Notice, demonstrably "untrue, misleading, or improper," may yet be so faulty in form and substance as to discredit the practitioner who gives them, and in a measure the profession of which he is a member. I should be the last to suggest that the vast majority of practitioners are not fully conscious of the onerous obligations now laid upon them by the State in regard to certificates; my purpose will be served if the few who seem to have misapprehended these obligations are moved by my remarks to realize

their duty. Instructions have been issued to all officials and members of National Service Medical Boards that every certificate from a man's private medical attendant is to receive due consideration and is to be filed for preservation. If the certificate is confined to matters of ascertained fact in the patient's medical history and physical condition, it cannot but be helpful to the Boards who have to pronounce on his fitness or unfitness for particular forms of service. The practitioner furnishing the certificate will therefore best consult the general interest, under present conditions, if he holds to the position of an impartial witness, and declines that of an advocate or a judge.

Duration of Sittings.

The circumstances in which we meet, and in particular the difficulties of our printers and office staff, render it desirable that we should not extend our session beyond the present week, or sit late in the evenings. It may therefore be necessary, when committee work is completed, to arrange for sittings of the Council in the forenoon of one or two days, in order that our important work for the nation may not be unduly hurried.

REPRESENTATION OF REGISTERED DENTISTS ON THE COUNCIL.

Professor ARTHUR THOMSON moved:

That steps be taken to promote legislation to secure the election of direct representatives of registered dentists upon the General Medical Council.

He said that in making this proposal he was influenced by two considerations: first, the result of experience; and secondly, the ground of expediency. The Council had always done its utmost to carry out to the best of its knowledge not only the letter of the Dentists Act, but also its spirit. Were it not, however, for the happy circumstance which had placed a distinguished member of the dental profession on the Council (Mr. TOMES), the Council would have been in many instances working in the dark. It was possible that the Privy Council, in nominating Mr. TOMES, had in mind the necessity of appointing some one who had an intimate acquaintance with the working of the dental profession; but that was an accident, and there was no guarantee that in future any one else might be appointed with a special knowledge of dental interests. It seemed a somewhat extraordinary thing that such a profession should not have representation on the body which exercised not only primary control over it, but also directed its educational system. In the Dentists Act of 1878 it was very explicitly stated that of the examiners on the boards concerned with education one-half must be practising dentists, but no provision was made for the representation of that profession on the body to whom supreme control of its affairs was given. But that was forty years ago, and there were now 5,000 registered dental practitioners. He urged the expediency of the proposal on the grounds that practising dentists were likely to be more familiar with the difficulties which beset the practice of their profession owing to the unrestricted opposition of unregistered practitioners: that in matters relating to the minimum standard of education necessary to qualify for registration, such registered practitioners were best qualified to judge in respect both to the scope and variety of the subjects examined in, and the efficiency and experience required to practise the profession without detriment to the public; that the present state of things was at variance with the accepted principles of representation; that there was evidence that the number of registered dentists was insufficient; and that as members of a profession closely allied, they ought to do their utmost to promote the interests of the dental profession, and to acquire for it control over its own affairs.

Mr. C. S. TOMES, in seconding, welcomed the general terms of the motion, and said that there could hardly be two opinions with regard to the principle of representation. Since the resolution was put down at the last session a departmental committee had been sitting to consider, broadly speaking, the advisability of recommending to Parliament an amendment of the Dentists Act. What the nature of the amendments might be no one could tell, but he thought it undesirable that the Council should pass any resolution which stated too definitely how the representation was to be accomplished.

Sir J. W. MOORE thought it a great misfortune that the

practice or profession of dentistry was ever separated from the general practice of medicine and surgery. There was no more reason for such separation, there was even less, than for the establishment of a separate profession of ophthalmology. He indicated various objections to giving separate representation to a branch of what he would call the great profession of medicine, and also questioned the advisability of increasing the Council's numbers.

Dr. EDWARD MAGENNIS, speaking as one who had taken a very special interest in the dental profession, said that he knew that dentists felt great dissatisfaction because they were not represented on the Council.

Mr. J. W. B. HODSDON, while cordially agreeing with Professor Thomson's remarks, thought it advisable to make the resolution still more general in its terms. He moved, and Sir BERTRAM WINDLE seconded, the following amendment, which Professor THOMSON accepted, so that it became the substantive motion:

That it would be of advantage to the Council in administering the Dentists Act if provision were made for the appointment to the Council of assessors or members representing the dental profession.

Dr. J. A. MACDONALD and Sir ARTHUR NEWSHOLME said that they failed to understand the position of assessors as distinct from members; and Dr. LATIMER added that if by an assessor was meant one who sat by the side of other people and assisted their judgement, he thought that dentists had a right to ask to be represented, not by assessors but by full members of the Council.

Dr. NORMAN MOORE said that it would be very much better that any representatives of the dental profession should be persons who were already on the *Medical Register* and were practising dentistry.

Mr. HODSDON withdrew the reference to "assessors" from his motion, and with that amendment it was carried, with a few dissentients.

The PRESIDENT said that while no effect could be given to the motion without an Act of Parliament, he would, if the Council desired, communicate it to the Lord President of the Privy Council. The Council signified its desire that this should be done.

(To be continued.)

MATERNITY AND CHILD WELFARE LEGISLATION AND A MINISTRY OF HEALTH.

A LETTER in the following terms, dated November 20th, 1917, has been sent to the members of the War Cabinet by the Medical Secretary:

I am directed to place before you on behalf of the British Medical Association the expression of the opinion unanimously arrived at by the Committee which has been considering the subject of a Ministry of Health—namely, that it would be most inexpedient to grant to local authorities under the supervision of the Local Government Board (as it now is) the new powers which it has been proposed to give them in connexion with maternity and child welfare.

In making this representation it is desired to meet in advance the accusation that has been made against other bodies which have made a similar protest—namely, that they are actuated by a desire to protect certain supposed vested interests, and have little or no regard for the saving of maternal and child life which it is hoped will follow from the proposed new legislation. The Association yields to no body in its desire to forward measures designed to promote the welfare of the mothers and infants of the country. But it believes that it would be most unfortunate if important new powers, such as those mentioned above, were given only to the present local authorities, and under the aegis of the Local Government Board, instead of being directed from the first by a new central department, a Ministry of Health, which could command the services and the confidence of all local bodies concerned.

In the opinion of the Association effective action throughout the country in connexion with maternity and child welfare must involve the provision of domiciliary treatment, and such provision cannot be made by the present local health authorities without seriously affecting the position of Insurance Committees and prejudicing the question of the extension of the Insurance Act to dependants. As the local health authorities are the only bodies over whom the Local Government Board has any control for these purposes, the Association would submit that the grant to these bodies of powers in England and

Wales similar to those given to the local authorities in Scotland would prove ineffectual, because the existing machinery for domiciliary medical attendance, which is essential if the movement is to be really useful, is not under their control nor under that of the Local Government Board, but under the National Health Insurance organizations. Even the present activities of the local authorities in England and Wales in relation to maternity centres cannot, in the opinion of the Association, be efficient without reference to the position of other local bodies.

The Association greatly fears that the granting of the proposed powers to local authorities in England and Wales similar to those given to the Scottish local health authorities would give an excuse for delay in dealing at once with what is considered to be a matter of vastly greater importance, namely, the formation of a new central department, a Ministry of Health, which shall take the central control of all matters relating to public health; which would, therefore, deal with the subject of maternity and child welfare throughout the country as part of a general and co-ordinated scheme, and would not be restricted locally in its operations to the agency of the local authorities over whom alone the Local Government Board has control.

The object of the Association in making these representations is to prevent if possible the launching of a plan the results of which it believes would be very disappointing, and to urge on the Government the desirability of pressing forward with a scheme which would put the health legislation and administration of the country on a sound and logical basis, affecting not only maternity and child welfare work, but every other project for dealing with the physical well-being of the community.

CONTROL OF POTASSIUM COMPOUNDS.

GENERAL LICENCE FOR PURCHASE FOR MEDICINAL PURPOSES.

The Ministry of Munitions issued an order, dated October 17th, 1917, forbidding any person to purchase or take delivery of certain potassium compounds except under a licence, and no person to sell such compounds except to the holder of a licence, subject to the provision that no licence is required by a person for the purchase and delivery of the compounds in quantities not exceeding 3 lb. in any one calendar month. The order applies to caustic potash (KOH), potassium chloride (KCl), potassium carbonate (K_2CO_3), potassium sulphate (K_2SO_4), or to any material containing more than 10 per cent. of any one or more of these compounds.

The Controller of Potash Production announces that until further notice he licenses the purchase by any person of potassium compounds coming within the terms of the order, notwithstanding that such purchases may exceed an aggregate of 3 lb. per month, *provided that the compounds so purchased are used solely in B.P. form or in B.P. preparations for purely medicinal purposes.*

By this general licence retail druggists, hospitals and similar institutions, medical men, and others are relieved of the onus of applying for individual licences to purchase compounds coming within the conditions indicated in italics above, and wholesale druggists and others may supply such compounds for use as above set out without the necessity of verifying that the purchaser holds an individual licence to purchase or take delivery.

It will, however, be necessary for the wholesaler in making his returns to the Controller to state the aggregate amount and value of his sales of compounds for purely medicinal purposes during the period covered by each return. Special forms of return will be provided for this purpose.

All sales of compounds other than those exceeding 3 lb. aggregate per month per person, and the sales for medicinal purposes hereby licensed, must be conducted strictly under purchasers' licences as prescribed by the Order, and, together with an aggregate statement of sales under 3 lb., and for medicinal purposes, must be brought out on the returns as at present.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

Surrey.—At a meeting of the Surrey Panel Committee on November 16th the following resolution was adopted

on the motion of Dr. DANIELL (Epsom), seconded by Dr. SULLY (Claygate):

That the Surrey Panel Committee adheres to the policy adopted by the Conference of Panel Committees by large majorities, and deprecates action by any other body which is in direct conflict with the policy laid down at that Conference.

THE DEMAND FOR AN INCREASED CAPITATION FEE.

The following communication has been sent to the British Medical Association by the National Health Insurance Joint Committee:

Sir,

I am directed to state that Sir Edwin Cornwall has under consideration certain resolutions of the recent Conference of Local Medical and Panel Committees, submitted by the deputation from the Insurance Acts Committee which interviewed the Commissioners on Thursday, 15th inst., representing that the present capitation rate for medical services under the National Insurance Acts should be raised from 7s. to 10s.

As the result of the deputation, it is understood that this application is submitted to the Government as arising out of special war conditions, but without prejudice on either side to the consideration of remuneration as part of any general questions as to conditions of service that may come under review at a later date.

It would seem desirable, as your Committee will doubtless agree, that the oral statements made to the Commissioners should be embodied in, and, if and so far as your Committee may consider necessary, supplemented by, a written statement, which could be placed before the Government, and supported possibly by deputation if thought desirable; if this be so, Sir Edwin Cornwall would be glad to receive any such statement from your Committee as soon as possible.

I am, Sir, your obedient Servant,
(Signed) E. HACKFORTH.

November 22nd, 1917.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty: Staff Surgeon M. Langford, D.S.O., to the *Challenger*. Surgeons P. L. Gibson, M.B., to Chatham Hospital; F. J. Burke, M.B., to the *Fivid*, additional, for disposal. Temporary Surgeons R. Silcock to the *Hecla*; W. H. de Pre to the *Pembroke*, additional, for Chatham Hospital; A. T. Woodward, M.B., to the *Fivid*, for disposal; R. Pollok to the *Fivid*, additional, for Plymouth Hospital; A. N. Wilde to the *Victory*; J. G. Dobson, M.B., E. J. G. Sargent, B. Thomas to the *Fivid*; J. W. Pratt to the *Minerva*. To be temporary Surgeons: T. J. Kelleher, P. Ward.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationer J. P. Docherty to the *Victory*; S. Ackroyd to be Surgeon Probationer.

ARMY MEDICAL SERVICE.

Colonel (temporary Surgeon-General) H. N. Thompson, C.M.G., D.S.O., M.B., on completion of four years in his rank is retained on the active list under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieut.-Colonel W. Butler, M.B. (Brevet Lieut.-Colonel T.F.), relinquishes his temporary commission on reposting.

Major E. L. Moss, M.C., to be acting Lieut.-Colonel whilst in command of a medical unit.

Temporary Major H. D. Harrison, M.B., F.R.C.S., relinquishes his commission on ceasing to be employed at the Welsh Metropolitan War Hospital.

Temporary Captain E. R. Fethergill, M.B., to be temporary Major.

Temporary Captain H. C. T. Langdon, M.B., to be temporary Major while specially employed.

Temporary Captains relinquish their commissions and are granted the honorary rank of Captain: R. Forbes, M.B., H. A. Treadgold, M.D.

Temporary Captain H. Cross relinquishes his commission on account of ill health.

Temporary Captain T. J. Lloyd, M.B., relinquishes his commission on account of ill health contracted on active service.

Temporary Captains relinquish their commissions: S. K. Adams, M.B., J. W. B. Thorburn, M.B., J. C. Mackwood, F. P. Maitland, J. H. Parsons, M.B., F.R.C.S., R. P. N. B. Bluet, M.C., B. M. Bennett, M.B., W. McDermott, M.B., F. W. H. Hutchinson, H. W. Kendall.

M. R. Mackay, M.B., and A. E. Stevens, M.D., late temporary Captains, are granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: G. Lewin, M.B., D. C. Norris, K. W. D. MacRae, M.B., J. Leach, M.B., L. Leslie, M.D., A. G. Cament, M.D., W. A. Hosson, S. W. H. Stuart, M.B., R. A. Smith, M.B., W. J. Smyth, M.B., J. S. E. Selby, H. Ainscow, M.B., H. G. K. Young, B. H. Moore, M.B., B. Knowles, M.B., J. Laing, M.B., P. R. McNaught, M.B., J. Cruickshank, M.D., W. Montgomery, M.B., H. M. Gray, T. S. S. Holmes, M.B., F.R.C.S., J. A. C. Greene, M.C., J. Fryce-Davies, G. H. Morris, Lt. H. Rains, W. A. Murray, M.B., A. G. H. Lovell, M.D., F.R.C.S., H. V. Swindale, C. E. Pepper, M.B., W. J. Stephens, S. G. Keen.

To be temporary Captains: J. C. Bayden, C. H. Phillips, G. M. Shaw, M.B., J. T. Mackenzie, M.C., A. Drouin, M.D., H. M. Godfrey, M.D., A. MacD. Westwater to be temporary honorary Captain whilst serving with the Red Cross Hospital, Bellahouston.
Temporary Lieutenants relinquish their commissions: W. S. Wildman, F.R.C.S., A. J. Macvic, M.B., E. A. Bullmore, F.R.C.S.E., A. Moyse, M.D., J. Spencer-Daniell, M.B.
Temporary Lieutenant D. V. Muller relinquishes his commission on account of ill health.

The notifications in the *London Gazette* of October 29th and November 2nd, 1917, regarding Lieutenants S. G. Kean, M.D., and A. L. Saunders respectively, are cancelled.

To be temporary Lieutenants: A. G. McKenley, M.D., H. J. Starling, M.D., C. W. Joynt, L. H. Butler, M.B., F. W. H. Pilot, M.D., T. B. H. Tabuteau, M.B., B. W. H. Fergus, M.B., J. G. Millar, M.B., W. S. Stevenson, M.D., R. Butterworth, M.B., J. C. Nixon, M.B., A. G. Wright, M.B., H. J. Villiers, J. C. Fox, G. H. Cruihart, F.R.C.S.E., H. S. Metcalfe, M.D., J. A. M. Bligh, M.D., H. L. W. Woodroffe, M.D., R. Steel, M.B., B. E. Laurence.

To be temporary honorary Lieutenant: G. S. Peppers, M.D.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel R. M. Wilson, M.B., resigns his commission on account of ill health, and is granted permission to retain his rank and wear the prescribed uniform.

Major (temporary Lieut.-Colonel) F. J. Steward, F.R.C.S., relinquishes his temporary rank, and is restored to the establishment.

Captain (temporary Major) H. W. Wilson, M.B., F.R.C.S., relinquishes his temporary rank and is restored to the establishment.

Major W. M. Sturrock, M.B., and Captain F. J. Neary, M.B., resign their commissions on account of ill health.

Captain (temporary Major) W. W. Greer, M.D., F.R.C.S., relinquishes his temporary rank on ceasing to command a field ambulance.

Captain (temporary Major) T. B. Mount, M.D., F.R.C.S., relinquishes his temporary rank and is restored to the establishment.

Captain L. P. Harris is seconded while holding an appointment as Deputy Assistant Director of Medical Services.

Captains W. H. G. Ball, F.R.C.S., and F. V. Milburn, are seconded for duty with a general hospital.

Captains W. Cotton, M.D., J. G. Emanuel, M.D., and J. Pearson, M.B., are restored to the establishment.

Attached to Units other than Medical Units.—Surgeon Major A. C. Oldham, F.R.C.S., from R.F.A., to be Major with precedence as from July 19th, 1912 (substituted for announcement in the *London Gazette* of June 7th, 1915).

TERRITORIAL FORCE RESERVE.

Major D. E. Dickson, M.B., from R.A.M.C., to be Major.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BERMONDSEY MEDICAL MISSION FOR WOMEN AND CHILDREN.—Resident (female). Salary, £150 to £200 per annum.

BIRMINGHAM EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary, £300 per annum.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL.—Clinical Assistant in Out-patient Department.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—House-Surgeon. Salary, £200 per annum.

BRISTOL GENERAL HOSPITAL.—Casualty House-Surgeon. Salary, £175 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician, (2) House-Surgeon. Salary, £120 per annum.

CHARING CROSS HOSPITAL, W.C.—Resident Medical Officer. Salary, £400 per annum.

DARLINGTON HOSPITAL.—House-Surgeon. Salary, £200 per annum.

FIFE COUNTY COUNCIL.—Assistant Tuberculosis Officer. Salary, £350 per annum.

GENERAL LYING-IN HOSPITAL, York Road, Lambeth.—Resident Medical Officer. Salary, £100 per annum.

ILFORD URBAN DISTRICT COUNCIL.—Temporary Medical Officer of Health. Salary at the rate of £550 per annum.

LEICESTER: POOR LAW INFIRMARY.—Resident Medical Officer. Salary, £300 per annum.

LONGTON HOSPITAL.—Honorary Anaesthetist.

MANCHESTER CORPORATION.—Lady Medical Officer. Salary, £400 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer (temporary). Salary, £400 per annum.

MANCHESTER ROYAL INFIRMARY.—Resident Surgical Officer at the Central Branch. Salary, £200.

NOTTINGHAM CHILDREN'S HOSPITAL.—Resident Lady House-Physician and Anaesthetist. Salary, £250 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House-Surgeon.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—Milroy Lecturer.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—Medical and Surgical Registrars (female).

STOKE-ON-TRENT BOROUGH.—Resident Assistant Medical Officer at the Stanfield Tuberculosis Sanatorium. Salary, £250 per annum.

STOKE-ON-TRENT: NORTH STAFFORDSHIRE INFIRMARY.—House-Surgeon (lady). Salary, £200 per annum.

SUNDERLAND: CHILDREN'S HOSPITAL IN CONNEXION WITH ROYAL INFIRMARY.—Resident Medical Officer. Salary, £200 per annum.

SWANSEA GENERAL HOSPITAL.—Fourth or fifth year student to act as Assistant to House-Surgeons. Salary, £100.

WANDSWORTH UNION.—Assistant Medical Officer (temporary) at St. James's Infirmary. Salary, £7 7s. a week.

WEST LONDON HOSPITAL, Hammersmith Road, W.—Clinical Assistants.

YORK COUNTY HOSPITAL.—House-Physician (lady). Salary, £200 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

ANDERSON, M. C. B., M.R.C.S., L.R.C.P., District Medical Officer of the Wareham and Purbeck Union.

KING, J. C., M.R.C.S., L.R.C.P., District Medical Officer of the Cardiff Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

PHILP.—On November 25th, at 9, Northmoor Road, Oxford, the wife (née Margaret Fussell) of Captain C. H. G. Philp, M.B., R.A.M.C., of a son.

MARRIAGES.

COCK—TINDALL.—On November 24th, at the Church of the Assumption (Royal Bavarian Chapel), Warwick Street, W., Reginald Cock, M.R.C.S., L.R.C.P., son of Henry Cock, M.V.O., late Chief Constructor to the Admiralty, and of Mrs. Cock, Stonehouse, Plymouth, to Mollie, eldest daughter of the late Captain C. S. Tindall, Royal Mail Steam Packet Company, and of Mrs. Tindall, Shoreham-by-Sea, Sussex.

OWEN—PRICE.—On November 23rd, at the Tabernacle C.M. Church, Bangor, N. Wales, Leonard V. D. Owen, Lieutenant Oxford and Bucks Light Infantry (Lecturer in History, Sheffield University), to Gwen, eldest daughter of Dr. and Mrs. E. O. Price, Bangor.

VASSIE—MCNEILL.—On November 20th, at St. John's Church, Paddington, by the Rev. J. R. Hale, M.A., C.F., Vicar of Boxley, Kent, assisted by the Rev. A. E. Oldroyd, M.A., Vicar of St. James's, West Hampstead, A. H. Vassie, M.B., of 98, Priory Road, N.W., to Margaret Lyons Grace McNeill, daughter of the late Mr. and Mrs. John McNeill.

DEATHS.

GOODSON.—On November 22nd, 1917, at "Wendover," West Road, Westcliff-on-Sea, William Goodson, L.R.C.P. (Edin.), late of Stratford, aged 79 years. Cremation City of London Cemetery.

JAMESON.—On November 26th at 2, Great Cumberland Place, W.1, Sir Leander Starr Jameson, Bt., P.C., C.B., M.D., in his 65th year. Memorial Service at St. Margaret's, Westminster, December 5th, 12.30 p.m. No flowers by special request.

DIARY FOR THE WEEK.

MONDAY.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1, 8.30 p.m.—Discussion on Surgical and Dental Treatment of Severe Facial Injuries, to be introduced by Major H. D. Gillies, R.A.M.C. Captain Kelsey Frey, R.A.M.C.(T.), and Mr. Percival Cole.

THURSDAY.

HUNTERIAN SOCIETY, 1, Wimpole Street, W., 5 p.m.—Discussion: The Medical Classification of Recruits, to be opened by Captain Haldin Davis, R.A.M.C.

FRIDAY.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, 8.30 p.m.—The Methods of Detecting Simulated—(1) Deafness, by Mr. Richard Lake—(2) Blindness, by Mr. Percy Dunn.

POST-GRADUATE COURSES AND LECTURES.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C., 5 p.m.—Professor A. Keith: Principles of Orthopaedic Treatment. Monday, Application of Discoveries made by Marshall Hall, C. E. Beevor, and Duchenne. Wednesday and Friday, Bearings of Discoveries of Modern Neurologists on Orthopaedic Practice.

ROYAL SOCIETY OF MEDICINE.—Section of Psychiatry: Tuesday, 4.30 p.m., Captain W. H. R. Rivers, R.A.M.C., F.R.S.: Repression of War Experience. Section of Pathology: Tuesday, 8.30 p.m., Dr. W. S. Lazarus-Barlow: An Attempt at the Experimental Production of Carcinoma by means of Radium; Professor S. G. Shattock, F.R.S.: Explosive Phenomena in Gunshot Wounds. Section of Bacteriology and Climatology: Thursday, 5.30 p.m., Dr. C. F. Sonntag: (1) Whirlpool and Manipulation Baths; (2) The Arthrodynamicograph. (At 7.15 p.m. the members will dine together at Paganini's Restaurant, Great Portland Street, W.) Section of Obstetrics and Gynaecology: Thursday, 8 p.m., Discussion: Scopolamine-morphine Narcosis in Childbirth, to be opened by Dr. J. S. Fairbairn, Dr. C. Hubert Roberts, Mr. T. G. Stevens, and Dr. Herbert Williamson. Section of Laryngology: Friday, 4 p.m., Cases. Section of Epidemiology and State Medicine: Friday, 8.30 p.m., Presidential Address by Lieut.-Colonel G. S. Buchanan, M.D.: Epidemics of the Eastern Campaign.

DIARY OF THE ASSOCIATION.

Date. Meetings to be Held.

DECEMBER.

6 Thur. London: Insurance Acts Executive Subcommittee, 3.30 p.m.
13 Thur. London: Propaganda Subcommittee, 2.45 p.m.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 8TH, 1917.

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British Medical Association.

CURRENT NOTES.

Organization of the Profession.

The Medical Secretary took the opportunity of a visit to Lancashire on business for the Central Medical War Committee to address meetings of the profession at Blackburn, Preston, and Warrington on the organization of the profession, particularly as it affects that section of it working under the Insurance Acts. The meetings at Blackburn and Warrington were arranged by the honorary secretaries of the respective Divisions and were well attended, especially that at Blackburn, where between fifty and sixty practitioners were present. The meeting at Preston was called by the Lancashire Panel Committee. There was a very large attendance and, after Dr. Cox's address, full opportunity was given and taken for questions. The pressure on our columns prevents the publication of a report of the meeting this week, but we hope it may appear in our next issue.

Erratum.

The Medical Secretary wishes to draw attention to a mistake made at the foot of page 3 of document M.17, sent to Local Medical and Panel Committees, where certain resolutions of the October Conference are quoted upon the question of increase of remuneration. Minutes 58, 59, 60, and 61 are given, but obviously the last mentioned was quoted in error, as it is not a complete resolution, but only a motion to which words were added before it became a resolution of the Conference. The complete resolution is as follows:

Minute 61.—Resolved: That the Insurance Acts Committee be instructed to negotiate these terms with the Government, and to organize the profession forthwith in furtherance of this object.

GENERAL COUNCIL

OF

MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1917.

Sir DONALD MACALISTER, K.C.B., President,
in the Chair.

PUBLIC HEALTH COMMITTEE.

Experience with the Expeditionary Force and the Diploma in Public Health.

THE Public Health Committee reported that an application had been considered from a captain R.A.M.C. asking for recognition of work carried out by him in connexion with his military duties in France in lieu of certain courses of study prescribed for the D.P.H. Oxford. After Lieut. Colonel Beveridge, Assistant Director for Medical Services (Sanitation), B.E.F., France, had given information as to conditions existing in the field which would justify

temporary modification in the rules and regulations, the Committee agreed to suggest certain such modifications in the case of medical officers of the Expeditionary Force.

Sir JOHN MOORE moved, in order to make it clear that the Council was the paramount authority in regard to the curriculum and examination for the public health diplomas:

That when an application is made for exemption from some of the training laid down by the Council as the minimum necessary before entering for the examination for the diploma in public health, the decision must rest with the General Medical Council itself.

Dr. NORMAN MOORE said that the powers of the Council in this matter rested upon the Act of 1886 and a report to the Council of 1889, but he proposed to ask the Council not to accept the recommendation, purely on the ground of public convenience. If an exceptional case arose the proper course was for the licensing body to report its action in the matter to the Council. It was true that the licensing body might err in the relaxation it allowed in a particular instance, but it was not likely to go on erring for long when it had to report to the Council.

THE PRESIDENT said that if the licensing body made an exception from the rules laid down by the Council, it reported to the Council, and the Council could refuse to register the diploma in question. That machinery was quite workable.

Dr. J. C. McVAIL said that the "exemption" spoken of in the recommendation was purely nominal; it was really substitution, and it seemed reasonable that any such substitution should be uniform. If the matter were left to the different examining bodies throughout the kingdom, differences of standard might well arise; therefore requests for substitution—of which he entirely approved—should all come before the same body, and it was thought that the Council might give powers to its Public Health Committee which would be exercised by a thoroughly reliable subcommittee acting in relation with the higher authorities in every case.

Sir JOHN MOORE, by leave, withdrew the recommendation; it was understood that the Council made no pronouncement one way or another. He then submitted the proposed modifications. The first was an additional note to Rule 2 for the diploma in public health:

That the laboratory experience at a base hygiene laboratory, when and so far as approved by the General Medical Council, shall count towards the four months' laboratory course prescribed by the Council; and that laboratory experience acquired by medical officers on the staff of hospitals for infectious diseases shall count for such part of the laboratory course for the diploma in public health as the A.D.M.S. (Sanitation) may recommend, and the General Medical Council on consideration may approve.

The second consisted of the addition after Rule 3 (j) of the words "or in charge of a base district on lines of communication of a British Expeditionary Force and holding a diploma in public health or other public health qualification," together with the appropriate addition to the list of districts and commands recognized by the Council under this same rule. These modifications were agreed to, and it was further decided that they should be

communicated to the various Licensing bodies in the United Kingdom which granted diplomas in public health or other public health qualifications.

DISCIPLINARY CASES.

Supply of Drugs by Doctor to Patient who had formed the Drug Habit.

On November 28th and 29th the Council considered at great length the case of Reginald Nitch Smith, M.R.C.S., L.R.C.P., of 10, New Bond Street, W., who appeared on the charge—

That being a registered medical practitioner you abused your position:

1. By selling to Mrs. Deborah Platt at exorbitant prices, at frequent intervals, and otherwise than as a medicine in the course of your treatment of her, large quantities of a narcotic toxicant drug named heroin, and knowing that she had formed the drug habit continued so to supply her to her moral and physical detriment;

2. By selling to the said Mrs. Deborah Platt the said drug at exorbitant prices and at frequent intervals for an officer and men, members of His Majesty's Forces, contrary to Regulation 40 of the Defence of the Realm Regulations, and of the Order of the Army Council, dated May 11th, 1916.

And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The complainant in the case was Lieutenant Ernest John Hodder Platt, who was represented by Mr. Gill, K.C. Dr. Nitch Smith was represented by Mr. Colam, K.C., and Mr. Zeitlyn.

Mr. GILL, in opening, said that the conduct of the practitioner in this case was so extraordinary that it could only be explained on the ground that he had supposed that when dealing with a victim of the drug habit he could act with impunity. Mrs. Platt was arrested on July 6th last on a charge of stealing jewellery in Bond Street, but on being taken to the police station her condition was so obvious that the divisional surgeon was sent for and found her to be suffering from the effects of a drug. She afterwards made a statement that she had been taking very large quantities of drugs, which had been supplied to her by Dr. Nitch Smith. A large number of cheques drawn by this lady were found to have been dealt with by Dr. Nitch Smith, and it was quite clear that she was in constant communication with him from January of this year down to within a day or two of her arrest. When the case was sent for trial, the judge came to the conclusion that medical treatment rather than imprisonment was called for, and accepted sureties for her good behaviour; at the same time he said that it was a case for the General Medical Council. The lady's statement was that on returning from France at the end of last year she desired to procure the drug heroin, as French doctors had recommended her to take it; and finding that she could not obtain it in this country without a doctor's prescription, and the name of Dr. Nitch Smith having been mentioned by a chemist of whom she inquired, she went to him, and he at first gave her a prescription, and afterwards himself supplied her with the drug as required. The number of cheques parted with by the lady in Dr. Nitch Smith's favour was fifty-one, and the total amount £137 10s. Every cheque from the beginning of March was—(the lady said, at Dr. Nitch Smith's request)—made payable to bearer. On fourteen occasions the drug was sent for by district messenger, who called at Dr. Nitch Smith's house for it. The chemist with whom Dr. Nitch Smith dealt had supplied him with heroin on seventeen occasions between January and July. The counsel went through Dr. Nitch Smith's deposition, which he claimed, apart from the lady's evidence, bore out the contention of grave irregularity. It was to the effect that Mrs. Platt consulted him in the early part of the year, stating that she had been taking heroin in France. She was suffering from some degree of bronchitis and profuse expectoration. He prescribed heroin for her on two or three occasions, and then she asked him to obtain the drug directly for her, which he did. When, later on, she asked for larger quantities than the previous limited supply, she told him, on inquiry, that she was sending the excess amount to her husband, an officer in France, for his use and that of some of the men who were with him. On no occasion during the eighteen personal interviews he had had with her had he seen any harmful effects of the drug. The reason she gave for not seeing him on certain occasions when the drug was supplied was that she was working at the War Office and unable to get away. Dr. Nitch Smith

had further stated that while visiting his consulting room she became acquainted with his attendant and obtained from her on occasion other quantities of the drug without his knowledge. Mr. Gill submitted that the case was one of the gravest possible importance, and he cited the stringent regulations made under the Defence of the Realm Act.

Mrs. Platt, in evidence, stated that she remembered receiving only one prescription from Dr. Nitch Smith. She had not paid him eighteen or twenty visits as he alleged, but five at the most. She denied having arranged with Dr. Smith's attendant for the supply of drugs in the doctor's absence; on two occasions only she had implored the attendant to give her more, which she did. The doctor had never warned her against taking too much of the drug. She admitted having stated that she wanted some of the drug to send to her husband in the Flying Corps for the use of his pilots, but she had not, in fact, sent any of the drug to France. She took the drug hypodermically. She had never had bronchitis, and had never mentioned bronchitis to the doctor.

The bank cashier and the chemist spoke as to the cheques and the sales of the drugs respectively. The chemist said that he had supplied some of the drugs by telephone order from the doctor's attendant, whose voice he recognized.

Dr. Nitch Smith gave evidence, in the course of which he said that Mrs. Platt called upon him in January to consult him for chest trouble. She was then in a wheezy, bronchitic condition. He prescribed two tubes of heroin, a drug she had already been using, and he gave similar prescriptions on six or eight later occasions. Afterwards she said that she was unable to come to see him owing to war work, and asked him to obtain the drug for her. He did not know that his attendant was also letting her have some further supplies of the drug. He never received a cheque from her other than after a consultation save on three occasions, when she was not able to come, and he let her have two tubes each time. He produced his case book on Mr. Gill's demand, but it had only the record of one prescription for Mrs. Platt; he explained that the others were not recorded when they were of the same character as the first. He had never personally received a cheque from Mrs. Platt for more than £2 10s. Cheques for larger amounts—£5 or £6—were paid into his banking account without his knowledge by his attendant. Some cheques were cashed through an agency of which he knew nothing. He had been in a bad state of health for some time, and had had to rely upon his attendant for the routine of his business. He added that he had had many drug-takers under his care, and might claim to be an expert in drug effects. He had never come across a case of heroin poisoning in this country, though it was common in France and America.

Miss Hall, the attendant in Dr. Smith's employment, stated that she had been in his service for twelve years. She remembered Mrs. Platt coming perhaps eighteen or twenty times. On several occasions Mrs. Platt had begged the witness to get her a supply of heroin, which ultimately she did, keeping the cheque back for a time, until, growing nervous over the matter, she paid it in to the doctor's account. Ordinarily three tubes were given to Mrs. Platt's messenger each time she sent. She had looked up a book which stated that heroin was a cure for chest trouble. She had no idea that it was so dangerous; otherwise she would not have given it.

Mr. COLAM, in his speech for Dr. Nitch Smith, traversed Mrs. Platt's statement, and presented the case as an issue between her reliability and the doctor's. The incontestable fact was that some of these supplies of drugs were obtained by this lady without the doctor's knowledge. The doctor had never let her have more than two tubes at a time. Indiscipline there might have been, but not infamous conduct in a professional respect.

Mr. GILL replied that the case against Dr. Nitch Smith in no way depended upon Mrs. Platt's statement. The defendant's own deposition as given originally to the police, and upon which he had commented in opening, was quite sufficient. Within the period covered by the case something like 430 tubes of the drug had been supplied to Dr. Nitch Smith by the chemist, and during the month of June—the month previous to the lady's arrest—batches of four dozen tubes were supplied on three or four occasions. He submitted that the case was one of exceptional gravity.

The Council deliberated in private, and afterwards the President announced the decision of the Council as follows:

Mr. Nitch Smith, I have to inform you that the Council have come to the following conclusion:

That you have been judged to have been guilty of infamous conduct in a professional respect, and that the Acting Registrar has been directed to erase your name from the *Medical Register*.

Giving Certificates Without Personal Examination.

On November 29th the Council considered the case of Frederick William Salter, L.R.C.P., L.R.C.S., of Glarhiew, New Mills, Newtown, Montgomeryshire, who appeared in

answer to the charge of giving seven certificates bearing various dates from January to June, 1917, as to the health of a man who was liable to service under the Military Service Acts without seeing or examining him, whereby this man was enabled for a time to avoid military service, all of which certificates were untrue, misleading, or improper.

The complainant was Dr. R. W. Johnstone, Deputy Commissioner of Medical Services of National Service.

Mr. SPEAR, on behalf of the complainant, said that the man with regard to whose health the certificates were given was T. O. Davies, aged 20, living in Montgomeryshire, at a place thirty five miles distant from the residence of Dr. Salter. On December 10th last Davies was visiting some friends in the neighbourhood of New Mills, and was taken ill with some sort of rheumatic complaint, and Dr. Salter attended him for the next fortnight. On December 24th the man was well enough to return to his home. He received a calling up notice for military service about January 1st, whereupon a certificate from Dr. Salter dated December 18th was sent to the recruiting officer, who, after the receipt of it, asked for a further certificate nearer to the date for which the man was actually summoned. Although Dr. Salter never saw the man at all after December 24th, he continued to give certificates based upon written information sent him by the man. Ultimately, when it was thought advisable that the military authorities should see the man, Colonel Cureton, commanding the military hospital at Shrewsbury, called and examined him on May 22nd, and found him on that date in good health and, in his opinion, fit for service, yet, on June 2nd, there was a further certificate from Dr. Salter that Davies was not fit to travel, although the doctor had not himself seen the man for five months. It was beyond question that certificates should be given only after personal examination.

Mr. ELLIS GRIFFITH, K.C., who appeared for Dr. Salter, said that his client recognized quite frankly that he had done an imprudent thing in granting these certificates, but he contested the assertion that they were untrue. Dr. Salter held many public posts in Montgomeryshire, and was a justice of the peace for the county. In December last this young stranger, who was a ministerial student, visited the neighbourhood to preach, and was taken ill through sleeping in a damp bed. He was attended by Dr. Salter frequently during a fortnight, and as a result of the knowledge of his condition which the doctor had acquired in that time he continued to send him medicines and liniments after his return home, and also at his request to grant him certificates. On every certificate, however, he put his own address and that of the man, and to any one with local knowledge it would be obvious from the geographical facts of the case that he could not be in actual attendance on him. There was no attempt on Dr. Salter's part to keep him out of the army. A letter of his, written in the late spring, that the man would probably be able to go to Wrexham before the Medical Board in a month's time was based on the fact that by then the weather would be warmer, an important consideration in view of the man's rheumatic condition. Davies joined the army in June, but from September 8th until the present day he had been in a hospital bed, and had only done about a fortnight's military duty. This bore out the serious view of the man's condition which the doctor had formed from the beginning.

Dr. SALTER, in evidence, said that when he saw Davies the man was suffering from acute rheumatism and from valvular disease of the heart. He formed the highest opinion as to his straightforwardness and integrity, and therefore took his written statements afterwards unquestioningly. He only charged him half-a-guinea for the treatment he gave him in December, and did not charge him anything for the medicines and liniments he sent to his home. When the certificates were first asked for he had no notion of the man's liability to military service. He understood that they were required in connexion with his examination for the ministry. Later on, however, after the man had returned to his home, he knew that the further certificates were required in response to the demands of the recruiting officer. He regarded the case as one of heart disease; the man never was fit for military service. Later on he was anxious for him to go to Wrexham to be examined, to get the opinion of the army medical authorities; he believed that he would be totally rejected.

The man's medical history sheet was handed in, from which it appeared that he was classified "B1" at Wrexham on June 4th.

Mr. L. MATLEY, solicitor, brought forward a written statement which he had obtained from Davies at the Preses Heath Hospital, Shropshire, a few days previously, reciting the facts of his case. The word "myalgia" and under it the initials "D. A. H." appeared above his bed.

After the Council had deliberated in private, the President announced the decision of the Council as follows:

Mr. Salter, I have to inform you that the Council has found that certain of the facts alleged against you in the notice of inquiry—namely, that you have given certificates which were misleading or improper—have been proved. The Council takes a very grave view of the offence which you have committed, and has issued a Warning Notice in regard to the giving of medical certificates as follows:

"Registered practitioners are in certain cases bound by law to give, or may be from time to time called upon or requested to give, certificates, notifications, reports, and other documents of a kindred character, signed by them in their professional capacity, for subsequent use either in courts of justice or for administrative purposes.

"Such documents include, among others, certificates, notifications, reports, etc. . . .

"(a) For excusing attendance in courts of justice, in the public services, in public offices, or in ordinary employments.

"(b) In connexion with naval and military matters.

"Any registered practitioner who shall be shown to have signed or given under his name and authority any such certificate, notification, report, or document of a kindred character, which is untrue, misleading, or improper, whether relating to the several matters above specified or otherwise, is liable to have his name erased from the Register."

In order to give you an opportunity to prove to the Council that you realize the gravity of your offence, and to produce evidence from your professional brethren regarding your character and conduct generally, the Council has postponed judgement till the May session, when you will be required to attend. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren who may be willing upon written application from the Registrar to testify by letter, addressed to him for the use of the Council, as to your character and conduct in the interval. You will receive in due course a formal written intimation of what I have just announced to you, and the intimation will specify the dates to which I have referred.

On behalf of the Council the President tendered to Mr. Spear and to the Ministry of National Service its thanks for the assistance which they had rendered in placing the facts before it.

PHARMACOPOEIA COMMITTEE.

Use of Glycerin and Sugar in Pharmacy.

The report of the Pharmacopoeia Committee, after noting that they had, in the national interest, agreed unanimously to the temporary withdrawal from the *Pharmacopoeia* of the official directions for the use of glycerin and sugar in the compounding of certain preparations, expressed concurrence in the resolution passed at the last Representative Meeting of the British Medical Association with regard to the benefits likely to attach to a general use of the metric system in teaching.

(To be continued.)

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are reported by the Admiralty: Fleet Surgeon (retired) M. C. Langford promoted to the rank of Deputy Surgeon-General (retired). Fleet Surgeon E. T. P. Eames to the *Flood*, additional, for disposal. Surgeons H. White, to R.M.A., Eastney; R. M. R. Thursfield, to the *Boudicca*. Temporary Surgeons A. H. Moore to the *Grafton*, A. Selby-Green to Plymouth Hospital, K. R. Hill to Chatham Hospital, D. Stewart to the *Newcastle*, C. V. Samwell to Haslar Hospital. To be temporary Surgeons: R. C. W. Staley, P. J. Swanepoel, M.B., C. M. Bower.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon W. G. Evans, M.D., to the *Dryad*.

ARMY MEDICAL SERVICE.

Colonel F. R. Newland, C.M.G., M.B., to be temporary Surgeon-General.

ROYAL ARMY MEDICAL CORPS.

Major T. B. Moriarty to be acting Lieut.-Colonel whilst in command of a medical unit, July 3rd (substituted for notification in the *London Gazette* of October 2nd).

Major J. F. Whelan, M.B., to be acting Lieut.-Colonel whilst in command of a medical unit.

Temporary Major G. D. Gray, M.D., to be acting Lieut.-Colonel whilst in command of the Chinese General Hospital, May 22nd (substituted for notification in the *London Gazette* of November 12th).

Temporary Captains relinquish their commissions: N. McGowan, S. Pinion, M.B., A. J. Best, L. Cairns, M.D., J. H. O'Neill, W. R. W.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL.

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British Medical Association.

CURRENT NOTES.

The Supply of Carbide for Motor Head-lamps.

The whole of the stocks and supplies of calcium carbide in this country have for some time been required for war purposes. The position is still far from satisfactory, and the Priority Branch of the Ministry of Munitions of War can only release quite small quantities for lighting the head-lamps of motor cars or motor cycles used by medical practitioners, and only where an urgent need exists for such supply and other means of lighting are not available. The demand should at present be restricted to what will be required over a period of three months; the requisition forms are obtainable through the usual channels of supply. The Ministry of Munitions has asked the British Medical Association to undertake the investigation of all demands on the part of medical practitioners, and only to pass on to the department such demands as the Association is in a position to recommend; the Association has accepted the responsibility of advising the department in this respect. It must be understood that no carbide can be released for lighting houses, nor for lighting surgeries, and that applications in respect of motor cars and motor cycles should be restricted to cases of exceptional difficulty.

Treatment of Discharged Disabled Soldiers and Sailors.

The attention of the Insurance Acts Committee has been drawn to two instances of mistaken procedure adopted by clerks to Insurance Committees in connexion with the arrangements for the domiciliary treatment of discharged disabled soldiers and sailors, with consequent detrimental results to the practitioners concerned. All men discharged subsequent to the coming into operation of the scheme are provided with Form I.S.1. for presentation to the doctor of their choice. If the doctor accepts, he signs that form and forwards it to the clerk of the local Insurance Committee, who should issue a blue (medical) card to the discharged soldier, and notify the serial number thereof to the doctor. Payment on the attendance basis thereupon commences for any treatment given from and including that first visit. It appears, however, that, owing to names of insured persons not having been removed from a doctor's ordinary panel list on joining the army, some Insurance Committee clerks, upon receiving from a doctor Form I.S.1. regard such discharged men as already on the doctor's ordinary panel list, even though some considerable time has been spent in the army or navy, and forward to the doctor Form I.S.2 to sign and return. If Form I.S.2 is signed by the doctor he is only paid on the payment per attendance basis as from the commencement of the following quarter. No money is received by him from any source in respect of any attendance given to the insured up to the beginning of the next quarter, because even though the insured's name is on the doctor's ordinary capitation list no money goes into the Central Pool in respect of that person, since the money available therefor

has already gone into the Special Fund set up to defray the cost of treatment on the payment per attendance basis. Doctors who are applied to by discharged men for treatment and who tender Form I.S.1. should, after signing and returning that form to the Insurance Committee clerk, take care, in those instances where treatment has been given, that they receive in return from the Insurance Committee a notification of the serial number of the insured's special blue (medical) card, in order to enter that number at the head of the account which they will have already opened in respect of the patient.

THE ORGANIZATION OF THE PROFESSION.

MEETING OF LANCASHIRE PRACTITIONERS.

A MEETING which had been called by the Lancashire Panel Committee was held in the County Hall, Preston, on November 29th, when an address was delivered by Dr. ALFRED COX. The chair was taken by Dr. H. F. OLDHAM, Chairman of the Committee, and over 200 practitioners from all parts of the county were present.

THE CHAIRMAN said that when he learnt that Dr. Cox was coming to Lancashire for the purpose of interviewing certain committees he thought it would be an admirable opportunity for Lancashire practitioners to meet the Medical Secretary of the British Medical Association, and to put to Dr. Cox some of those questions which they were continually addressing to Dr. Campbell and himself. For his own part, he wished to touch only on one matter, namely, the protection of the practices of men absent on service. All those present were well aware that the duties of the Local Medical War Committees were, practically, to recruit the profession for the army. The responsibilities of those committees, however, did not cease when they had selected the men who could best be spared from a district and had recommended them for commissions. It was their further duty to safeguard in every way possible the practices of the absent men. They had failed in their duty if, having sent men into the army, they did not thoroughly and honourably defend the interests which those men had left in their keeping. In the matter of military service the medical profession had been treated on an entirely different footing from every other class in the community. The Government had regarded the profession as a guild, and had handed over to the profession itself its own recruiting. Not even the War Ministry had the right to interfere once this had been done. When Lord Derby on a certain occasion rushed a particular matter through, he had afterwards to withdraw, for no Minister of the Crown could step in between the medical profession and the rights which had been conferred upon it. To have been given such rights was a triumph, and if only the responsibilities attaching thereto were properly discharged, the effect would be to place the profession in a position it had never held previously in the social polity of the country. When the Insurance Committee ventured to intervene between the Local Medical War Committee and its work and came to the Panel Committee with the delightful suggestion that a joint committee should be set up which should carry out the

duties, he was proud to say that his own committee (Lancashire) absolutely refused to have anything to do with such a project. The duty of the Panel Committee was to see that the panel patients of a man who went into the army were properly looked after, and the duty of the Local Medical War Committee was to select the men. They would have nothing to do with any committee which attempted to interfere between the War Committee and the matters over which it was given control. Dr. Oldham went on to appeal to the individual practitioner to accept loyally the decision of the profession as expressed through the War Committee, and said that it was due to the action of the British Medical Association, and to no other influence whatever, that the profession stood apart from the rest of the community in the proud position of a guild which was privileged to have the deciding voice in its own affairs. In conclusion, he said that he had received from the secretary of the Panel Committee a circular, which had been sent out by the secretary of the Burnley Panel Committee, giving notice of a meeting to be held in Manchester to discuss certain questions relating to policy. But the questions were those which had already been discussed and decided by the Conference of Panel Committees in London on October 18th, and as a result of that conference certain action had been taken by the Insurance Acts Committee. It was a great mistake to call a meeting to discuss those very questions when the machinery was already moving to carry out the decisions of the Conference. The practitioners of Lancashire and Cheshire had elected Dr. Campbell and himself as their representatives on the Insurance Acts Committee, and in accepting that position they had considered themselves empowered to speak for the area. Yet when this meeting of medical men was called they were not summoned nor invited, nor even informed. He pleaded for loyalty to the men whom they had elected to represent them on the central body, and said that, given this, and the courage which the British Medical Association had always shown in the past in tackling these problems, a very great deal could be done, not on behalf of panel practitioners only, but on behalf of the whole profession.

Dr. ALFRED COX, after expressing his pleasure at being able to attend so large a meeting of the profession, devoted the main part of his address to the question of professional organization on democratic lines. The profession had got beyond the stage when it was prepared to be governed by a few selected superior persons who would lay down the law. Democratic government meant that those who were governed selected the men they considered best fitted to conduct their centralized affairs, and these in turn did their best to discover the will of their constituents, the constituents on their part agreeing tacitly to be bound by the opinion of the majority. Some years ago the British Medical Association was reorganized on thoroughly democratic lines, to such an extent, indeed, that its constitution was often referred to as a model of what democratic organization should be. It allowed for the most ample reflection in the central bodies of the opinion of the mass, if the mass cared to make use of the machinery available. When the Insurance Bill was brought in the Association applied its machinery to the business of finding out what it was that practitioners wanted, and while they did not get all that they asked for, they secured probably as great a proportion of their demands as any body had ever won in a similar fight. They obtained *inter alia* one and three-quarter millions of additional money and defeated an attempt of the approved societies to secure control of medical benefit. In the first year of the Act the Association called a conference of Local Medical Committees, and the same practice had been followed each subsequent year, the Association endeavouring to carry out the desires then expressed. It was, of course, to the interests of the Association to do so. Out of about 14,000 practitioners on the panel, about 10,000 were members of the Association, and it was a significant fact that although the local committees could send anybody they liked as representatives to the conference, there had never been more than nine or ten non-members of the Association present. The Insurance Acts Committee had been delegated at each conference to carry out the executive work until the conference following, and that committee had fulfilled its trust in the belief that those representatives who at the conference had been in a minority would abide by the result.

At the last Conference a long discussion took place on

the new regulations for the treatment of discharged sailors and soldiers, and by a very large majority the Conference approved the action of the Insurance Acts Committee, and agreed that as an experiment the regulations were worth a trial. This resolution was sent to the Commissioners, who naturally supposed that it bound all those represented at the Conference. But the surprise of the Commissioners might be judged by their own, when it was found that at least two Panel Committees did not intend to be bound by the resolution, and had advised the local practitioners not to attend discharged sailors and soldiers under the new regulations. One committee, after an interview with the Commissioners, had changed its opinion and advised its members to fall into line, and the others would certainly have to do the same or take the responsibility of vitiating the experiment the profession had agreed to make. But the impression left on the outside public must be deplorable, as they must imagine either that the Conference was not thoroughly representative, or that it did not know its own mind, or that those present were not aware of the elements of democratic government.

At the same Conference a resolution was on the agenda claiming that the capitation rate for insurance practice should be increased from 7s. to 10s., and that the agreements for 1918 should not be signed until that concession had been obtained. This latter part of the motion (which was equivalent to saying that the practitioners should not renew their agreements) was withdrawn after discussion because of the evident impracticability of collecting within one month the resignations of 80 per cent. of panel practitioners (for it was agreed that no general resignation should be organized unless 80 per cent. of the practitioners were known to be prepared to act together). No public discussion had previously taken place as to the exact amount of increase to be pressed for, and there was no proof that the required number of individual practitioners throughout the country were prepared to take the extreme step of resigning. Obviously the first thing to do was to find out how far the individual practitioners were prepared to go, and to do this and collect the resignations could not be carried through in the brief time available. The method of negotiation, which consisted of presenting ultimatums without being sure of one's ground, was untenable. He did not at all agree with those persons whose idea of organization was to present a pistol at the head of bodies with whom negotiations were taking place. It was incumbent upon all who had to deal with the Government and other bodies that they should bring forward a reasonable case, and be prepared to discuss it on its merits. The Insurance Acts Committee had, in conformity with the resolution of the Conference, demanded the increase as from January, 1918, and would continue to press that when the increase was given it should take effect as from that date. A few committees represented at the Conference did not approve the scheme for collective bargaining, and if these committees insisted on standing aside—which he did not think they would in view of the unanimity of the profession on the need for an increased capitation fee—they could prevent the 80 per cent. of resignations from being obtained if it were found necessary to take that course. Obviously the first step to be taken by the Insurance Acts Committee was to find out how far it could rely on these committees. Every committee had now been asked to give a definite pledge to abide by the scheme for collective bargaining, and if that scheme broke down the responsibility would not rest on the Association. The Insurance Acts Committee had been asked by the Commissioners to send in a written statement of the case for the increase which would be forwarded to the Cabinet, and probably the Committee would have to discuss the matter with the Chancellor of the Exchequer. An increase of about 40 per cent. in remuneration was no light matter for the Government which had to find the money, but the profession had an exceedingly good case, and the Association was determined to press it to the best of its ability if loyally supported.

Shortly after the Conference the Cheshire and Burnley Panel Committees assumed that it was the intention of the Insurance Acts Committee to collect the resignations of practitioners by the required date—November 19th—and to put an immediate ultimatum to the Government. He wrote explaining the position, but these committees were not satisfied, and called a meeting at Manchester, at which

many things were said which would not have been said had the speakers realized what democratic government involved. Were all the committees who took the trouble to send representatives to the conference, as well as the Insurance Acts Committee and its subcommittees, to be stultified by action of this kind? The Panel Medico-Political Union—a body with a membership said to be over 2,000, scattered over the country, but with no collective mandate from the profession—had also circularized its members and advised them not to abide by the resolution on the new regulations. If individual panel committees were to go off at a tangent and individual practitioners were to take a line of their own, instigated by irresponsible outside bodies, there was an end of all effective organization.

Dr. Cox went on to say that an investigation of the central pool was to be made by the president of the Institute of Actuaries, who was being given full facilities by the Commissioners. After this actuarial investigation was completed, it was very likely that, in accordance with the suggestion of the Insurance Acts Committee, the present method of distribution would be reviewed and an attempt made to find a better method. Turning from matters of purely insurance interest, he proceeded to touch upon the proposed Ministry of Health. Dr. Addison on the previous Saturday (*BRITISH MEDICAL JOURNAL*, December 1st, p. 726) had made it evident that the Government was doing its best to reconcile the various conflicting interests with a view to the establishment of the new Ministry. The Minister of Reconstruction had invited representatives of the Association to meet him to discuss the medical aspects of the question, and as soon as definite information could be obtained the profession would be consulted. The last Representative Meeting had strongly endorsed the view that the new Ministry should place the clinical and preventive aspects of medicine on an equal footing. In the past the preventive work had always seemed to have preferential treatment in the central departments, with the result that local authorities undertaking new medical work had had every inducement to put it under the control of whole-time medical officers. The Association was anxious that the new Ministry should take it as an axiom that in clinical work the opportunity should first be offered to practitioners on the spot.

After dealing with the need for a substantial concession from the Treasury to the rural practitioner engaged in insurance work, which he hoped would soon be obtained, Dr. Cox concluded with a reference to the position of men on service. Though he was sure the average man honestly did his best to preserve the interests of his absent colleague, even the best efforts often had poor results. A great deal of the falling off in incomes was inevitable, owing to the death and removal of patients, the disinclination of some to go to a stranger for minor ailments, and of others to inform their new doctor that they already had a practitioner who was on service. Then it was often very difficult, if not impossible, to say definitely to which of two or more doctors a given patient belonged. But allowing for all this, it was the duty of everyone at home to look after the interests of the absent men, and in cases of doubt to give them the benefit.

In the course of discussion,

Major ELWIN NASH strongly supported the claims of the Association to represent the profession as a whole. Speaking also as a man on service, though not in general practice, he said that many of his colleagues were very dissatisfied with the amount of protection their practices were receiving.

Dr. JAMES GARDNER (Burnley) said, with regard to the Manchester meeting, that he came away from the Conference in London with the belief that the profession was to be organized at once. At Burnley they were of opinion that the Insurance Acts Committee had been very dilatory, and they thought they were justified in having a meeting to ascertain the actual situation. The resignations had not been sent in, and insurance practitioners were now bound to go on treating their patients for the whole of next year on the old basis. The Committee ought to have sent out notices at once to the Panel Committees asking them to consult their members as to the extreme step.

Dr. SIDLEY (Eccles) said that in his district the work of protecting the practices of the men on service was done for nothing by those at home, but they were ashamed.

nevertheless, of the smallness of the cheques they sent to the men who were away.

Another speaker thanked the Lancashire Panel Committee for calling the meeting, which he hoped would be a precedent. He added that Lancashire men did not wish the Insurance Act extended to dependants, as they valued their private practices much more than any kind of contract work.

Dr. MAIN (Salford) defended the Panel Medico-Political Union, which he said was not composed of scattered individuals but of blocks of men in various places. If it was not possible for a man to be a supporter of the Union and of the British Medical Association, one-third of the Union's council and a considerable proportion of its members would have to decide between the rival allegiances. As to the protection of the practices of absent men, it was often difficult to ascertain to what practitioner a patient belonged. The practice of one Salford doctor on service, originally worth £1,400 a year, had practically disappeared. The local committee had investigated the lists of all the men in the neighbourhood, but all except one showed decreased instead of increased income, and the exception was a man who had newly come into the neighbourhood and whose practice was growing, and even so, it in no degree explained the loss.

Dr. CAMPBELL (Wigan) spoke of his intention as secretary of the County Panel Committee to organize the county thoroughly, as it was felt that Lancashire was one of the most vital centres in the kingdom. He hoped that the Panel Committees of the various county boroughs would give their support.

A vote of thanks was heartily accorded to Dr. Cox and to the Chairman.

GENERAL COUNCIL

OF

MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1917.

SIR DONALD MACALISTER, K.C.B., President,
in the Chair.

EDUCATION COMMITTEE.

Inclusion of Latin in Preliminary Examination in General Knowledge.

THE Education Committee presented a further report on the compulsory inclusion of Latin in the preliminary examination in general knowledge. The report dealt with the part of the subject which in the session of November, 1916, was remitted for further consideration—namely, that dealing with the junior entrance examination, a test intended to meet the conditions of youths who leave school at the age of 15-16 years and of those who occupy a similar educational level. The considerations which led the Committee to take the view that Latin should be retained for the present in this examination were recapitulated, and further documents were put in, including a special report from the Rector of the Royal High School of Edinburgh (Mr. John Strong, M.A.), who agreed that there were no possible substitutes for Latin in the educational scheme suitable to a youth of 15 which could be said to be entirely satisfactory. The Committee recommended that for the present, in examinations which were entirely of the junior order and open to pupils of 16 and under, the subject of Latin should continue to be required. In the case of older candidates belonging to an intermediate group standing between the levels of the senior and junior certificates, who did not profess Latin, an intermediate portal might be established. The general standard of such an examination (for pupils of 17 to 18) would be distinctly higher than that of the present junior examination, and effect could be given to the proposal by appending a note to the present regulations governing the junior examination that an examination on the standard of the higher examination in science or in any one of the four subjects specified in the junior list might be substituted for Latin. The report also pointed out that for some years the number of entrants upon medical study had been increasing, from 1,397 in 1912 to 1,873 in 1916—a progressive increase, save for a slight falling-off in 1916 as compared with the previous year. The time seemed favourable for taking a first step towards the raising of the

standard of the entrance examination in medicine. If the conditions of entrance for the diploma in dentistry were relaxed, in view of the diminution in numbers of registered dentists, this should not be allowed to influence the discussion of the question. The Committee recalled the fact that in 1902 it had replied to a deputation from the British Medical Association to the effect that as soon as the Committee believed the requirement was practicable it was prepared to recommend to the Council the adoption as a general rule of the age of 17 for admission to the *Students' Register*. The report contained no recommendation.

Examinations in Secondary Schools in England.

The Education Committee submitted a report upon examinations in secondary schools in England. The Committee advised that until the new Board of Examiners, which was created in September last, had had time to complete the reorganization with which it was charged, no further action should be taken by the Council with reference to the conditions of the examination in general knowledge. If the scheme realized expectations the complicated problem with which the Council, in dealing with the preliminary education of the student, had been confronted in the past would be profoundly modified. Hitherto there had been no educational authority in the country to supervise and classify examinations; therefore the General Medical Council and the licensing bodies had been compelled to define and exact their own requirements in general education. Under the new arrangements all examinations to which the pupils of State-aided secondary schools were submitted would be under the control of a committee of experts representative in the broadest sense of purely educational interests. The Secondary Schools' Examination Council included representatives of all the universities, of the managing bodies of the State-aided schools, and of the teachers. The examination would be conducted under its supervision by the universities. There would be two examinations, the first the Schools' Examination, suitable for pupils of 16 and qualifying for university matriculation if passed with credit, and the second the Higher Schools' Examination, adapted for youths of about 18 years of age. Each school might be examined on its own syllabus; pupils would be put forward in classes rather than individually; in doubtful cases the school record would be taken into account, and the subjects included in the "pass" would be endorsed on the certificate. Admission to the examination would be, in the majority of instances, by way of a definite period of instruction in a secondary school, but arrangements would be made for the inclusion of those who approached by other than the usual channels. The success of the scheme demanded the co-operation of the universities and the professional bodies with the Board of Education. The great advantage which the scheme offered to this country could only be realized through the avoidance of any conflict of interests between the two grades of educational institutions and through granting to the schools complete freedom from external influences inimical to their true teaching work. In the near future probably all the general entrance examinations in the country which were conducted by or on behalf of the universities would be co-ordinated and classified, and it was to be hoped that those of the College of Preceptors would be included in the classification. The gradual advance of the standard of the entrance examination in medicine should then present no difficulty, as it would be possible to carry it out in strict harmony with the educational progress of the country. The Education Committee therefore expressed the view that the General Medical Council should be maintained in close touch with the Board of Education and the newly-established Secondary Schools' Examination Council. It would probably be found advantageous, however, to grant to the Students' Registration Committee even a greater measure of freedom than it had exercised in the past in dealing with the educational qualification of candidates who were above school age.

The report of the Committee embodied a report by two members who represented the General Medical Council at a conference of representatives of the professional bodies held in July. A proposal was then submitted that a Standing Committee of Representatives of the Professional Bodies should be formed, and that one member of this Standing Committee should have a place upon the

Secondary Schools' Examination Council. The latter part of this proposal was afterwards withdrawn, but the representatives of the Council held the opinion—which is endorsed by the Committee—that the purposes of the Council would be better served by direct relation with the Board of Education or any permanent committee it might appoint than they could be if approach were to be made through the suggested Standing Committee, though such direct relation need only come into action occasionally.

Dr. MACKAY said that the work of the secondary schools in England had been greatly hampered by the multiplicity of examinations. The establishment of the Secondary Schools' Examination Council made it possible to look forward to considerable progress in general education, the result of joint action by schools and universities, and each step would be taken in unison. His committee did not approve the proposal of Mr. Fisher to set up a standing committee from the professional bodies, which were 17 in number, and of extremely divergent aims.

Dr. MACKAY moved, and Sir ARTHUR CHANCE seconded, and it was agreed:

That as the professional bodies which demand an entrance examination are widely divergent in their aims, the Council is of opinion that they cannot be combined in a Joint Standing Committee, which might reasonably be expected to take united action. On the other hand, the Council would welcome the privilege of conference, from time to time, as occasion arises, with the Education Board or the Secondary Schools' Examination Committee.

Dr. MACKAY said that probably the Council would soon be called into consultation by the new examination body which was attempting to co-ordinate and standardize examinations, and accordingly moved the postponement of discussion of the subjects to be included in the junior examination in general education.

Dr. NORMAN MOORE seconded the motion, which was agreed to.

DENTAL EDUCATION AND EXAMINATION COMMITTEE.

Dental Nurses.

The Dental Education and Examination Committee reported that the Birmingham Education Committee, finding it difficult to secure suitable candidates for the normal dental staff of their school medical service, had inquired whether dental nurses comparable to medical nurses in respect of undertaking, under supervision, certain details of treatment could be employed without involving the supervising dentists in the liability to be charged with "covering." The President of the Council and the Chairman of the Committee were consulted, and a reply was sent to the effect that there would be no objection to the employment of dental nurses as proposed, provided that the supervision was of a real and not of a perfunctory nature.

Dental Education and Examination.

At the suggestion of Mr. C. S. TOMES it was agreed, in view of the appointment of a departmental committee on the Dentists Act, to postpone further a discussion on certain recommendations made in December, 1916, with regard to the course of study in dentistry.

REPRESENTATION OF REGISTERED DENTISTS ON THE COUNCIL.

THE PRESIDENT read a letter from the Lord President of the Privy Council stating the proposal of the resolution passed on the first day of the session affirming the advantage of some provision for the appointment to the Council of members representative of the dental profession appeared to require legislation, for which at present there seemed to be no adequate opportunity.

RESTORATION TO "MEDICAL REGISTER."

At the resumption of the public session on November 28th the PRESIDENT announced that the Acting Registrar was directed by the Council to restore to the *Medical Register* the name of William Joseph Ryan.

DISCIPLINARY CASES.

Sir Archibald Rodkin, the Legal Assessor, and Mr. Harper, the Solicitor to the Council, were in attendance.

The first case taken, adjourned from November 30th, 1916 (SUPPLEMENT TO BRITISH MEDICAL JOURNAL, December 9th, 1916, p. 161), was that of Robert Francis Ferris, M.B., Ch.B., of Burnopfield, co. Durham. At the former hearing the Council found the facts proved, but in view of the evidence as to general good character, suspended judgement until the present session.

Mr. Harper said that no further evidence against Dr. Ferris was alleged. Two medical men and three other men of high professional standing testified to his character and conduct in the interval, and the Birmingham Insurance Committee, the original complainant, expressed itself satisfied with the testimony. In reply to Mr. Steele, his solicitor, Mr. Ferris gave an undertaking as to his future conduct.

After the Council had considered the case in *camera*, the President announced the decision of the Council as follows:

Mr. Ferris, the Council has taken into consideration the evidence of good conduct during the interval which has been tendered in your behalf, and the assurance which you have given as to your future conduct, and has not seen fit to direct the Acting Registrar to erase your name from the *Medical Register*.

(To be continued.)

INSURANCE.

INSURANCE ACT IN PARLIAMENT.

THE TREATMENT OF DISABLED MEN.

MR. BUTCHER asked Sir Edwin Cornwall, on December 6th, whether he was aware that every one of the medical practitioners on the York panel, now resident in the area, had refused to attend upon invalid seamen and soldiers under the regulations recently issued by the National Insurance Commissioners (England), but had offered to continue to treat them upon the old (capitation) basis of treatment pending negotiations between the Commissioners and representatives of the medical practitioners, and were at present treating them gratuitously; whether he was aware that the Commissioners had refused to allow these persons to be treated upon the capitation basis provided for in the agreements between the Insurance Committee and the practitioners, and what provision was at present made by the Commissioners or the York Insurance Committee for adequate medical attention to the insured persons. Sir E. Cornwall, in reply to the first two parts of the question, referred to an answer given by him on November 26th, in which he said that the regulations were framed in accordance with the express desire of the authoritative representatives of the medical practitioners concerned, and that events subsequent to their issue had shown that the regulations were in fact acceptable to the great majority of such practitioners. As to the last part of the question, he said he was not aware that any insured persons were not receiving adequate medical attention in the area named, nor was there any reason why the attendance need be given gratuitously, for the Insurance Committee would pay any bills which were sent up in accordance with the authorized arrangements.

In reply to a similar question, on December 10th, by Mr. Ramsay MacDonald as to Leicestershire panel practitioners, Sir Edwin Cornwall replied in a written answer that the number of doctors referred to was not known to him; he was unaware of any medical practitioner who had refused to render treatment in any such case. He added that the doctors appeared to have been under some misunderstanding in the matter which a letter from the Commissioners, of which he was sending Mr. MacDonald a copy, would, he hoped, serve to remove. Sir Howell Davies received a similar reply to a question in regard to Bristol panel practitioners. It is understood that the reply of the Commissioners sent to Mr. MacDonald expresses the same views as were set out in the letter addressed to the Cheshire Medical Panel Committees, and published in the SUPPLEMENT of the JOURNAL on November 24th, p. 103.

INSURANCE GRANTS.

Mr. Duncan Miller asked the Chancellor of the Exchequer whether he was prepared to sanction the payment of the grants-in-aid for administration and medical benefits and for sanatorium benefit, the grants to provide for the expenses of medical referees, consultants, and of specialist consultants in connexion with medical benefit and the equipment, etc., of clinics, and also the nursing grant, all of which had been suspended since the outbreak of war, although appearing in the estimates for National Insurance. Mr. Bonar Law: The suggestion made in question will be carefully considered in connexion with the estimates of the Insurance Department for the coming year, but having regard to the general financial situation I cannot pledge myself to the revival of all or of any of those grants at the present time.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are reported by the Admiralty: Fleet Surgeon J. A. Keogh, M.B., to the *Victory*, additional, for disposal. Staff Surgeon C. K. Bushe, M.D., to rank of Fleet Surgeon. Staff Surgeon L. P. Cope to the *Victory*, additional, for disposal. Temporary Surgeons: T. H. W. Idris to the *Esquad*; F. G. Hunt, M.B., to Chatham Hospital; H. Harvey to the *Amphitrite*; H. C. C. Joyce to the *Vindicta*, additional, for disposal. To be temporary Surgeon: D. M. Dickson.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon C. H. P. Atkinson to the *Vindicta*, for disposal. Surgeon Probationer W. E. McCormack to the *Alarm*. To be Surgeon Probationer: E. De L. W. Deane.

ARMY MEDICAL SERVICE.

Lieut.-Colonel A. W. N. Bowen, D.S.O., relinquishes the rank of temporary Colonel on re-posting.

Lieut.-Colonel S. A. Archer to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temporary Colonel Sir John Collier relinquishes his commission.

Temporary Lieut.-Colonel R. E. Kelly (Captain R.A.M.C.T.F.) to be temporary Captain.

ROYAL ARMY MEDICAL CORPS.

Temporary Colonel P. W. G. Sargent, D.S.O., M.B., F.R.C.S. (Lieutenant R.A.M.C.T.F.), relinquishes the rank of temporary Colonel and to be temporary Lieut.-Colonel on re-posting.

The following relinquish their commissions on appointment under the Ministry of National Service: Temporary Colonel J. Galloway, C.B. Temporary Majors W. B. Edwards, A. G. Andrews, N. S. Manning, F.R.C.S.I. Temporary Captains H. Owen, J. J. Robb, W. R. Reith, H. Bates, E. L. Jenkins, H. P. Gaston, J. C. Fisher, J. D. C. White, W. G. Galletly, J. Davies, T. W. E. Moreton. Temporary Lieutenants C. Alison, M.B., R. W. Johnstone, M.D., F.R.C.S.E.

Lieut.-Colonel A. R. Aldridge, C.S.I., C.M.G., M.B., relinquishes the acting rank of Colonel on re-posting.

Major A. S. J. Graham is seconded for employment under the Ministry of National Service.

Major P. J. Maret to be acting Lieut.-Colonel whilst in command of a medical unit.

Temporary Major E. D. Macnamara, M.D. (Captain R.A.M.C.T.F.), relinquishes his temporary commission on re-posting.

Temporary Majors relinquish their commissions: J. C. Briscoe, M.D., F.R.C.P., J. Kerr, M.D., W. A. Brend, M.B., J. F. Porter, M.D., T. M. Martin, M.D.

Temporary honorary Major B. Crothers relinquishes his commission.

Temporary Captain F. Herniman-Johnson relinquishes his commission on account of ill health and is granted the honorary rank of Captain.

Temporary Captains C. A. Dupont and J. D. Wilkinson relinquish their commissions on account of ill health contracted on active service.

The notifications regarding temporary Captains R. P. Nash and J. A. Smith published in the *London Gazette* of October 20th and November 14th respectively are cancelled.

Temporary Captain C. A. Keegan relinquishes his commission on account of ill health.

To be temporary Captains: Temporary Lieutenant H. T. H. Butt, W. T. Smith, M.B., A. C. Falkiner, M.B., J. N. Glaister, C. G. Monro, M.B.

Temporary Captains relinquish their commissions: J. R. Polson, M.D., W. W. Linington, F.R.C.S., J. B. Orr, D.S.O., M.C., M.B., D. E. Scott, M.D., J. E. Knox, M.B., R. I. Harris, A. R. Riddell, M.B., T. C. Routley, M.B., E. T. Jones.

Temporary Lieutenants to be temporary Captains: C. J. C. Macquarie, M.B., M. J. Ahern, C. W. Forsyth, M.B., R. Stansfeld, J. H. Hes, M.B., E. R. D. Macdonald, M.B., F.R.C.S.E., T. J. Lloyd, G. N. Kirkwood, M.B., A. W. Brodrick, M.B., G. W. Bury, M.D., F.R.C.S.E., F. B. Macdonald, M.D., P. A. Creux, J. F. H. Stallman, M.B., T. Marron, M.B.

The following are granted the honorary rank of captain: G. K. Allan, M.B., and C. H. Evers, late temporary Captains.

Temporary Lieutenant S. Y. Walsh, M.B., relinquishes his commission May 26th (substituted for announcement in the *London Gazette* of July 10th).

Temporary Lieutenants relinquish their commissions: W. Brennan, A. W. R. Stratton, J. A. A. Boddy, H. V. O'Shea, M.B., O. H. Woodcock, M.B., R. G. Griffin, J. G. Fleming, M.B., M. J. Walsh, M.B.

To be temporary Lieutenants: S. Spencer, C. Murphy, M.B., A. R. P. Scott, J. C. Johnson, G. C. Cossar, P. S. Clarke, F. J. Power, G. Ferguson, M.B., R. O'Connor, A. Bryans, H. S. Gabb, M.B., W. Cregar, M.B., H. Barber, M.D., F. Joyce, M.B., E. F. Lawson, M.B., M. J. O'Flynn, M.D., J. M. McCormack, M.B., A. G. Heron, M.D., F. C. Watson, R. J. MacMillan, M.B., A. S. Moorhead, M.B., F.R.C.S., F. Green, M.D.

Temporary Lieutenant Thomas Francis Collins is dismissed the service by sentence of a general court-martial October 22nd.

To be temporary honorary Lieutenants: G. H. V. Hunter, H. A. Haskell, C. S. Gilman.

TERRITORIAL FORCE.

ARMY MEDICAL SERVICE.

Temporary Colonel W. C. Beevor, C.M.G., M.B. (Lieut.-Colonel retired pay), relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services, and is granted the honorary rank of Colonel.

ROYAL ARMY MEDICAL CORPS.

Majors (temporary Lieut.-Colonels) J. H. Ray, M.B., F.R.C.S., and A. Cooke, M.B., F.R.C.S., and Captains (temporary Majors) R. Ollershaw, M.D., F.R.C.S., and F. E. Tyldesley, M.D., relinquish their temporary rank and are restored to the establishment.

Major (temporary Lieut.-Colonel) R. M. West, D.S.O., M.D., to be Lieut.-Colonel.

Major J. A. Coupland, M.B., F.R.C.S., from permanent personnel, to be Major whose services are available on mobilization, and is restored to the establishment.

Major (temporary Lieut.-Colonel) G. A. Trapp, M.D., relinquishes his temporary commission on ceasing to command a field ambulance.

Major (acting Lieut.-Colonel) T. A. Barron relinquishes his temporary rank on ceasing to command a field ambulance, July 19th.

Major A. E. Hodder, D.S.O., to be acting Lieut.-Colonel whilst commanding a field ambulance, August 3rd.

Major A. Milne-Thomson, C.M.G., is seconded whilst holding an appointment as Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Major L. P. Demetriadi, M.D., F.R.C.S., relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Lieut.-Colonel.

Majors J. W. Mackenzie, M.D., and J. B. Yeoman, M.D., F.R.C.S., and Captain D. Shannon, M.D., to be acting Lieut.-Colonels whilst commanding a stationary hospital.

Captain R. P. Pollard, from Attached to Units other than Medical, to be Captain.

Major (temporary Lieut.-Colonel) T. Kay, M.B., to be Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Captains (acting Lieut.-Colonel) H. B. Low, M.C., M.D., and H. F. Wilkin, M.C., F.R.C.S., relinquish their acting rank on ceasing to command a field ambulance.

Captains (temporary Majors) A. C. H. McCullagh, M.B., J. R. Pooler, M.B., and R. S. Taylor, D.S.O., to be acting Lieut.-Colonels whilst commanding a field ambulance.

Captain (temporary Major) W. Cowie, M.B., relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Major.

Captain (temporary Major) J. M. Hunt, M.B., to be acting Lieut.-Colonel whilst performing the duties of administrator of a general hospital.

Captains F. W. C. Brown, M.B., and E. B. Argles are seconded whilst holding an appointment as Deputy Assistant Directors of Medical Services.

Captain (temporary Major) J. W. Keay, M.D., relinquishes his temporary rank on ceasing to command a field ambulance, November 8th, 1917.

Captain J. P. H. Davies, M.B., relinquishes his commission on account of ill health, and is granted the honorary rank of Captain, October 14th (substituted for notification in the *London Gazette* of October 3rd).

Captains C. R. Handfield-Jones, M.B., and P. G. Phillips, resign their commissions on account of ill health.

Captain J. F. Edmiston, M.B., from Deputy Assistant Director of Medical Services, to be Captain.

Captain B. Fawcett resigns his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.

Captain J. D. Allen, M.B., resigns his commission on account of ill health.

Captain J. S. Burton resigns his commission.

Captain A. S. Daly is seconded for duty with a general hospital.

Captain A. Gough, M.B., F.R.C.S., is restored to the establishment.

Captain P. W. Thompson resigns his commission on account of ill health contracted on active service, and is granted the honorary rank of Major.

Lieutenant H. J. Shanley, M.B., to be Captain.

Captains (temporary Majors) relinquish their temporary rank and are restored to the establishment: D. Douglas-Crawford, M.B., F.R.C.S.; J. Hay, M.D.

Captain H. W. Beedham, M.B., resigns his commission on account of ill health, November 15th (substituted for notification in the *London Gazette* of November 14th).

Captain E. Bromet relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.

Captain J. Bradley, M.B., F.R.C.S., and Captain H. Mason, M.D., are seconded.

Captains G. M. A. Thomas, M.D., and W. W. Horton, M.D., resign their commissions on account of ill health.

Captains restored to the establishment: H. Armstrong, M.D.; W. C. Oram, M.D.; V. C. de Boynville, M.D.; J. Wharton, M.D.; W. R. Higgins, M.B.; R. H. Fagge, L. A. Rowden, M.B.

Captain J. MacMillan, M.C., M.B., to be acting Lieut.-Colonel whilst commanding a field ambulance.

Captain W. Brown, M.B. (acting Lieut.-Colonel) relinquishes his acting rank on ceasing to command a field ambulance, August 5th.

Lieutenant S. R. Walker to be Captain.

Lieutenant G. L. Matthews to be Captain, February 11th, 1916 (substituted for announcement in the *London Gazette* of March 14th, 1916).

VOLUNTEER FORCE.

City of Glasgow Regiment—3rd Battalion.—J. W. Methie, late Lieutenant R.A.M.C., to be Medical Officer with the temporary rank of Lieutenant.

Shropshire Regiment—1st Battalion.—J. McC. McCarthy to be Medical Officer with the temporary rank of Captain.

County of London Regiment—11th Battalion.—Medical Officer and temporary Lieutenant T. Halliwell to be temporary Captain.

Hampshire Medical Corps.—To be temporary Captains: A. E. Clark and A. C. D. Newton, late Lieutenants R.A.M.C.

Kent Medical Volunteer Corps.—T. W. Hinds, M.D., to be temporary Captain.

Suffolk Volunteer Regiment—1st Battalion.—A. Y. Pringle to be temporary Captain. 4th Battalion—H. G. Toombs to be temporary Lieutenant. 5th Battalion—T. H. Goodman to be temporary Lieutenant. 6th Battalion—C. W. Biden to be temporary Lieutenant.

City of Bristol Volunteer Regiment—2nd Battalion.—F. E. Peake to be Medical Officer and temporary Captain.

Midlothian Volunteer Regiment—11st Battalion.—R. Inch to be Medical Officer and temporary Lieutenant.

Somerset Volunteer Regiment—3rd Battalion.—Medical Officer and temporary Captain A. D. Willcocks, from 1st Battalion, to be Medical Officer and temporary Captain.

Glamorgan Medical Volunteer Corps.—Captain A. W. Anderson, late R.A.M.C., to be temporary Major.

Lancashire Medical Volunteer Corps.—T. B. Grimsdale to be temporary Major. H. E. Jones and J. Watson to be temporary Captains.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BELFAST DISTRICT ASYLUM.—Medical Superintendent of Purdysburn Villa Colony Asylum. Salary, £700 per annum.

BRISTOL EYE HOSPITAL.—House-Surgeon. Salary, £120 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician. (2) House-Surgeon. Salary, £120 per annum.

CARDIFF UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.—Temporary Lecturer in Physiological Chemistry. Salary, £200 per annum.

CHELMSFORD: ESSEX EDUCATION COMMITTEE.—Assistant School Medical Inspector. Salary, £350 per annum.

CHILDREN'S INFIRMARY, Cleveland Street, W.—Assistant Medical Officer (female). Salary, £250 per annum.

DARLINGTON HOSPITAL.—House-Surgeon. Salary, £200 per annum.

FIFE COUNTY COUNCIL.—Assistant Tuberculosis Officer. Salary, £350 per annum.

GUILDFORD: ROYAL SURREY COUNTY HOSPITAL.—House-Surgeon. Salary, £250 per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Two House-Surgeons. Salary at the rate of £100 per annum and £5 washing allowance.

HYDE BOROUGH EDUCATION COMMITTEE.—Woman Dentist to take charge of the dental clinic.

IVERNESS: NORTHERN INFIRMARY.—House-Surgeon. Salary, £3 3s. per week, and £1 1s. additional as war bonus.

KINGSTON-UPON-HULL CORPORATION.—Resident Medical Officer at the Infectious Diseases Hospitals. Salary, £400 per annum.

LEEDS CITY.—Woman Medical Assistant. Salary, £350 per annum.

LEWISHAM BOROUGH.—Assistant Medical Officer of Health and Medical Officer for the Municipal Maternity and Child Welfare Centre. Salary, £500 per annum.

NEW HOSPITAL FOR WOMEN, Euston Road, N.W.—Surgeon-in-Charge of Throat and Ear Department.

NOTTINGHAM CHILDREN'S HOSPITAL.—Resident Lady House-Physician and Anaesthetist. Salary, £250 per annum.

PLYMOUTH: SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House-Physician. Salary, £200 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—Temporary Assistant Physician. Honorarium, £12 10s.

SOUTHAMPTON: ROYAL SOUTH HAMTS AND SOUTHAMPTON HOSPITAL.—Senior House-Surgeon. Salary, £300 per annum.

STOKE-ON-TRENT COUNTY BOROUGH.—Lady Medical Officer. Salary, £350 per annum.

STOKE-ON-TRENT: NORTH STAFFORDSHIRE INFIRMARY.—House-Surgeon (lady). Salary, £200 per annum.

SUNDERLAND: CHILDREN'S HOSPITAL IN CONNEXION WITH ROYAL INFIRMARY.—Resident Medical Officer. Salary, £200 per annum.

WALLASEY COUNTY BOROUGH.—Lady Assistant School Medical Officer. Salary, £300 per annum, plus war bonus of £37 10s.

WALSALL AND DISTRICT HOSPITAL.—Senior House-Surgeon. Salary, £250 per annum.

WEST HAM UNION INFIRMARY.—Temporary Assistant Medical Officer. Salary, £300 per annum.

WILLESDEN URBAN DISTRICT COUNCIL.—Temporary Assistant Medical Officer. Salary, £10 10s. per week.

CERTIFYING FACTORY SURGEONS.—The Chief Inspector of Factories announces the following vacant appointments: Kenilworth (Warwick), Killeshaundra (Cavan), Wolsingham (Durham), Yarmouth (Isle of Wight).

MEDICAL REFEREE.—Medical Referee under the Workmen's Compensation Act, 1906, for Hull, Hedon, Beverley, Great Driffield, Bridlington, Pocklington, Selby, Goole, and Howden County Courts, Circuit No. 16. Applications to the Private Secretary, Home Office, by December 27th.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

APPOINTMENTS.

ATKINSON, H. L., M.R.C.S., L.R.C.P., District Medical Officer of the Cokermouth Union.

BOYES, A., M.B., Ch.B., Glas., Medical Officer for Mother and Infant Welfare and School Work in the County of Surrey.

FAIRCHILD, G. C., M.R.C.S., L.R.C.P., District Medical Officer of the Camelford Union.

JONES, C. R., M.B., Ch.B., Certifying Factory Surgeon for the Arnesby District, co. Leicester.

PATEY, W., M.D., District Medical Officer of the Newton Abbot Union.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

DEATHS.

FALENER.—On December 10th, at the Hermitage, Fulham Palace Road, S.W., Marie Louise (Minnie), the beloved wife of S. Falkner, M.R.C.S., L.R.C.P.

FISHER.—At Great Eccleston, Garstang, suddenly, on December 1st, Dr. Thomas Fisher, J.P., aged 63 years.

DIARY FOR THE WEEK.

FRIDAY.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos Street, W. 5.30 p.m.—Geographical Distribution of Human Diseases and their Control, by Colonel J. H. Tull Walsh, I.M.S. (ret.).

ROYAL SOCIETY OF MEDICINE.—Tuesday, 5 p.m., General Meeting of Fellows. Section of History of Medicine: Wednesday, 4.30 p.m., Exhibition of pictures, books, etc. 5 p.m., Dr. G. C. Peachey: The Two John Peacheys (Seventeenth Century). Dr. G. C. Cunston: (1) Morgagni and the Foramen Caecum; (2) The Death of King Henry II. Section of Dermatology: Thursday, 5 p.m., Cases. Section of Electro Therapeutics: Friday, 8.30 p.m., Mr. A. E. Baines: Interpretation of Certain Electro Physiological Phenomena.

DIARY OF THE ASSOCIATION.

Date. Meetings to be Held.

DECEMBER.

19 Wed. London: Journal Committee, 2.30 p.m.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 22ND, 1917.

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INSURANCE.

THE DEMAND FOR AN INCREASED CAPITATION FEE.

THE Insurance Acts Committee of the British Medical Association has forwarded to the National Health Insurance Joint Committee the following memorandum on the reasons which led the last conference of representatives of Local Medical and Panel Committees to ask that the capitation fee for medical attendance under the National Insurance Acts should be raised to 10s.

Memorandum.

For more than two years past the stress of war conditions has been felt by the medical profession to an ever-increasing degree. In this, of course, their experience has only been the same as that of all classes in the nation who have not been profiting by those conditions, and members of the profession like many others have been willing as a patriotic duty to make the best of the circumstances and to work much more strenuously and much less profitably than would otherwise have been the case. Latterly, however, the economic stress has reached such a degree that practitioners in most areas have found it necessary to increase their fees either according to their individual necessities and methods or by local arrangements with their fellow practitioners. This may be supposed to meet the case as far as private practice is concerned, but in connexion with practice under the National Insurance Acts the contract is fixed according to an arrangement made in peace times, and with no reference to such economic conditions as now prevail.

Those members of the profession who are working under these Acts have been reluctant to raise any questions on this matter, or to make any actual proposals for increased remuneration, both because as part of an educated profession they wished to be fully persuaded as to the real necessity of the case and of the equity of any proposals they might make, and because they desired to act with the utmost degree of patriotism, and to bear on their own shoulders their increased burdens to the limit of what was fair to themselves and those dependent upon them.

At the conference of representatives of Local Medical and Panel Committees in June, 1915, representing the great majority of those committees throughout the country, resolutions were passed pointing out the need for a revision of the insurance rate of remuneration in so far as the war had led to a disturbance of the liability of medical attendance on the insured population, and the conference of October, 1916, declared that "owing to the great increase in the cost of living, insurance practitioners have a claim to an increase of remuneration, and that if such claim be not pressed at the present time this must be considered as a contribution to the national cause and without prejudice to the rate of remuneration after the war."

The profession is fully aware that if prices are proportionately raised all round no one is really any the better off for any increase that may be given in remuneration. But so general and considerable has been the rise in prices during the past year that it has become evident that if all classes except one or two raise the price of what they are able to contribute to the general well-being, those one or two classes are necessarily placed in a relatively disad-

vantageous position which eventually becomes almost intolerable. The conference of Local Medical and Panel Committees held in October last unanimously passed the following resolutions:

1. That because of the continuance of the war, and the uncertainty of its duration, it has become impossible to postpone the reconsideration of the rate of remuneration of medical practitioners under the Insurance Acts till the war is over.
2. That the increased cost of living and of carrying on practice, and other reasons, require an increase in the capitation fee as from January 1st, 1918.
3. That the present capitation fee of 6s. 6d., plus 6d. for domiciliary treatment, be raised to 10s., which shall cover the increased liabilities with regard to discharged sailors and soldiers and all the services now rendered to tuberculosis patients by panel practitioners.
4. That the Insurance Acts Committee be instructed to negotiate these terms with the Government, and to organize the profession forthwith in furtherance of this object.

Without prejudice to the consideration, some time in the not too distant future, of the general question of the adequacy or otherwise of the present remuneration for work under the Insurance Acts, the alteration in the situation brought about by the war amply justifies a demand for a substantial increase of that remuneration as long as that situation continues, at least to the extent indicated in the above resolutions. The present maximum capitation fee is 7s. 6d.; that asked for is 10s.

There are three ways in which conditions brought about by the war have affected disadvantageously to the medical profession financial arrangements agreed upon when service was accepted for National Insurance work. The most important of these is the great increase in the cost of living and of carrying on medical practice. The exact degree to which the cost of living has risen is probably more accurately known to the Government than to the profession, but it is admittedly very great. In the case of the medical profession it is peculiarly difficult to make a clear distinction, in respect of every item, between the cost of living and the cost of carrying on practice, but in a number of practices in which accounts have been carefully kept it has been found that quite apart from the cost of food and other necessities, and without taking into account the cost of drugs, the expense of carrying on practice has risen by 37 per cent. or more—that is to say, it has risen by 10 to 15 per cent. on the income derived from the practice. As compared with other professional men—for example barristers and civil servants—whose expenses have been increased by war conditions, medical men are under a peculiar disadvantage—namely, that whereas it is possible for most people to reduce their expenses to almost any degree they find necessary, the professional expenses of a doctor are to a large degree fixed; his travelling and surgery expenses cannot be cut down, and the fact that his practice ties him to a particular locality and often practically to a particular house, makes it extremely difficult to reduce his household expenses without injury to his professional income.

Secondly, the insurance risk of medical attendance has been increased by the withdrawal of millions of the more healthy lives among that part of the insured population (men) which makes the smaller call upon the profession in this respect, and the addition of considerable numbers of women and of elderly men who have returned to work

who make a relatively larger call. The total amount of work required has probably been diminished owing to the reduction in the total number of insured persons in civil life, but this diminution of work is relatively less than the reduction of total remuneration owing to the causes mentioned. The amount of medical attendance necessitated has also been relatively increased by the desire of the great majority of insured persons to be helped to keep on working even while unwell instead of taking more readily that rest of which they really stand in need. Returns of sickness benefit, which is only granted when the recipient is unable to work, are very fallacious as a guide in this matter.

Thirdly, in a great many cases the daughters of well-to-do families and the wives of men in comfortable circumstances who had to join the forces, or whose economic position has been adversely affected by the war, have entered into employment either from a wish to take their share in national service, or because work is easier to obtain and the opportunity of earning larger amounts than was previously possible has made work more attractive when obtained. These women thus added to the number of insured persons were as private persons a source of considerable income to medical men practising amongst them, and would have remained so under normal conditions.

The effect of these and other circumstances of minor importance has been entirely to alter the appropriateness of the present fee for National Insurance work, and it is safe to say that if these conditions had obtained at the time when the arrangements were made with the profession, the terms agreed upon would have been materially different. Those practitioners who are doing National Insurance work now feel that there is most urgent need of readjustment. It is eminently undesirable that a sense of economic injustice should in any case be allowed to stand in the way of the best possible work for insured persons, and the profession desires to bring its collective influence to bear upon each of its members to keep the work up to the highest standard. It is the more easy to do this if the rate of remuneration be raised in accordance with the altered conditions now prevalent, and for as long as they prevail. The profession feels that its present demand is justified both by the merits of the case and by comparison with the increases of remuneration that have been granted to other classes of the community that are doing work of national importance.

MEETINGS OF BRANCHES AND DIVISIONS.

MIDLAND BRANCH: HOLLAND DIVISION.

A MEETING of the Holland Division was held at Boston on November 26th, when Dr. WITHAM was in the chair. Dr. Wright was elected the representative of the Division on the Branch Council. The action of the Insurance Acts Committee as set forth in M. 17 was approved. Various matters affecting local conditions were reported by the SECRETARY, and the action taken by the members residing in Boston approved.

SOUTHERN BRANCH.

At the half-yearly general meeting of the Southern Branch, held in Southampton on November 22nd, 1917, when Dr. H. J. MAY was in the chair, Major H. S. SOUTTAR read the paper on the treatment of nerve injuries which is published in full this week. A discussion followed and a vote of thanks to Major Souttar was carried by acclamation. With the view of improving the attendance at the annual clinical meeting, the desirability of holding it either early in the autumn or in the spring was suggested.

MEETINGS OF THE PROFESSION.

SOUTHAMPTON.

At a meeting of the medical profession in the Southampton area held on July 13th it was resolved:

That in view of the difficulty of the "remaining" doctors getting accurate information this meeting recommends that each "absent" doctor on his return to Southampton should call on his old patients and obtain from them particulars of their having consulted any "remaining" doctors, and the "absent" doctor should be and is hereby authorized to make application to the "remaining" doctors for particulars of any attendance given, and for payment of the half fees earned, and that all doctors be so informed.

That this meeting recommends that the individual members of the profession should, owing to the difficulty of selling a practice, pay to the representative of any "absent" doctor (general practitioner) who dies on service, or to himself if

permanently and totally disabled on service, £10 if such dead or disabled practitioner was in practice on his own account, or £5 if in partnership, and that all doctors be so informed.

The two following riders to the second resolution were also adopted:

That it should apply to general practitioners only, and that the benefits should apply to those general practitioners absent from the town and from their practices.

That the widow of any doctor who received the benefit should have the right to succeed, so far as the grant would be concerned, to such practice.

THE ORGANIZATION OF THE PROFESSION.

THE Medical Secretary requests us to publish the following letter reparing an omission in his speech at Preston reported under this heading last week, p. 118:

Sir,

The York Panel Committee is anxious that I should publicly repair an omission in my speech at Preston where I referred to two Panel Committees—London and Kent—as having advised their constituents not to attend discharged disabled men under the new regulations. Dr. Lyth, Honorary Secretary of the York Committee, informs me that his own Committee took the same line, as also did the North Riding Panel Committee. I did not know these facts when I spoke at Preston, or I should certainly have included these two Committees among those which, by declining to be bound by the overwhelming vote of the Conference at which they were represented, had, in my opinion, acted in opposition to one of the fundamental principles of democratic government.

Yours faithfully,

ALFRED COX.

MOTOR CAR BADGE FOR MEMBERS OF THE ASSOCIATION.

THE motor car badge referred to on page 101 of the SUPPLEMENT of November 24th is now ready for issue to members of the Association, and may be obtained at the cost of 1s. on application to the Financial Secretary and Business Manager, 429, Strand, London, W.C.2. The badge is intended to be affixed by gum or paste to the inner surface of the wind screen. The badge will only be issued on the distinct understanding that the member to whom it is supplied will only use it when his car is engaged on professional or other purposes expressly authorized in the Motor Spirit Restriction Order No. 2 of 1917, and that the Association does not accept any responsibility for any improper use that may be made of the badge.

GENERAL COUNCIL

OF

MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1917.

SIR DONALD MACALISTER, K.C.B., President,
in the Chair.

(Concluded from p. 121.)

THE APOTHECARIES' HALL OF IRELAND.

SIR FREDERICK TAYLOR, in submitting the report of the Examination Committee on various matters relating to the Apothecaries' Hall of Ireland, said that the Final Examinations were taking place during that week, and the result of the examinations held in July called for no comment. He moved, and Dr. NORMAN WALKER seconded, a recommendation that the Irish Branch Council again be authorized to appoint for one year a deputy to be present on behalf of the Council at the professional examinations.

Dr. EDWARD MAGENNIS moved a contrary amendment, which found no seconder. He said that his desire had always been to find out in what respect the examinations of the Apothecaries' Hall had failed to satisfy the Council. Why was not the Hall reported to the Privy Council and given a chance to prove that it compared favourably with any licensing body in the kingdom, and that its examinations were conducted with strictness and impartiality? The Council had not even appointed an English or Scottish deputy, as it should have done; its deputies were nominees of rival licensing bodies.

The PRESIDENT pointed out that the resolution proposed by the Examination Committee was in accordance with a general instruction given to that Committee two years ago, and it was simply an administrative matter at that stage to pass the resolution in order that the Council might get what it was hoped would be a final report upon the examinations.

Sir JOHN MOORE said that there was no "inspection" of the Apothecaries' Hall. The examinations were, at the instance of the Privy Council, a conjoint matter between the Apothecaries' Hall government and the General Medical Council. In the table showing the results of the examinations held in July, 1917, two out of the three candidates had left the bodies to which they belonged, and had gone to the Apothecaries' Hall. That fact alone would justify a very close supervision over the examinations of the Hall.

Dr. MAGENNIS said that he was perfectly aware that there was no inspection, but he had an objection to a deputy. He proceeded to defend the status of the examiners.

The recommendation authorizing the Irish Branch Council to appoint a deputy was carried, with Dr. Magennis the only dissident.

DISCIPLINARY CASES.

Professional Relationship in Adultery Cases.

The Council considered, on November 30th and December 1st the case of Bertie Cecil Eskell, registered as of 26, Zealand Road, Bristol, M.R.C.S., L.R.C.P., Captain R.A.M.C., who was summoned on the charge that, being a registered practitioner, he abused his position by committing adultery with Mrs. Kathleen Margaret Dobson Mercer Adam, with whom and whose husband he stood in professional relationship. Two days previously to the hearing a decree *nisi* had been granted in the Divorce Court, and £2,000 damages awarded the petitioner, Mr. J. B. Mercer Adam, who was the complainant in this case. Mr. Horace Rowlands opened the case on behalf of Mr. Adam, who gave evidence as to the professional treatment of himself by Dr. Eskell, and stated that the defendant had also treated his wife medically. He had offered to pay Dr. Eskell for his professional services, but the doctor refused to accept any fee. Dr. E. C. Robertson-Pullarton, of Hampstead, said that he attended Mrs. Adam in her confinement in April last. He was of opinion that it would have been undesirable for her to have remained in India, as she had albuminuria. Dr. Eskell, in his evidence, denied professional relationship, and said that fees were never mentioned by Mr. Adam from first to last. Mr. R. W. Turner, who appeared for Dr. Eskell, claimed that his client's relationship with Mr. and Mrs. Adam was simply that of a guest, and that the adultery did not arise out of the relationship of medical man and patient. After the Council had deliberated in private, the President announced the Council's decision as follows:

Mr. Eskell, I have to announce that the facts alleged against you in the notice of inquiry have been carefully considered by the Council, and have been found proved to its satisfaction; and that the Council has, on the facts proved, judged you to have been guilty of infamous conduct in a professional respect, and has directed the Acting Registrar to erase from the *Medical Register* the name of Bertie Cecil Eskell.

James George Silver Jamieson, formerly in practice in London, was summoned to appear on the charge that, being a registered practitioner, he abused his position by committing adultery with a lady with whom and whose family he stood in professional relationship, of which adultery he had been found guilty in the Divorce Court in 1915, in a case in which he was co-respondent. Mr. Booth, solicitor for Mr. Jamieson, said that Mr. Jamieson had transmitted to him a document acknowledging receipt of a notice with regard to the charge, and admitting that the statements contained in that notice were substantially true, and that consequently he must submit to his name being removed from the *Register*. He stated, however, that professional relationship had ceased to exist some time before the occasion of the charge, and that many statements made against him in the Divorce Court were wholly untrue and others greatly exaggerated. He added that he married the respondent in 1915. The solicitor said that Mr. Jamieson admitted the charge and accepted the consequences, and put in his plea as in some degree mitigation, but not in any sense justification. The case having been considered *in camera*, the President announced that the Council had directed the name to be erased from the *Medical Register*.

Part-heard Case.

The case was opened before the Council on November 30th of Arthur Edward Gladstone, M.R.C.S., L.R.C.P., now of

Alexandria, New Zealand, whose counsel, Mr. Craig Henderson, pleaded for postponement on the ground that the doctor's statutory declaration, which was an essential part of his defence, was on its way from New Zealand and had not yet arrived. It was agreed to take the statutory declaration of the petitioner in the divorce suit out of which the charge arose as he might not be able to attend at a later session, and after this gentleman had been examined by Mr. Harper, the Council's solicitor, and cross-examined by the counsel for Dr. Gladstone, the further hearing of the case was adjourned till the next session.

Name Erased.

Ernest Wardman Wilbourn, L.R.C.P., L.R.C.S., of Huthwaite, Nottingham, was summoned to appear on the charge that, being a registered medical practitioner, he was, at the Nottingham Assizes in June last, convicted of feloniously having carnal knowledge of a woman without her consent, and was sentenced to three years' penal servitude. Mr. Harper said that the accused had applied to the Home Office for leave to be present that day, but leave had been refused.

Sir A. Bodkin read a letter from the defendant, dated November 15th, admitting the fact of his conviction and sentence, but absolutely denying that the offence was committed or even intended. He admitted that he had been guilty of grave indiscretion in allowing the woman in question to come into the tuberculosis dispensary, of which he was officer, when no third party was present, but his desire was not to send her away without attending to her case as she had come a distance of three or four miles. He pleaded for a certain period of probation, during which he would undertake not to engage in private practice.

The Council considered the case *in camera*, and the President announced that the conviction had been proved to the satisfaction of the Council, and that the Acting Registrar had been directed to erase the name from the *Medical Register*.

Charge of Covering Uncertified Midwife.

The case of Edward White, L.S.A., M.R.C.S., L.R.C.P., of 2, Green Park, Bath, which had been adjourned from May, 1917 (SUPPLEMENT TO BRITISH MEDICAL JOURNAL, June 2nd, 1917, p. 125), in order to give the defendant an opportunity of reconsidering his whole position in relation to the matter, was next taken. The charge was of covering a woman whose name had been removed by the Central Midwives Board from the roll of midwives.

Dr. White now attended and produced certain testimonials, including one from Dr. Francis Fosbery of Bath, who said that he had known him for twenty years in Bath, and could testify that since his appearance before the Council in May his practice had been conducted with the utmost propriety. The clerk of the Bath Insurance Committee also wrote that Dr. White had been on the panel since the beginning, and had been one of the most careful of practitioners in granting certificates for sickness and disablement benefit. Two other testimonials from medical men were put in.

Mr. Bertram, who represented the Central Midwives Board, the complainants in the case, said that, following a practice which he understood the Council did not disapprove of, the Central Midwives Board had made inquiries from the local authority regarding the case, and he read a letter from the town clerk of Bath, dated October 22nd, in which it was stated that Dr. W. H. Symons, the medical officer of health for the city, died in August last, but the present acting medical officer had no adverse report to make upon Dr. White's conduct since May, and, moreover, that Dr. Symons shortly before his death had stated to the writer that it was his intention to submit a favourable report upon Dr. White's conduct.

After the case had been considered *in camera*, the President announced the decision of the Council as follows:

Mr. White, I have to announce that the Council, having considered the testimonials as to character which have been tendered on your behalf, and the assurance which you have given as to your professional conduct in future, has not seen fit to direct the Acting Registrar to erase your name from the *Medical Register*.

Dental Case.

The Council considered, on November 30th, the case of John Stanley Francis, L.D.S., of 59, Cambridge Street, W., with regard to whom a report was presented by the Dental Committee. Mr. Francis was originally registered in 1902, but in 1905 his name was erased from the *Dentists' Register* because no answer had been received to the customary notices sent to him. In 1908 he telephoned to the Registrar on the subject of the erasure of his name, but, although letter and application form for restoration were sent to him, no reply was received. The Committee reported that in 1910 he was convicted at Marylebone Police Court of assault and wilful damage, and later at the same police court, and again at another, of being drunk and disorderly and using obscene language. In August last he applied for restoration to the *Register*, and as his papers were in order the restoration certificate was issued, but his record of convictions was referred to the Dental Committee. He maintained that the first was a wrongful conviction; the other convictions he did not question. The Council, after deliberating in private, decided that the convictions had been proved, but, in order to give Mr. Francis the opportunity of showing that he had reformed, judgement was deferred until November, 1918, when he would be called upon to produce references as to his character and conduct in the interval.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty: Staff Surgeon T. R. L. Jones to the *Pembroke*, additional, for disposal; Temporary Surgeons: C. Gardiner Hill to the *Frid*, additional, for disposal; C. M. Ryley, M.B., to Chatham Hospital; W. J. Tison to Hospital ship *Garth Castle*.

ROYAL NAVAL VOLUNTEER RESERVE.

To be Surgeon Probationer: W. W. Dow.

ARMY MEDICAL SERVICE.

Temporary Colonels to be temporary Surgeon-Generals: Sir Willmot T. Herringham, C.B., M.D.; Sir J. Rose Bradford, K.C.M.G., C.B., F.R.S., M.D.; Sir Bertrand E. Dawson, K.C.V.O., C.B., M.D.; Cuthbert S. Wallace, C.M.G., F.R.C.S.; Sir Berkeley G. A. Moynihan, C.B., M.B., F.R.C.S.

Lieut.-Colonel K. J. Greig, C.M.G., Reserve of Officers, relinquishes the rank of temporary Colonel on reposting.

Lieut. Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of Divisions: E. W. W. Cochran, M.B., L. N. Lloyd, C.M.G., D.S.O., J. H. Campbell, D.S.O.

Temporary Lieut.-Colonel R. E. Kelly (Captain R.A.M.C.T.F.) to be temporary Colonel (correction of announcement published last week).

ROYAL ARMY MEDICAL CORPS.

Major B. S. Bartlett retains the acting rank of Lieut.-Colonel whilst commanding a casualty clearing station.

The undermentioned relinquish the acting rank of Lieut.-Colonel on reposting: Major (temporary Lieut.-Colonel) T. J. Wright, D.S.O., Captain (temporary Lieut.-Colonel) A. Irvine-Fortescue, M.B.

Majors to be acting Lieut.-Colonels whilst in command of a medical unit: P. C. T. Davy, C.M.G., M.B., R. H. Bridges, D.S.O.

Major E. T. Potts, D.S.O., M.D., to be acting Lieut.-Colonel whilst employed as Assistant Director of Medical Services of an army.

Temporary Major F. L. Collie, M.B., relinquishes his commission.

Captain H. A. T. Fairbank, F.R.C.S. (R.A.M.C.T.F.), to be temporary Lieut.-Colonel.

Temporary Captain F. F. Muecke, M.B., F.R.C.S., relinquishes the acting rank of Lieut.-Colonel on reposting.

Temporary honorary Captain A. M. Westwater to be temporary honorary Major.

Temporary Captain J. B. Scott, M.B., relinquishes his commission on appointment to the Ministry of National Service.

Temporary Captains relinquish their commissions: F. A. Anderson, M.C., M.B., D. Macnish, M.B., P. M. Ragg, M.B., A. F. Elliott, M.B., A. Burns, M.B., C. W. Ensor, H. A. Cutler, M.B., W. Jameson, A. R. Muir, R. E. Thomas, M.D., T. Davidson, M.B., A. J. Couper, M.B., C. C. Bullmore, F. E. Wynne, M.B., K. J. Aveling, M.B., G. Pollock, M.D., F. J. McGlade, M.B., R. S. Jenkins, T. W. G. Hoeg, M.B., L. J. H. Oldmeadow, M.D., F.R.C.S.E., J. E. R. Orchard, J. J. Anning, T. J. Simpson, M.B.

Temporary Captains relinquish their commissions on account of ill health: A. J. Anderson, M.B., G. B. Flux, M.D.

Temporary Lieutenants to be temporary Captains: A. W. P. Pirle, M.B., J. Paterson, M.B., J. R. Fleming, D. O. Richards, M.B., W. C. P. Barrett, M.B., G. O'N. Waddington, T. P. Lincham, M.B., L. G. White, M. Golding, W. Simpson, M.B., J. B. Lester, M.D., V. C. Montgomery, M.B., A. H. Macklin, M.B., W. D. Kirkwood, M.D., F. A. Godson, M.B., E. W. Hall, J. J. O'Mullane, W. M. G. Guinness, M.D., B. G. H. Connolly, M.B., C. L. Warke, R. Cope, J. G. Macqueen, M.B., J. C. L. Day, A. Leeming, M.B., G. Cooper, M.D., C. Murphy, M.B., W. E. Harrows, M.D., E. W. Milne, M.B., S. E. Holder, T. F. Murphy, R. C. Corbett, M.B., A. MacMillan.

Temporary honorary Lieutenants W. F. Matthews, of St. John Ambulance Brigade Hospital, and C. G. Hitchcock to be temporary honorary Captains.

Temporary Lieutenants relinquish their commissions: W. T. Morton, W. L. Walker, M.B., T. B. Stedman, M.D., J. B. McEwan, M.B., R. C. de C. Wheeler, M.B.

C. R. Bird to be temporary honorary Lieutenant.

INDIAN MEDICAL SERVICE.

Lieut.-Colonel P. P. Kilkelly, I.M.S., to be Residency Surgeon in the Western States of Rajputana, August 3rd.

Captains to be Majors, September 1st, 1917: C. E. Palmer, M.B., P. E. M. Newland, L. A. H. Lack, M.B., E. J. C. McDonald, J. F. Boyd, N. S. Sodhi, W. C. Gray, M.B.

The services of Lieut.-Colonel C. H. James, C.I.E., have been placed temporarily at the disposal of the Chief Commissioner, Delhi, from October 1st, or subsequent date on which he takes up his duties as Professor of Operative Surgery at the King Edward Medical College, Lahore.

Lieut.-Colonel W. W. Clemesha, M.D., to be temporary Colonel whilst employed as Assistant Director of Medical Services, July 1st (substituted for notification under "Army Medical Service" in the *London Gazette* of August 31st).

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Lieutenants to be Captains: R. V. Clarke, W. Yeoman, M. A. White, S. C. Swinburne.

Lieutenant Alexander Duguid, M.B., is dismissed the service by sentence of a general court-martial (August 13th).

To be Lieutenants: K. J. A. Gillanders, M.R., from Glasgow University Contingent O.T.C.; W. H. Rowden, M.B., from Leeds University Contingent O.T.C.; J. Thompson, M.B., from Edinburgh University Contingent O.T.C.; W. B. Buer, G. E. Birkett, M. B. Gunn.

OVERSEAS CONTINGENTS.

CANADIAN ARMY MEDICAL SERVICE.

D.A.D.M.S.: Temporary Major G. G. Greer, M.C., C.A.M.C., vice Major J. S. Jenkins, D.S.O., C.A.M.C.

CANADIAN ARMY MEDICAL CORPS.

Temporary Major C. F. C. Hazzard, from Canadian Light Horse, to be temporary Major.

Temporary Captain (acting Major) A. L. Jones to be temporary Major.

Temporary Major (acting Lieut.-Colonel) R. Wilson relinquishes the acting rank of Lieut.-Colonel on ceasing to be specially employed.

Temporary Captain (acting Major) A. MacKay relinquishes the acting rank of Major.

Temporary Captain F. V. Woodbury to be acting Major.

TERRITORIAL FORCE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel (Brevet Colonel) F. H. Westmacott, F.R.C.S., and Captains H. H. Markham and M. D. Wood, M.D., are restored to the establishment.

Major (temporary Lieut.-Colonel) W. A. Wetwan relinquishes his temporary rank on ceasing to command a casualty clearing station.

Major G. Hall, C.M.G., M.D., is restored to the establishment.

Captain (temporary Major, acting Lieut.-Colonel) W. D. Sturrock, M.D., reverts to the temporary rank of Major on ceasing to command a field ambulance, with precedence as from September 11th, 1915.

Captain (temporary Major) E. R. Carling, M.B., F.R.C.S., relinquishes his temporary rank, and is restored to the establishment.

Captain J. Grace, M.B., and C. A. Moore, M.B., are seconded.

Captain J. H. Baldwin resigns his commission on account of ill health, and is granted the honorary rank of Captain.

Captain D. MacP. Taylor, M.D., relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain.

Captain H. A. P. Robertson, M.B., from a field ambulance to be Captain.

EXCHANGE.

M.O. with Field Artillery brigade in France desires exchange to hospital or other unit in England.—Address, No. 4100, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

VACANCIES.

NOTICES REGARDING APPOINTMENTS.—Attention is called to a Notice (see Index to Advertisements—Important Notice re Appointments) appearing in our advertisement columns, giving particulars of vacancies as to which inquiries should be made before application.

BARNSELY BECKETT HOSPITAL.—Second Lady House-Surgeon, Salary, £225 per annum.

BEDFORD COUNTY HOSPITAL.—(1) House-Surgeon; (2) House-Physician. Salary, £174 10s. and £152 10s. per annum respectively.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House-Surgeon, Salary, £170 per annum.

BRISTOL EYE HOSPITAL.—House-Surgeon. Salary, £120 per annum.

BRISTOL ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon. Salary, £120 per annum.

CARDIFF UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.—Temporary Lecturer in Physiological Chemistry. Salary, £200 per annum.

HOSPITAL FOR SICK CHILDREN. Great Ormond Street, W.C.—Two House-Surgeons. Salary at the rate of £100 per annum and £5 washing allowance.

KINGSTON-UPON-HULL CORPORATION.—Resident Medical Officer at the Infectious Diseases Hospitals. Salary, £400 per annum.

MANCHESTER ROYAL INFIRMARY.—Resident Surgical Registrar at the Central Branch. Salary, £200.

NOTTINGHAM CHILDREN'S HOSPITAL.—Resident Lady House-Physician and Anaesthetist. Salary, £250 per annum.

QUEEN'S HOSPITAL FOR CHILDREN. Hackney Road, E.—Temporary Assistant Physician. Honorarium, £12 10s.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Senior Resident House-Surgeon. Salary, £300 per annum.

SALOP COUNTY COUNCIL.—Temporary Assistant School Medical Officer. Salary, £400 per annum.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Senior House-Surgeon. Salary, £300 per annum.

STOKE-ON-TRENT: NORTH STAFFORDSHIRE INFIRMARY.—House-Surgeon (lady). Salary, £200 per annum.

WALLASEY COUNTY BOROUGH.—Lady Assistant School Medical Officer. Salary, £300 per annum, plus war bonus of £37 10s.

WALSALL AND DISTRICT HOSPITAL.—Senior House-Surgeon, Salary, £250 per annum.

To ensure notice in this column—which is compiled from our advertisement columns, where full particulars will be found—it is necessary that advertisements should be received not later than the first post on Wednesday morning. Persons interested should refer also to the Index to Advertisements which follows the Table of Contents in the JOURNAL.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 5s., which sum should be forwarded with the notice not later than the first post on Wednesday morning in order to ensure insertion in the current issue.

BIRTH.

KEELING.—On December 16th, at Attleborough, Norfolk, the wife of G. S. Keeling, M.D.—a son.

DEATHS.

ANDERSON.—On December 17th, at Alde House, Aldeburgh, Suffolk, Elizabeth Garrett Anderson, M.D., aged 81. Funeral Friday, December 21st, 2.30 p.m., Aldeburgh. Memorial service at Christ Church, Endell Street (Military Hospital), on Saturday, December 22nd, at 11 a.m. No flowers by request.

ROBSON.—Killed in action, on December 2nd, 1917, aged 30 years, Captain Charles Henry Robson, M.B., R.A.M.C., the dearly loved husband of Winifred Irene Robson (née Taylor), of 47, Roxburgh Terrace, Whitley Bay, and oldest son of Mr. and Mrs. Alfred Robson, of 25, Victoria Avenue, Whitley Bay.

SWANN.—On November 28th, through sinking of ss. *Apapa* by enemy action, Alexander James Thompson Swann, M.B., Ch.M., D.P.H., Medical Officer, West African Medical Staff, Nigeria, beloved husband of Effie Jemima Cassels or Swann, L.R.C.P. and S.S. Eddlehurst, Eastwood Avenue, Giffnock, near Glasgow.

THOMPSON.—On December 5th, at Boxford, Suffolk, Alfred Thompson, L.R.C.P. Lond., M.R.C.S. Eng., aged 65.

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 29TH, 1917.

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RURAL PRACTITIONERS AND MILEAGE.

The last conference of Local Medical and Panel Committees passed three resolutions on the subject of mileage. The first asked the Insurance Acts Committee to take steps to have the arrangements for mileage improved under the scheme for treating discharged disabled sailors and soldiers; the second recorded strong objection to the mileage allowance for this purpose, and pressed for the same scale of payment as that allowed for attendance on serving soldiers; while the third instructed the Insurance Acts Committee to press for an increased mileage grant to rural practitioners generally. These, together with the other resolutions of the conference, were communicated in writing to the Insurance Commissioners on November 5th. On November 15th a deputation from the Executive Subcommittee of the Insurance Acts Committee waited upon the Insurance Commissioners, and after discussion of the mileage question it was agreed that certain detailed figures from members of the deputation in rural practice should be forwarded to the Commissioners. On November 20th the Medical Secretary wrote to the Insurance Commissioners stating the case for a review of mileage allowances, both general and in connexion with attendance on invalided sailors and soldiers, and pressing the Commissioners to induce the Treasury to make an immediate increase in the amount.

The result of the action of the Insurance Acts Committee on behalf of rural practitioners was announced briefly last week. The full text of the letter from the Commissioners is as follows:

December 19th, 1917.

Sir,

I am directed by Sir Edwin Cornwall to refer to your letter of November 20th, and to the representations which were made on behalf of rural practitioners at the conference with the Insurance Acts Committee on November 15th, and to state that the Joint Committee have been authorized to disburse an additional mileage grant as from January 1st, 1917, which will permit of a substantial increase in the special payments made to rural practitioners in respect of mileage, and will also permit of extra payments for mileage under the scales laid down in Regulations for the treatment of temporary residents and for invalided soldiers and sailors.

Sir Edwin Cornwall would be glad if two or three representatives of your Committee could attend here at an early date with a view to a discussion on points of detail with representatives of this department as to the general basis of distribution of this additional grant.

I am to add that this question has, as you are aware, been considered, on the request of your Committee, as a separate question, not involving the larger issues raised by the general application for increased remuneration put forward by the Conference of Panel Committees for the consideration of the Government.

I am, Sir, your obedient servant,

(Signed) E. HACKFORTH.

Thus the Insurance Acts Committee, acting on behalf of the Panel Committees, has succeeded in securing a prompt and satisfactory settlement of one of the important matters discussed at the recent conference.

SELF-GOVERNMENT OF THE MEDICAL PROFESSION.*

BY

JOHN CAMPBELL, M.A., M.D., F.R.C.S. ENG.,

BELFAST.

THERE has recently been some correspondence in the *BRITISH MEDICAL JOURNAL* regarding the organization of the medical profession. This brings to mind some of the various attempts in the same direction which have been made at various times during the past thirty years, and also recalls local efforts towards co-operation which have engaged the attention of the Ulster Branch and of the Ulster Medical Society on several occasions. These movements have been spasmodic; they have been brought about by some more or less temporary irritation; and they have subsided without leaving the profession in a much better position than it was. They failed to lead to any substantial general improvement, because they only arose to meet some pressing local requirement, and, on that account, did not go to the root of the matter.

The time is appropriate for considering the present and the future position of the profession, owing to the fact that the victorious ending of the war, for which we all hope, will set free a large number of men, some of whom will return to gather up the remnants of the practices which they left at the call of duty, others of whom will desire to settle down as newly-qualified practitioners, to make their way as best they can, and all of whom will have to engage in the struggle for existence with those who have been steadily pursuing their work at home. Beyond all these there are the students now attending the medical schools who will be coming into competition with the men already qualified. We have at present 403 medical students in Queen's University. Whatever the condition may be in England and Scotland, the information to be got about the Irish schools shows them to be very flourishing. These considerations suggest that there is probably a hard time before the medical profession. In the past the profession has been at best a struggling one. In the future the total amount of remuneration available from the community will be spread over a larger number of men and women doctors than hitherto, which is equivalent to saying that the average income will be less for the individual man. The difficulty of making ends meet will be greater even than it has been. We, as a profession, must look at the matter from this point of view. There will probably be work enough for all, but we all know that the doctor may be very busy and, at the same time, be making only a small income. Every medical man, from the nature of his calling, must do a considerable amount of gratuitous work.

The problem is how to make the available income equal to the demands of the members of the profession, or to keep the numbers of those entering the profession within such limits as to enable every man to get a decent living. The plan of setting out a local scale of fees has been tried time after time and found wanting. We have in our own

* Read at a meeting of the Ulster Branch of the British Medical Association on November 22nd, 1917.

society meetings agreed to a minimum standard of fees and forgotten our pious resolutions as soon as we were outside the room in which we had met. The alternative of cutting down numbers on the threshold of the profession has not been attempted. Any one who can pass the meagre standard of the entrance examinations can begin his studies, and, with a moderate amount of exertion, can become fully qualified. The majority of those who enter the profession are without capital. Necessity compels them to scramble for what they can get, and the lot of many is in consequence far from enviable.

How can we improve the position? I wish to suggest that we can most readily do so by getting more representation for the profession on the General Medical Council. At first sight it may appear that because the General Medical Council is wholly composed of medical men it is quite representative of the great body of medical practitioners. This is not so. The Council is composed of thirty-eight members. Of these, five are chosen by the King on the advice of the Privy Council, and twenty-seven are chosen by the Universities, the Colleges of Physicians and Surgeons, and the Apothecaries' Halls. This leaves only six direct representatives chosen by the profession—an inadequate number to look after the interests of 43,000 men, the number on the *Medical Register* for 1915. The twenty-seven representatives of the teaching and examining bodies are, as individuals, no doubt sympathetic to the struggling practitioner, but they are on the Council not to represent him but to protect the interests of the corporations which selected them. Now, the interest of a teaching or examining body is by no means the interest of the practising profession. Indeed, it may be fairly regarded as hostile in fact though not in intention. The universities and colleges desire to attract students. The more students they have the more successful they are, and the better their teachers are remunerated. But the more students they can draw in the larger will be the number of qualified men they will turn out, and the more severe will be the competition in the professional struggle for existence.

Ireland had one member for its 3,060 practitioners in 1915; Scotland had one for its 4,173; England and Wales had four members for 26,470, or one representative for each 6,617 practitioners. There were also 8,867 men serving in the navy and army or resident abroad who have no representation. If we take the Irish proportion as fair, obviously England and Scotland are entitled to at least ten representatives instead of five. Practitioners in the services and those resident abroad are entitled to three representatives. This makes an addition of eight to the General Medical Council, giving, with the present six, a total of fourteen direct representatives from the profession. While such an arrangement as this would not give the direct representatives a preponderance in the Council, it would greatly increase their influence. Amongst reforms which might be accomplished under such a scheme of self-government for the profession priority of place should be given to a uniform entrance examination for the medical students of the whole three kingdoms. A higher minimum standard of entrance examination would raise the position of the profession, and at the same time give the profession control over the candidates for admission and enable it to prevent overcrowding. Moreover, the individual medical schools would not suffer as they do now when one of them raises its standard, and so empties its class-rooms.

The British Medical Association could perform a useful and necessary work by taking steps to obtain greater proportional representation for the profession on the General Medical Council.

SOUTH AFRICAN COMMITTEE.

A MEETING of the South African Committee was held at the Institute of Medical Research, Johannesburg, on June 26th. The following members were present: Drs. Watkins-Pitchford, Baumann, Bidwell, Dr. Drury, Napier, Howell-Davies, and A. Jasper Anderson (Honorary Secretary). In the absence of the President (Sir Kendal Franks), Dr. WATKINS-PITCHFORD was elected to the chair.

Representatives on South African Committee.—The HONORARY SECRETARY read the names of the Representatives on the Committee appointed by the Branches:

Cape of Good Hope—Western Province Branch: Professor Jolly (President), Dr. A. Jasper Anderson, Dr. Hugh Smith, Dr. I. A. W. Beck.

Cape of Good Hope—Eastern Province Branch: Dr. H. F. Bell-Walker (President), Dr. Dr. Drury.

Border Branch: Dr. Lowndes (President), Dr. Ganteaume, Dr. Barcroft Anderson.

Orange Free State and Basutoland Branch: Dr. Manning (President), Dr. de Keek.

Pretoria Branch: Dr. Howell-Davies (President), Dr. Dunstan.

Witwatersrand Branch: Dr. Watkins-Pitchford (President), Sir Kendal Franks, Dr. E. P. Baumann, Dr. F. Napier.

Rhodesian Branch: Dr. W. M. Eaton (President), Dr. E. H. Strong.

Natal Coastal Branch: Dr. Aymer Dumat (President), Dr. Campbell-Watt.

Resignation of President and Election of Officers.—A letter was read from Sir Kendal Franks stating that he did not wish to be elected President of the newly elected Committee on the grounds that his health was not sufficiently good for him to devote the amount of time and energy required for that office and thanking the Committee for the honour and support given to him. Sir Kendal Franks's resignation was accepted with regret, and a resolution was passed thanking him for the great services which he had rendered to the Committee and expressing the hope that he would still be able to take an active part in the work of the Committee. Dr. A. Jasper Anderson was unanimously elected President, Dr. Watkins-Pitchford Vice-President, and Dr. A. W. Reid, Assistant Medical Officer of Health for Cape Town, Secretary. Dr. J. Barcroft Anderson was unanimously re-elected Honorary Treasurer. Dr. Bidwell agreed to act as Secretary to the Committee during the meeting.

Formation of New Branches and Alteration of Branch Rules.—Correspondence was read between the Honorary Secretary and the Medical Secretary of the British Medical Association with regard to the formation of new Branches and the alteration of rules of Branches. It was proposed by Dr. Bidwell and carried that the alteration of rules of any existing Branch in South Africa should be subject to the approval of the South African Committee and that the Secretary should write to the Medical Secretary to see if that power can be given to the South African Committee. It was also resolved that a copy of the Memorandum and Articles of Association and By-laws of the British Medical Association and the Regulations of the South African Committee should be supplied to the Secretary of each Branch to be kept in a place of security accessible to the President and Secretary of each Branch.

Medical Defence.—The HONORARY SECRETARY reported that arrangements had been made with Lloyd's agents, Messrs. C. L. Andersson and Co., Johannesburg, with regard to medical defence. The arrangements were that Lloyd's had agreed to insure medical practitioners through the South African Committee for the sum of £2 plus 2s. 6d. stamp duty against actions for alleged professional malpraxis, neglect, or mismanagement. The policy to cover £1,000 in any one action with a maximum of £3,000 per annum. Messrs. Andersson had agreed to hold a practitioner covered from the date he advised the Honorary Secretary of his intention to take out a policy.

Medical and Pharmacy Bill.—The PRESIDENT reported that the Subcommittee of Representatives of the Cape of Good Hope Western Province Branch with regard to the Medical and Pharmacy Bill had met and had appointed Professor Jolly and himself to give evidence before the Select Committee of the Senate on this bill. They gave evidence on two occasions and handed in memoranda containing suggested amendments to the bill.

Medical Inspection of Schools.—Correspondence was read from several Branches with regard to the medical inspection of scholars and school buildings. It was resolved that the opinion of the South African Committee and that of the Provincial Education Department was that a whole-time medical inspector of schools should be appointed, with such assistance as might be required.

District Surgeons' Grievances.—Correspondence was read with regard to the grievances of district surgeons. It was resolved to appoint a deputation to interview the Minister of the Interior on the subject and that Dr. W. A. Cameron, Secretary of the District Surgeons' Association, should be asked to co-operate.

On September 24th a special meeting of the South African Committee was held at the Defence Head Quarters, Pretoria, when Colonel Stock, D.M.S., by invitation of the

President, made an important statement with regard to the medical needs of the Defence Department of the Union. After discussion it was unanimously resolved to adopt the principle of voluntary conscription of all members of the British Medical Association in South Africa, and to recommend that each Branch should appoint a Medical Services Committee, whose business it would be to select practitioners for military duty, and to safeguard the interests of those absent on service. A special sub-committee of six was appointed to represent the committee on all questions relating to military medical services, and to act as an intermediary between the Branches of the Association and the Defence Department.

Meetings of Branches and Divisions.

EDINBURGH BRANCH: EDINBURGH AND LEITH DIVISION.

A MEETING of the Division was held on December 11th, when Dr. W. STEWART presided.

The Executive intimated that congratulations had been sent to Dr. George Mackay on his receiving a bar to the M.C., and to Dr. J. H. H. Pearson on receipt of a Belgian honour; also condolence on the decease of Dr. Elsie Inglis.

Increase of Fees.—The subject of the increase of fees was considered on receipt of a letter from the Scottish Committee. The SENIOR SECRETARY summarized correspondence and information received from the clerk to the Scottish Committee on action taken by the Aberdeen, Perth and Glasgow and West of Scotland Branches, and reported that the Leith practitioners had agreed to raise the ordinary fee where practicable; and the general feeling was that the fees should be left to the discretion of each practitioner, but that an increase could be made. After much deliberation it was unanimously resolved:

That this Division is of opinion that professional fees should be increased where circumstances will permit.

A motion that the resolution be sent to the whole profession in Edinburgh and Leith was lost.

City Welfare Nurses.—Questions in the schedule of the City Welfare Nurses were discussed and the following motion carried:

That the schedule of questions of the City Welfare Nurses should not be asked in cases where the patients employ a private registered medical attendant.

It was also resolved to send the resolution to the Medical Officer of Health, the Convener of the Public Health Committee, and the Town Clerk. Dr. R. ROBERTSON protested against this last motion.

INSURANCE.

LOCAL MEDICAL AND PANEL COMMITTEES.

Cheshire.—At a meeting of the Local Medical and Panel Committee on October 7th Dr. Picton was appointed representative of the Committee on the Joint Disablement Subcommittee for the county. It was decided to draw attention to the inadequate representation of the interests of panel practitioners upon the medical section of the Statutory Advisory Committee under the Insurance Acts.

At a meeting on October 28th it was resolved to inform the Commissioners that no system of payment by capitation could, in the opinion of the Committee, be satisfactory to the profession unless based upon the actual lists at some given date in arrears, and not, as at present, on a system of estimate and conjecture.

At a meeting on November 11th it was decided to issue the following document to each member of the panel for signature and immediate return to the secretary, but that the forms be not issued as resignations without the further consent of the signatories:

I hereby give notice in accordance with Medical Benefit Regulations (England) 1913, 17(2), that I desire to discontinue Panel Service on the present terms of payment at the expiry of the current year; but that I will undertake service at the capitation rate of 10s. per head per annum (exclusive of drugs and appliances) calculated on the list of persons accepted by or assigned to me under Section 25 of Part III of Medical Benefit Regulations.

At a meeting on November 17th it was resolved to recommend to the district Medical Committees that the

resignations be sent in to the Cheshire Insurance Committee, with a covering letter. On November 19th, 170 resignations were handed in, with a long covering letter stating that they were subject to the qualifications:

1. The signatories are willing to accept service at the rate of 10s. per head per annum (exclusive of drugs and appliances) calculated on the list of persons accepted by or assigned to them under Section 25.

2. Should the Insurance Acts Committee of the British Medical Association, after the negotiations which they are at present conducting with the Commissioners, conclude a settlement satisfactory to the whole profession, then the signatories would be willing to accept that settlement and withdraw their resignations.

The letter went on to state that the Local Medical and Panel Committee would have advised its constituents to await the result of these negotiations before taking action had it not been that the terms of the Regulations required six weeks' notice of resignation before the commencement of any insurance year.

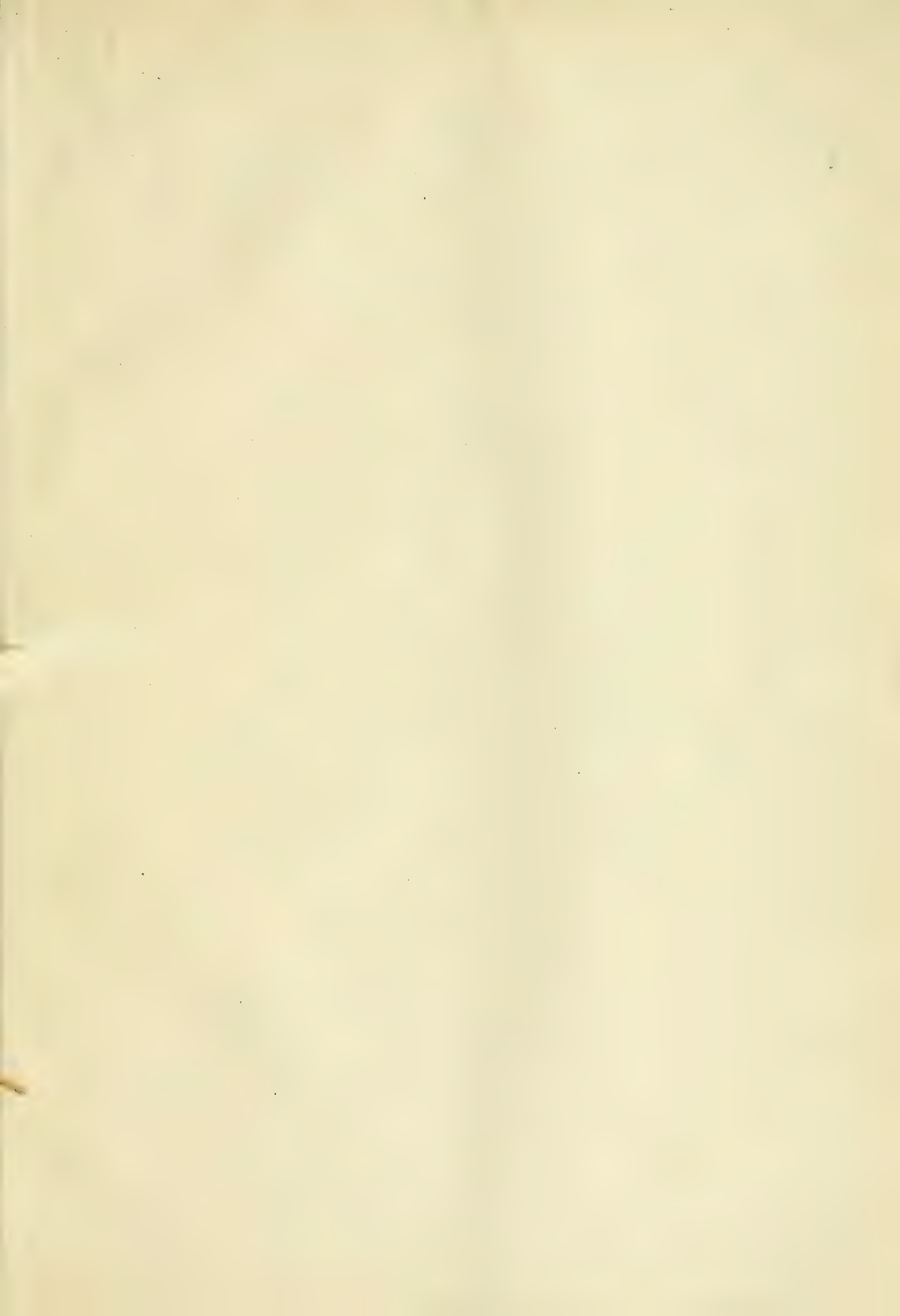
Birmingham.—At a meeting of the Panel Committee on December 4th it was reported that the prescriptions in the local pharmacopoeia had been reviewed by representatives of the Panel, Pharmaceutical, and Insurance Committees, and that alterations necessitated by the conjoint action of the British Medical Association and the Pharmaceutical Society had been made. It was decided to sign Memo. 19 supporting the Insurance Acts Committee of the British Medical Association should it be found necessary to carry into effect the scheme for collective bargaining as approved by the October, 1917, Conference of Local Medical and Panel Committees.

Nottingham.—At a joint meeting of the Nottingham City and County panel practitioners on November 27th it was decided loyally to support the Insurance Acts Committee of the British Medical Association if it should be necessary to use the scheme of collective bargaining as set out in Memo. 18.

Warwickshire.—At a meeting of the Panel Committee on November 21st it was resolved that the Insurance Committee be asked to arrange for payment of medicines supplied to invalided men under the new arrangements at a flat rate based upon the average cost per prescription for 1916. It was resolved loyally to support the Insurance Acts Committee of the British Medical Association should it be found necessary to carry into effect the scheme for collective bargaining as approved by the October (1917) Conference. A report was received as to the settlement for 1916 showing that the capitation fee for dispensing was 1s. 9.21d. and for ordinary patients 6s. 7d. It was agreed that the War Emergency Formularies be adopted from December 1st unless otherwise expressly ordered by the prescriber.

Forfarshire.—At a general meeting of the Local Medical and Panel Committees on October 3rd it was agreed to endeavour to carry out as far as possible the regulations in reference to discharged disabled sailors and soldiers, but to inform the British Medical Association that the meeting considered the adoption of these regulations was *ultra vires* without consultation with and the approval and knowledge of Local Medical and Panel Committees in the first instance, and to call upon the Association without undue delay to have the regulations rescinded and a scheme laid before practitioners for their opinion, especially in regard to adequate remuneration for attendances including mileage.

Renfrewshire.—At a meeting of the Panel Committee on October 24th the Secretary reported that he had drawn the attention of the British Medical Association to the fact that the dividend rate of remuneration for attendance on temporary residents was very much lower in Scotland than in England, and that the point had been noted by the Insurance Acts Subcommittee (Scotland) for discussion with the Commissioners on the occasion of the first conference. The Secretary was instructed to add a clause to the Renfrewshire agreement authorizing a levy up to 1d. per insured person for the Committee's administrative expenses.



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